



Research article

[urn:lsid:zoobank.org:pub:09F625AD-D58F-4D26-98B7-832743127667](https://zoobank.org/pub:09F625AD-D58F-4D26-98B7-832743127667)

Contribution to the genus *Chilocorus* Leach, 1815 (Coleoptera: Coccinellidae: Chilcorini), with descriptions of two new species from China

Wenjing LI¹, Lizhi HUO², Di WANG³, Dirk AHRENS⁴ & Xingmin WANG^{5,*}

^{1,2,5}Key Laboratory of Bio-Pesticide Innovation and Application, Engineering Technology Research Center of Agricultural Pest Biocontrol, Guangdong Province, Department of Entomology, South China Agricultural University, Guangzhou 510640, China.

¹Plant Protection Research Institute, Guangdong Academy of Agricultural Sciences, Guangzhou, Guangdong 510640, China.

³People's Public Security University of China, Beijing 100038, China.

⁴Zoologisches Forschungsmuseum Alexander Koenig Bonn, Adenauerallee 160, 53113 Bonn, Germany.

*Corresponding author: wangxmcn@scau.edu.cn

¹ Email: lwj4631221@aliyun.com

² Email: huolizhicn@163.com

³ Email: jgxywyjwd@163.com

⁴ Email: d.ahrens@zfmk.de

¹ [urn:lsid:zoobank.org:author:6B58B81E-DF8E-4463-8008-3CA190F588DD](https://zoobank.org/author:6B58B81E-DF8E-4463-8008-3CA190F588DD)

² [urn:lsid:zoobank.org:author:FA135086-13FD-4DF0-B5F9-8E3EE2111EF7](https://zoobank.org/author:FA135086-13FD-4DF0-B5F9-8E3EE2111EF7)

³ [urn:lsid:zoobank.org:author:7ED9BC5C-2112-483C-A39B-50259D5AB7CB](https://zoobank.org/author:7ED9BC5C-2112-483C-A39B-50259D5AB7CB)

⁴ [urn:lsid:zoobank.org:author:DEDCE5CF-AA11-4BBF-A2C6-D7C815019714](https://zoobank.org/author:DEDCE5CF-AA11-4BBF-A2C6-D7C815019714)

⁵ [urn:lsid:zoobank.org:author:51CDA9D0-12F3-4593-A887-BF8CB2E6AB16](https://zoobank.org/author:51CDA9D0-12F3-4593-A887-BF8CB2E6AB16)

Abstract. Twenty species of the genus *Chilocorus* Leach, 1815 currently known from China are recorded, including two new species described here: *C. nigricaeruleus* Li & Wang sp. nov. and *C. strenotubus* Li & Wang sp. nov. Diagnoses and detailed descriptions of the new species are given. Each species is illustrated in detail, including genitalia. Distribution maps, a key to the Chinese species and a world checklist of *Chilocorus* are given.

Keywords. Lady beetles, Chilcorini, new species, China, world checklist.

Li W., Huo L., Wang D., Ahrens D. & Wang X. 2018. Contribution to the genus *Chilocorus* Leach, 1815 (Coleoptera: Coccinellidae: Chilcorini), with descriptions of two new species from China. *European Journal of Taxonomy* 469: 1–34. <https://doi.org/10.5852/ejt.2018.469>

Introduction

The tribe Chilcorini Mulsant, 1846 belongs to the subfamily Chilcorinae along with the tribes Platynaspini Mulsant, 1846 and Telsimiini Casey, 1899 in the traditional classification, based on

the fact that they share a characteristic head capsule with a strongly expanded clypeus and reduced antennae (Sasaji 1968b). However, recent studies on the molecular phylogeny of Coccinellidae indicate that this subfamily is not a monophyletic group (Giorgi *et al.* 2009; Seago *et al.* 2011). As per the classification proposed by Ślipiński (2007) and Seago *et al.* (2011), Chilocorinae and its three tribes are now included in the subfamily Coccinellinae. Chilocorini has been identified as a sister group of Coccinellini (Magro *et al.* 2010; Seago *et al.* 2011; Escalona *et al.* 2017; Chen *et al.* 2017). At present, Chilocorini contains 27 genera and more than 280 species (Łączyński & Tomaszewska 2012; Li *et al.* 2017).

Chilocorus, the largest genus of the tribe Chilocorini, contains 79 species distributed all over the world and mainly preying on cocoidea (Giorgi *et al.* 2009; Escalona *et al.* 2017). Many species of *Chilocorus* are economically important as they are widely used as biological control agents (Ślipiński & Giorgi 2006), such as *Chilocorus nigrita* (Fabricius, 1798), which is widely distributed due to its deliberate introduction for biological control (Booth 1998). Leach (1815) established the genus *Chilocorus* for *Coccinella cacti* Linnaeus, 1767. Sicard (1920) proposed a subgenus *C. (Trichocorus)* for two species, this was supported by Chapin (1965) who considered *Chilocorus* as a non-monophyletic genus. This concept was accepted by Miyatake (1970), who studied East-Asian species, and subdivided *Chilocorus* into seven groups depending on the characters of pronotal oblique line, prosternal process, prosternal hypomeral foveae, elytral epipleural foveae, elytral outer margin, etc. The phylogenetic relationships of *Chilocorus* are still unclear. There are no detailed phylogenetic analyses based on morphology and Chilocorini are poorly represented in the molecular studies dealing with Coccinellidae.

The species of *Chilocorus* are abundant in China and prior to the present study, 18 were known (Liu 1963; Pang & Mao 1979; Cao & Xiao 1984; Pang *et al.* 2004; Ren *et al.* 2009). However, no comprehensive revision of Chinese *Chilocorus* has been carried out over the last 40 years. Furthermore, the world checklist of *Chilocorus* has not been updated for several decades since Korschefsky (1932), who provided the world checklist of Coccinellidae. The present paper aims at updating the knowledge of Chinese *Chilocorus*, including two new species, and provides a checklist of the known species of the world.

Material and methods

Specimens examined in this study were collected from China and Nepal. Type specimens of the new species are deposited at the Department of Entomology, South China Agriculture University, Guangzhou. Other material examined is deposited in the following research institutions:

SCAU = South China Agriculture University, Guangzhou, China
 FIQB = The Forest Inspection and Quarantine Bureau, Yunnan, China
 NCHU = National Chung Hsing University, Taiwan, China

External morphology was observed with a dissecting stereo microscope (SteREO Discovery V20, Zeiss). Male and female genitalia were dissected, cleared in a 10% solution of NaOH by boiling for several minutes and examined with an Olympus BX51 microscope. The photographs of genitalia and other morphological characters were generated with digital cameras (AxioCam HRc and Coolsnap-Procf & CRI Micro*Color), attached to microscopes using AxioVision Rel. ver. 4.8 and Image-Pro Plus ver. 6.0 to capture images, and photographs were cleaned up and laid out in plates with Adobe Photoshop CS ver. 8.0. Terminology follows Ślipiński (2007) and Ślipiński & Tomaszewska (2010).

Abbreviations

TL = total length, length from apical margin of clypeus to apex of elytra
 TW = total width, width across both elytra at widest part
 TH = height measured across the highest point of the elytra

- HW = head width in a frontal view
PL = pronotal length, from middle of anterior margin to base of pronotum
PW = pronotal width at widest part
EL = elytral length, from apex to base including scutellum
EW = elytral width, equal to TW

Results

Superfamily Coccinelloidea Latreille, 1807

Family Coccinellidae Latreille, 1807

Subfamily Coccinellinae Latreille, 1807

Tribe Chilcorini Mulsant, 1846

Genus *Chilocorus* Leach, 1815

Chilocorus Leach, 1815: 116.

Type species

Coccinella cacti Linnaeus, 1767, by monotypy.

Diagnosis

The genus *Chilocorus* can be distinguished from the other genera of the tribe Chilcorini by the following characters: body with dorsum glabrous, rarely with pubescence; outer elytral margin slightly reflexed, without distinct bead; antenna stout, composed of 8 antennomeres (Fig. 3e); terminal maxillary palpomere elongate, from 1 to 2 times as long as basal width, with sides nearly parallel or moderately expanded to apex (Fig. 3f); prosternal process long, narrow and subparallel without carina; legs with stout femora, tibiae with a triangular tooth at basal $\frac{1}{3}$, without tibial spurs (Fig. 3i–j); tarsal claws stout, with approximately rectangular basal tooth, about $\frac{1}{2}$ length of claw (Fig. 3k).

Description

BODY. Broadly oval or roundish, hemispherical and strongly convex. Dorsum glabrous, rarely pubescent. Head relatively large, 0.50–0.65 times pronotal width, covered with short, greyish pubescence; antenna composed of eight antennomeres, relatively stout, scape asymmetrical, scape and pedicel subequal in length and width, antennomeres 3–7 gradually broadening and elongated, antennomere 8 subconical, distinctly longer than antennomere 7 (Fig. 3e). Mandible unidentate, prosthema indistinct, lateral margin of mandible strongly curved (Fig. 3g). Terminal maxillary palpomere elongate with sides nearly parallel or expanded to apex, rarely subquadrate, apical margin obliquely truncate (Fig. 3f). Terminal labial palpomere subconical (Fig. 3h).

PROTHORAX. Descending anteriorly. Prosternum T-shaped, in front of coxae distinctly longer than basal width of prosternal process. Prosternal process moderately broad, subparallel or slightly expanded to apex, truncate at apex, without carinae (Fig. 3d). Mesoventrite approximately trapezoidal, anterior margin of mesoventrite straight. Meso-metaventral process narrow, junction straight, with visible suture. Scutellum small and triangular. Elytra distinctly wider than pronotum at base, surface finely or coarsely punctate. Elytral epipleura distinctly oblique, with or without grooves. Abdomen with five ventrites in female and six ventrites in male. Abdominal postcoxal lines incomplete, not curved, posteriorly reaching or very close to hind margin of ventrite. Legs with stout femora, tibiae with a triangular tooth at basal $\frac{1}{3}$, without tibial spurs (Fig. 3i–j); tarsal claw with basal tooth (Fig. 3k).

Key to species of the genus *Chilocorus* from China

1. Elytra without spots	2
– Elytra with spots	11
2. Elytra entirely black or outer margin black	3
– Elytra entirely red (Fig. 1a)	<i>C. politus</i> Mulsant, 1850
3. Elytra entirely black	4
– Only outer margin of elytra black	7
4. Body round	5
– Body heart-shaped (Fig. 2a)	<i>C. yunlongensis</i> Cao & Xiao, 1984
5. Dorsum without metallic lustre	6
– Dorsum with bluish lustre (Fig. 3a)	<i>C. nigricaeruleus</i> Li & Wang sp. nov.
6. Pronotum mostly black except lateral parts yellow (Fig. 4c)	<i>C. nigrita</i> (Fabricius, 1798)
– Pronotum black except anterior angles yellow (Fig. 5c)	<i>C. melas</i> Weise, 1898
7. Ground colour of elytra red	8
– Ground colour of elytra yellow	10
8. Body roundish.....	9
– Body heart-shaped (Fig. 6a).....	<i>C. rubidus</i> Hope, 1831
9. Scutellum black (Fig. 7a–c); abdominal postcoxal line not reaching posterior margin of abdominal ventrite 1 (Fig. 7d)	<i>C. chinensis</i> Miyatake, 1970
– Scutellum red (Fig. 8a–c); abdominal postcoxal line reaching posterior margin of abdominal ventrite 1 (Fig. 8d)	<i>C. rufitarsis</i> Motschulsky, 1853
10. Head black, pronotum and outer margin of elytra black with bluish lustre (Fig. 9a–c)	<i>C. hauseri</i> Weise, 1895
– Head and pronotum yellow, outer margin of elytra black without bluish lustre (Fig. 10a–c)	<i>C. circumdatus</i> (Gyllenhal, 1808)
11. Elytra with a pair of spots	12
– Elytra with two or three pairs of spots	17
12. Black areas of dorsum with bluish lustre	13
– Black areas of dorsum without any metallic lustre	14
13. Penis guide as long as parameres (Fig. 11h)	<i>C. chalybeatus</i> Gorham, 1892
– Penis guide distinctly shorter than parameres (Fig. 12g)	<i>C. shirozui</i> Sasaji, 1968
14. Elytral spots small, apex of penis blunt	15
– Elytral spots relatively larger, penis constricted to a pointed tip (Fig. 13a, e–f)	<i>C. hupehanus</i> Miyatake, 1970
15. Penis and tegmen moderately stout	16
– Penis and tegmen strongly stout, penis guide subtriangular, widest at base, gradually converging apically to blunted tip in ventral view (Fig. 14e, h)	<i>C. strenotubus</i> Li & Wang sp. nov.
16. Penis guide approximately $\frac{2}{3}$ length of parameres in lateral view, distinctly expanded at basal $\frac{1}{4}$ in ventral view (Fig. 15g–h)	<i>C. kuwanae</i> Silvestri, 1909

LI *et al.*, The genus *Chilocorus* Leach, 1815 (Coccinellidae, Chilocorini) in China

- Penis guide approximately $\frac{4}{5}$ length of parameres in lateral view, approximately parallel from base to basal $\frac{1}{2}$ (Fig. 16g–h) *C. esakii* Kamiya, 1959
- 17. Ground colour of elytra black 18
- Ground colour of elytra brown 19
- 18. Body length: 3.40–3.70 mm, broadly oval, dorsum with bluish lustre (Fig. 17a) *C. alishanus* Sasaji, 1968
- Body length: 4.30–5.30 mm, heart-shaped, dorsum without any metallic lustre (Fig. 18a) *C. bijugus* Mulsant, 1853
- 19. Body length: 3.33–3.67 mm, elytra dark brown, with three pairs of roundish yellow spots, arranged in a row before centre, penis guide as long as parameres (Fig. 19a, g) *C. bipustulatus* (Linnaeus, 1758)
- Body length: 3.80–4.67 mm, elytra dark brown, with a pair of transverse yellow strips, situated before centre, about $\frac{2}{3}$ elytra width, penis guide slightly longer than parameres (Fig. 20a, g) *C. geminus* Zaslavskij, 1962

Chilocorus politus Mulsant, 1850

Figs 1, 21

Chilocorus politus Mulsant, 1850: 455.

Chilocorus politus – Crotch 1874: 184. — Weise 1902: 507. — Miwa 1931: 87. — Korschefsky 1932: 240. — Nagaraja & Hussainy 1967: 252. — Sasaji 1968a: 20. — Chazeau *et al.* 1974: 280. — Hoáng 1983: 19. — Booth & Pope 1989: 360. — Cao *et al.* 1992: 153. — Poorani 2002: 312. — Kovář 2007: 593.

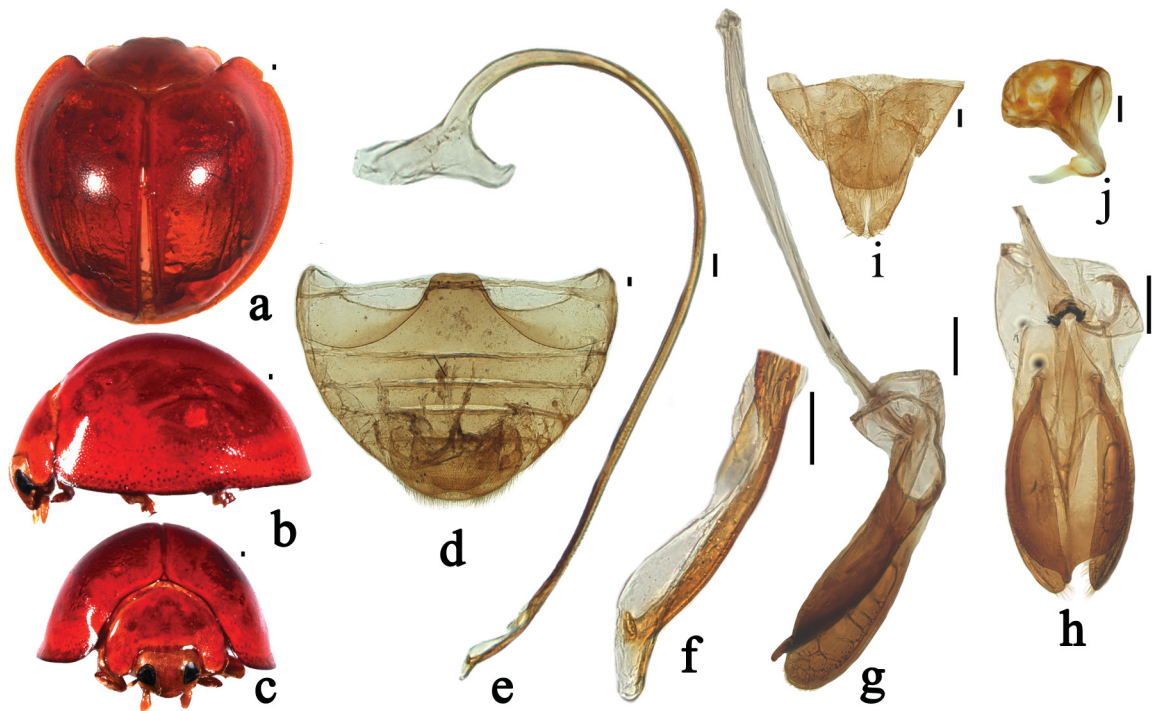


Fig. 1. *Chilocorus politus* Mulsant, 1850. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i–j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

Material examined

CHINA: Guangxi Zhuang Autonomous Region: 1 ♂, Hongqilinchang, Shiwandashan, 9 Nov. 2004, X.M. Wang leg. (SCAU 20051206200).

NEPAL: 1 ♂, 1 ♀, Tansen, Palpa, Lumbini, 16 Oct. 2011, S.X. Ren leg. (SCAU).

Distribution

China (Guangxi, Yunnan, Tibet, Taiwan) (Fig. 21), Thailand, Laos, India, Nepal, Bhutan, Indonesia.

Chilocorus yunlongensis Cao & Xiao, 1984

Figs 2, 21

Chilocorus yunlongensis Cao & Xiao, 1984: 117

Chilocorus yunlongensis – Cao *et al.* 1992: 159. — Pang *et al.* 2004: 29. — Kovář 2007: 594.

Type material

Holotype

CHINA: ♂, Yunnan Prov., Yunlong, 2800 m a.s.l., 24 May 1980, collector unknown (FIQB 83010).

Paratypes

CHINA: 3 ♀♀, same collection data as for holotype (FIQB).

Distribution

China (Yunnan) (Fig. 21).

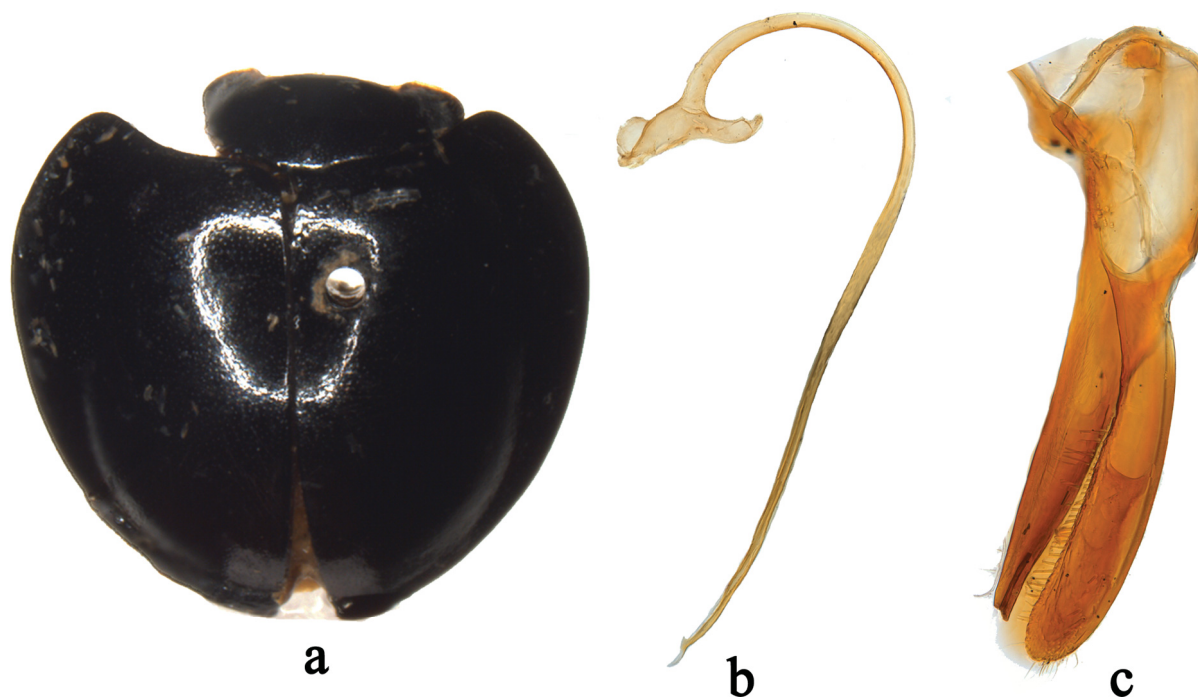


Fig. 2. *Chilocorus yunlongensis* Cao & Xiao, 1984. **a.** Dorsal view. **b.** Penis. **c.** Tegmen, lateral view. Scale bars: 0.1 mm. (FIQB)

***Chilocorus nigriceruleus* Li & Wang sp. nov.**

urn:lsid:zoobank.org:act:AD963BB9-B700-4984-BE32-C9AFAFFE15D1

Figs 3, 21

Diagnosis

This species resembles *Chilocorus melas* Weise, 1898, but can be distinguished from it by having relatively large black body with dorsum with bluish lustre (Fig. 3a) and equal length of penis guide and parameres (Fig. 3o). In *C. melas*, the body is relatively small, dorsum black (Fig. 5a) and the penis guide distinctly longer than parameres (Fig. 5g).

Etymology

The specific epithet is derived from the Latin and refers to the colour of the elytra and pronotum, black with a bluish lustre.

Type material

Holotype

CHINA: ♂, Yunnan Prov., Longtan, Ximeng, 900 m a.s.l., 9–10 May 2008, X.M. Wang leg. (SCAU (E) 11287).

Paratypes

CHINA: 1 ♂, same collection data as for holotype (SCAU (E) 11288).

Description (male)

MEASUREMENTS. TL: 4.40–4.67 mm, TW: 4.00–4.33 mm, TH: 2.33–2.40 mm, TL/TW: 1.08–1.10, PL/PW: 0.48–0.51, EL/EW: 0.98–0.99.

BODY. Roundish, strongly convex. Head, antenna and mouthparts yellow, sparsely covered with short, greyish pubescence. Pronotum black with bluish lustre, except anterior angles yellow. Scutellum and elytra black with bluish lustre (Fig. 3a–c). Underside yellow except elytral epipleura black, metaventrite brownish yellow, sparsely covered with short, greyish pubescence. Head relatively large, $0.52 \times$ as wide as pronotum, punctures on frons large and densely distributed, 1.0–2.0 diameters apart, surface polished between punctures. Eyes approximately oval, densely faceted, interocular distance $0.41 \times$ as wide as head (Fig. 3c). Pronotum $0.51 \times$ as wide as elytra, pronotal punctures moderately large and moderately densely distributed, smaller than those on head, 2.0–3.0 diameters apart, surface polished between punctures. Punctures on elytra moderately large and sparsely distributed, 2.0–4.0 diameters apart, similar to those on pronotum. Prosternal process moderate broad, slightly expanded to apex. Abdominal postcoxal lines incomplete, reaching posterior margin of abdominal ventrite 1 and running along posterior margin, then almost reaching lateral margin. Posterior margin of male abdominal ventrite 5 broadly rounded and ventrite 6 emarginate medially (Fig. 3l).

MALE GENITALIA. Penis slender, penis capsule with long outer and inner arms, apex of penis slightly narrow with membranous appendage (Fig. 3m–n). Tegmen stout, penis guide widest at basal $\frac{1}{3}$, then gradually converging to blunt apex, distinctly asymmetrical in ventral view and widest at base, gradually converging to blunt apex, bent outwardly from apical $\frac{1}{6}$ to apex in lateral view. Parameres constricted from base to basal $\frac{1}{2}$ then expanded toward apex, as long as penis guide, densely covered with short setae at the inner surfaces and distal end in lateral view (Fig. 3o–p).

Distribution

China (Yunnan) (Fig. 21).

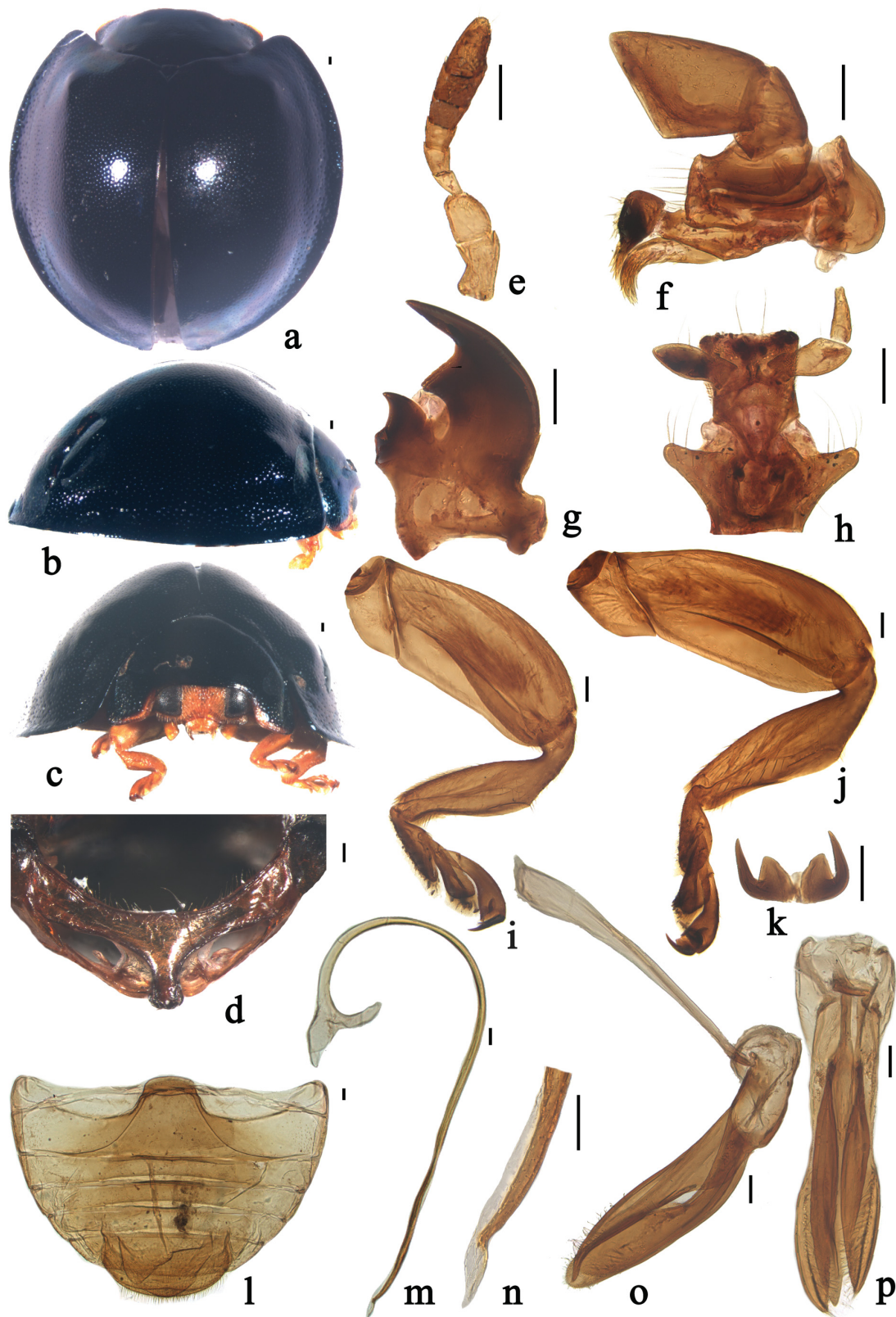


Fig. 3. *Chilocorus nigricaeruleus* Li & Wang sp. nov., holotype. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Prothorax. **e.** Antenna. **f.** Maxilla. **g.** Mandible. **h.** Labium. **i.** Front leg. **j.** Hind leg. **k.** Tarsal claw. **l.** Abdomen. **m.** Penis. **n.** Apex of penis. **o.** Tegmen, lateral view. **p.** Tegmen, ventral view. Scale bars: 0.1 mm. (SCAU (E) 11287)

***Chilocorus nigrita* (Fabricius, 1798)**

Figs 4, 21

Coccinella nigrita Fabricius, 1798: 79.

Chilocorus nigrita – Bielawski 1957: 86. — Booth 1998: 362. — Poorani 2002: 312.

Chilocorus nigritus – Mulsant 1850: 463. — Crotch 1874: 184. — Korschefsky 1932: 240. — Nagaraja & Hussainy 1967: 252. — Leeper 1976: 287. — Kovář 2007: 593.

non *Chilocorus nigritus* – Liu 1963: 78.

Material examined

CHINA: **Yunnan Prov.**: 2 ♂♂, 2 ♀♀, Jinghong, Xishuangbanna, 550 m a.s.l., 11 Aug. 2013, X.S. Chen leg. (SCAU); 2 ♀♀, Ruili, 20 Oct. 2000, Z.Q. Peng leg. (SCAU); 2 ♀♀, Dengshandao, Ruili, 22 Oct. 2000, Z.Q. Peng leg. (SCAU).

Distribution

China (Yunnan) (Fig. 21), Far East, Indian subcontinent, Oriental region, Australian region, USA, Brazil, Africa.

***Chilocorus melas* Weise, 1898**

Figs 5, 21

Chilocorus melas Weise, 1898b: 229.

Chilocorus gressitti Miyatake, 1970: 330.

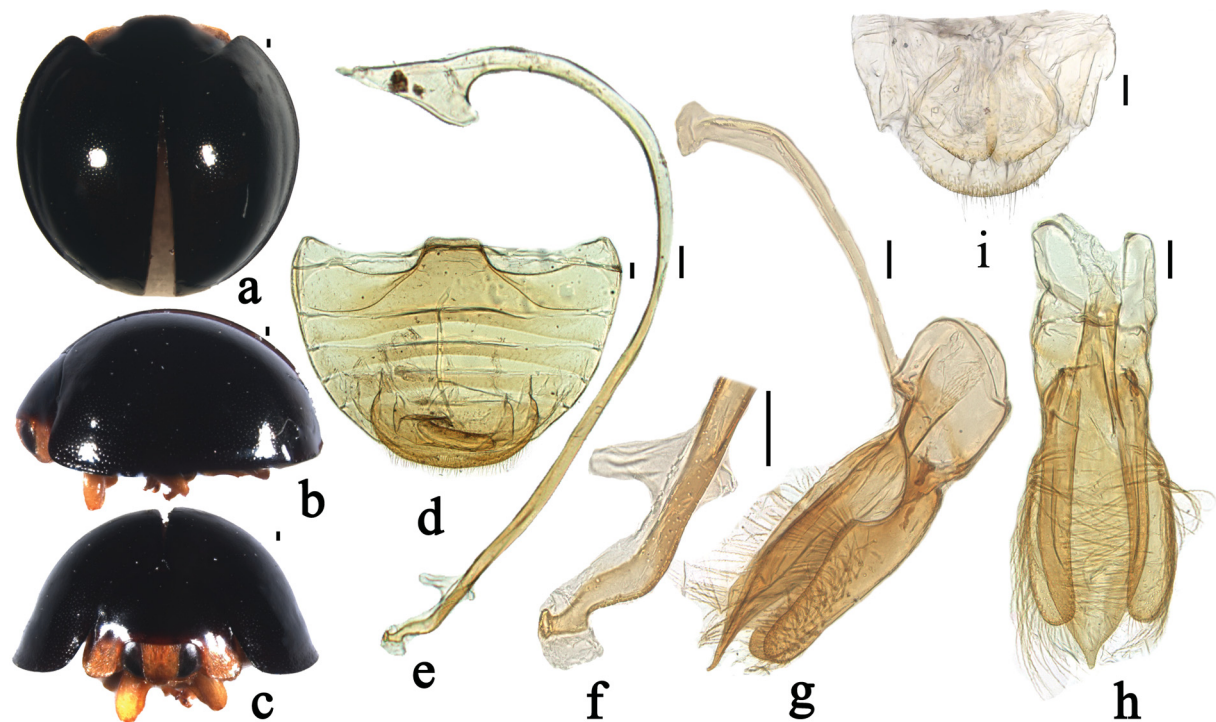


Fig. 4. *Chilocorus nigrita* (Fabricius, 1798). **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i.** ovipositor. Scale bars: 0.1 mm. (SCAU)

Chilocorus melas – Korschefsky 1932: 243. — Booth 1998: 364. — Poorani 2002: 311. — Pang *et al.* 2004: 28. — Kovář 2007: 593. — Ren *et al.* 2009: 132.

Chilocorus gressitti – Pang & Mao 1979: 84. — Hoáng 1983: 18. — Jing 1992: 567. — Cao *et al.* 1992: 159. — Pang *et al.* 2002: 317.

Chilocorus nigrinus – Liu 1963: 78.

Material examined

CHINA: **Guangdong Prov.**: 1 ♀, Tianma, Xinhui, 24 Apr. 1956, Z.B. Zhou leg. (SCAU); 4 ♀♀, Xinhui, Nov. 1956, collector unknown (SCAU); 1 ♀, Nanhai, 14 Oct. 1955, L.B. Huo leg. (SCAU). – **Guangxi Prov.**: 1 ♂, Longsheng, 6 Apr. 1974, Y.L. Luo leg. (SCAU); 1 ♂, Nanning, 4 Aug. 1985, X.F. Pang leg. (SCAU). – **Fujian Prov.**: 1 ♂, Huaan, 26 Apr. 1982, Y.Q. Tang leg. (SCAU). – **Hainan Prov.**: 1 ♂; 3 ♀♀, Diaoluoshan, Jul. 1995, Z.Q. Peng leg. (SCAU); 1 ♂, Diaoluoshan, 8 May 2005, X.M. Wang leg. (SCAU); 1 ♂, Dongfang, 27 Nov. 1997, Z.Q. Peng leg. (SCAU).

Distribution

China (Fujian, Guangdong, Guangxi, Hainan, Sichuan, Yunnan, Hongkong) (Fig. 21), Burma, Thailand, Laos, India, Nepal, Bhutan, Indonesia.

Chilocorus rubidus Hope, 1831

Figs 6, 21

Chilocorus rubidus Hope, 1831: 31.

Coccinella tristis Faldermann, 1835: 452.

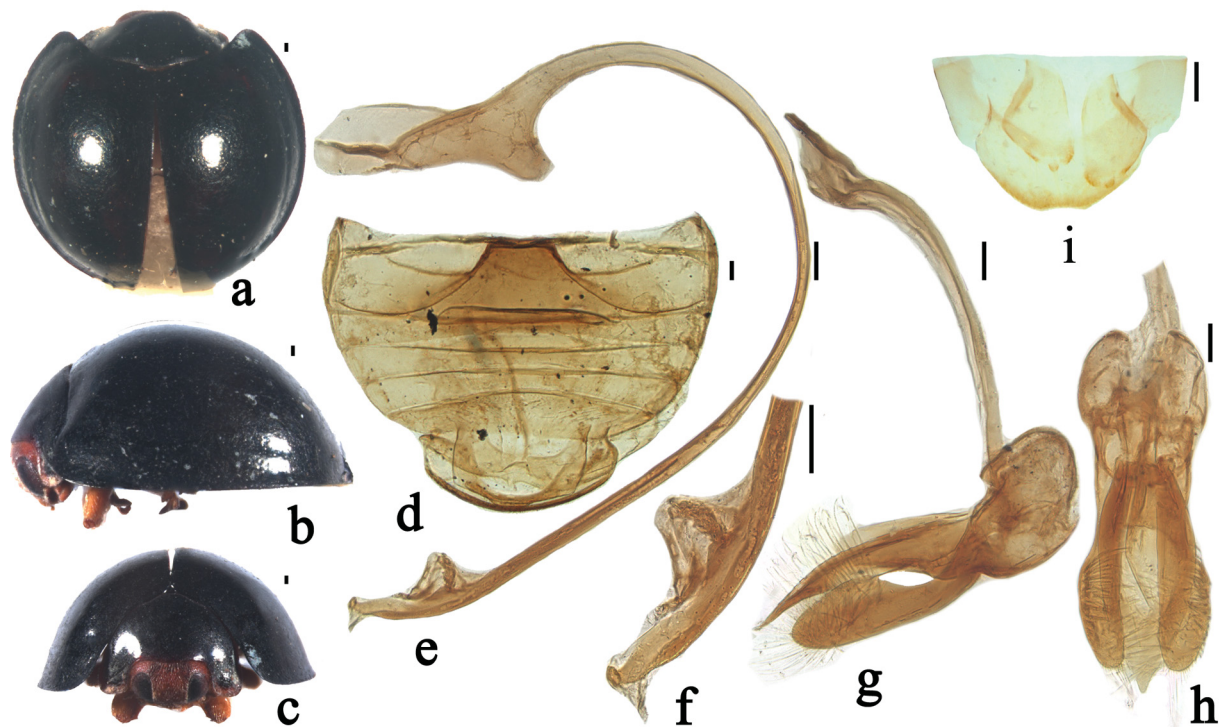


Fig. 5. *Chilocorus melas* Weise, 1898. a. Dorsal view. b. Lateral view. c. Frontal view. d. Abdomen. e. Penis. f. Apex of penis. g. Tegmen, lateral view. h. Tegmen, ventral view. i. ovipositor. Scale bars: 0.1 mm. (SCAU)

Chilocorus rubidus – Mulsant 1850: 452. — Crotch 1874: 183. — Weise 1887: 210. — Blackburn 1889: 1275. — Lewis 1896: 31. — Korschefsky 1932: 241. — Hu 1937: 563. — Mader 1955b: 775. — Kapur 1956: 262; 1972: 313. — Kamiya 1959: 100. — Nakane 1963: 209. — Liu 1963: 75. — Nagaraja & Hussainy 1967: 253. — Miyatake 1970: 318. — Sasaji 1971: 224. — Pang & Mao 1979: 80. — Booth & Pope 1989: 362. — Jing 1992: 567. — Cao *et al.* 1992: 154. — Pang *et al.* 2002: 320; 2004: 29. — Poorani 2002: 311. — Kovář 2007: 593. — Ren *et al.* 2009: 134.

Chilocorus tristis – Mulsant 1850: 452. — Crotch 1874: 183. — Weise 1885: 51. — Lewis 1873: 56.

Chilocorus rubidus ab. *tristis* – Korschefsky 1932: 241. — Kapur 1956: 262.

Material examined

CHINA: **Inner Mongolia**: 1 ♂, 1 ♀, Xiangchizi, Gulaben, 1861–2283 m a.s.l., 7 Aug. 2010, C.W. Li leg. (SCAU). – **Ningxia Hui Autonomous Region**: 3 ♂♂, 1 ♀, Suyukou, Helanshan, Yinchuan 1950 m a.s.l., 12 Aug. 2009, X.M. Wang leg. (SCAU). – **Jiangsu Prov.**: 1 ♀, Nanjing University, 5 Sep. 1962, collector unknown (SCAU); 2 ♂♂, Nanjing Agricultural College, time of collection and collector unknown (SCAU). – **Zhejiang Prov.**: 1 ♂, Hangzhou, time of collection unknown, X. Cong leg. (SCAU). – **Shandong Prov.**: 1 ♀, Yuantoucun, Qingdao, 7 Jun. 1958, collector unknown (SCAU). – **Henan Prov.**: 1 ♂, 31 Jul. 1954, collector unknown (SCAU). – **Guizhou Prov.**: 1 ♂, Guizhou Forestry Institute, time of collection and collector unknown (SCAU). – **Yunnan Prov.**: 1 ♂, 4 ♀♀, Yuxi, Jul. 1981, collector unknown (SCAU); 1 ♂, Jilong, Tibet, 25 Jul. 1984, Z.X. Yan leg. (SCAU).

Distribution

China (Beijing, Tianjin, Hebei, Inner Mongolia, Liaoning, Jilin, Heilongjiang, Jiangsu, Zhejiang, Fujian, Shandong, Henan, Hunan, Hainan, Sichuan, Guizhou, Yunnan, Tibet, Shannxi, Gansu, Ningxia) (Fig. 21), Mongolia, Korea, Japan, India, Nepal, Indonesia, Siberia.

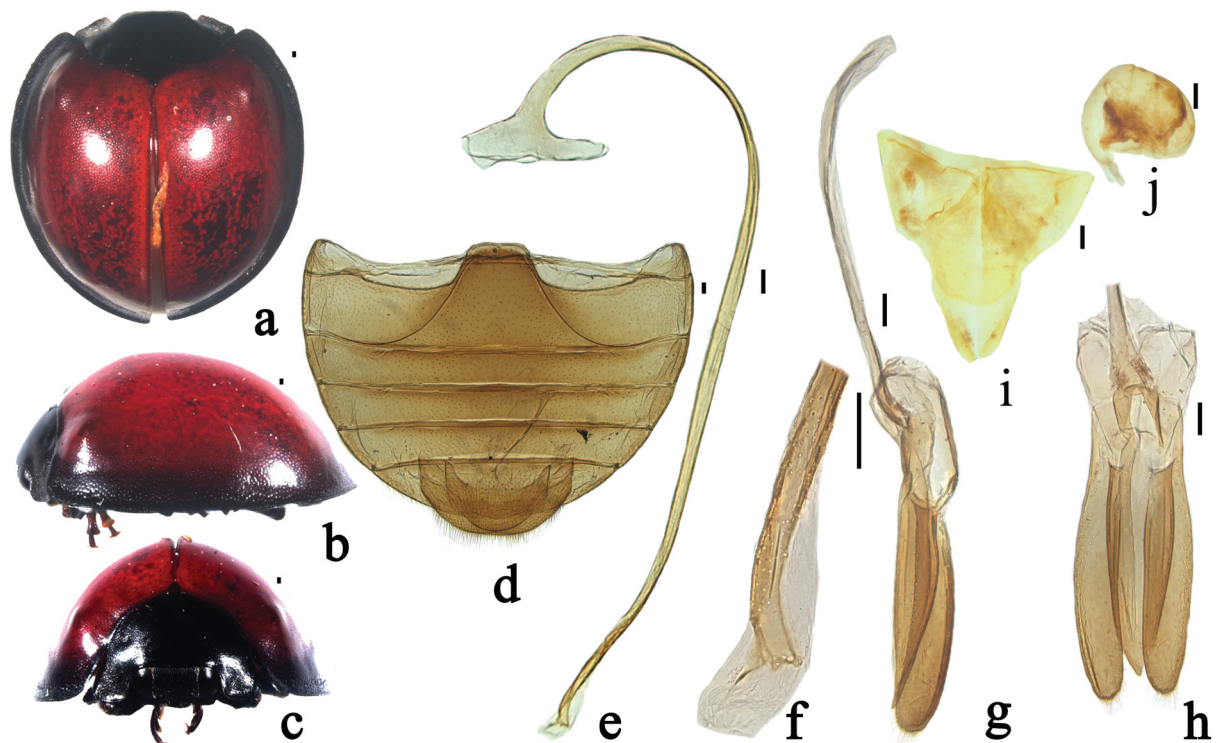


Fig. 6. *Chilocorus rubidus* Hope, 1831. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i-j.** Female genitalia: **i.** ovipositor. **j.** spermatheca. Scale bars: 0.1 mm. (SCAU)

Chilocorus chinensis Miyatake, 1970

Figs 7, 21

Chilocorus chinensis Miyatake, 1970: 322.

Chilocorus chinensis – Pang & Mao 1979: 81. — Hoáng 1983: 22. — Cao *et al.* 1992: 156. — Pang *et al.* 2002: 317; 2004: 28. — Kovář 2007: 593. — Ren *et al.* 2009: 128.

Material examined

CHINA: **Henan Prov.**: 1 ♀, Longyuwan, Luoyang, 1390 m a.s.l., 11–12 Nov. 2009, X.M. Wang leg. (SCAU). – **Guangdong Prov.**: 2 ♂♂, Huangniping, Shimentai, 7 Oct. 2004, X.M. Wang leg. (SCAU). – **Anhui Prov.**: 1 ♂, Tangkouzhen, Huangshan, 12–13 Sep. 2010, X.M. Wang leg. (SCAU). – **Guizhou Prov.**: 1 ♂, Xianheping, Anlong, 14–15 Sep. 2006, X.M. Wang leg. (SCAU). – **Hainan Prov.**: 1 ♀, Bawangling, 21 Mar. 1996, Z.Q. Peng leg. (SCAU). – **Jiangsu Prov.**: 2 specimens, Agricultural college, Nanjing, the time of collection and collector unknown (SCAU). – **Jiangxi Prov.**: 2 ♂♂, 1 ♀, Maoping Jinggangshan, 20 Sep. 2004, X.M. Wang leg. (SCAU); 4 specimens, Lushan, Sep. 1978, Y.H. Wang leg. (SCAU).

Distribution

China (Anhui, Zhejiang, Fujian, Jiangxi, Henan, Guangdong, Guangxi, Hainan, Guizhou, Yunan, Jiangsu) (Fig. 21).

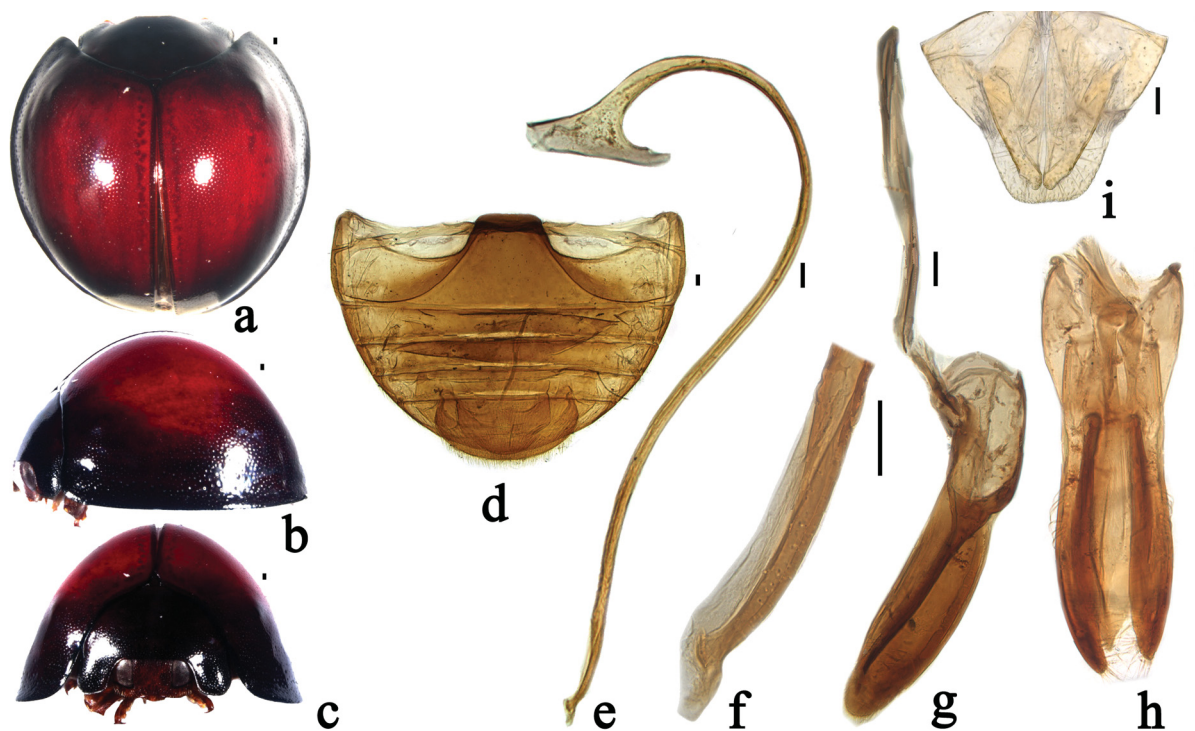


Fig. 7. *Chilocorus chinensis* Miyatake, 1970. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i.** Ovipositor. Scale bars: 0.1 mm. (SCAU)

Chilocorus rufitarsis Motschulsky, 1853

Figs 8, 21

Chilocorus rufitarsis Motschulsky, 1853: 50.

Chilocorus rufitarsis – Crotch 1874: 183. — Korschefsky 1932: 243. — Hu 1937: 563. — Mader 1955b: 775. — Liu 1963: 79. — Miyatake 1970: 319. — Pang & Mao 1979: 80. — Hoàng 1983: 22. — Cao *et al.* 1992: 155. — Pang *et al.* 2002: 320; 2004: 29. — Kovář 2007: 594. — Ren *et al.* 2009: 134.

Material examined

CHINA: **Hunan Prov.**: 1 ♂, Shennonggu, Yanlin, 650–800 m a.s.l., 9 Oct. 2010, X.M. Wang leg. (SCAU). – **Shandong Prov.**: 1 ♀, Qishui, Jul. 1958, collector unknown (SCAU). – **Guizhou Prov.**: 2 ♂♂, 1 ♀, Guizhou Forestry Institute, time of collection and collector unknown (SCAU). – **Guangdong Prov.**: 1 ♂, Dadongshan, Liangzhou, 19 Jul. 2005, X.M. Wang leg. (SCAU); 1 specimen, Shipai, 7 Apr. 1954, J.X. Jiang leg. (SCAU); 1 specimen, Shipai, 16 Oct. 1960, Y.K. Wang leg. (SCAU); 1 specimen, Nanhai, Mar. 1960, collector unknown (SCAU); 2 specimens, Zhangdongshui, 26 Sep. 1989, J.C. Wu leg. (SCAU). – **Guangxi Prov.**: 3 ♂♂, 3 ♀♀, Xinguang, Yiyang, 18 Aug. 1981, G.M. Deng leg. (SCAU); 1 ♀, Jun. 1960, T.S. Pu leg.; 2 ♀♀, Quanzhou, 1980, collector unknown (SCAU).

Distribution

China (Jiangsu, Zhejiang, Fujian, Jiangxi, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, Yunnan, Hongkong, Shandong) (Fig. 21), Vietnam.

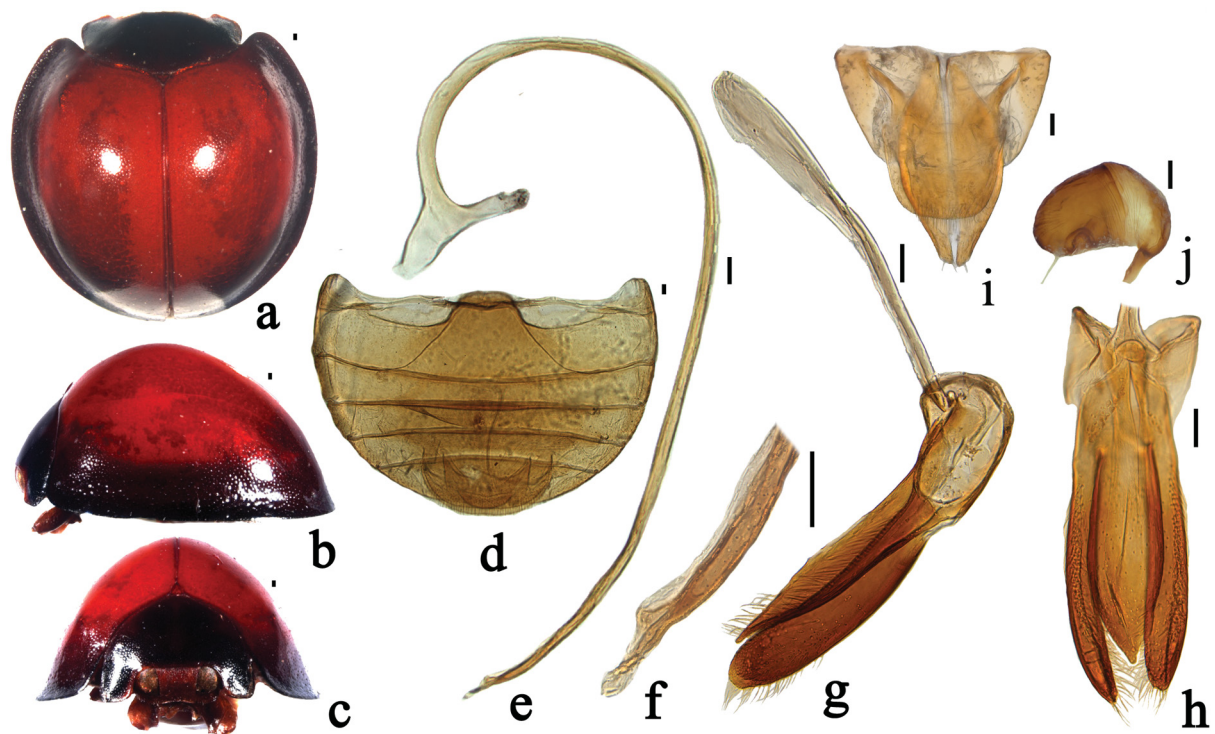


Fig. 8. *Chilocorus rufitarsis* Motschulsky, 1853. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i–j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

Chilocorus hauseri Weise, 1895

Figs 9, 21

Chilocorus hauseri Weise, 1895a: 135.

Chilocorus hauseri – Sicard 1913: 500. — Korschefsky 1932: 243. — Liu 1963: 77. — Nagaraja & Hussainy 1967: 250. — Pang & Mao 1979: 82. — Cao *et al.* 1992: 156. — Pang *et al.* 2002: 318; 2004: 28. — Kovář 2007: 593. — Ren *et al.* 2009: 130.

Material examined

CHINA: **Hainan Prov.**: 1 ♂, 2 ♀♀, Jianfengling, 15 Jun. 1982, Y.F. Liu leg. (SCAU). – **Sichuan Prov.**: 3 ♂♂, Puge, 2000 m a.s.l., 15 Sep. 2007, X.M. Wang leg. (SCAU). – **Yunnan Prov.**: 1 ♂, 1 ♀, Funing, 16 Aug. 2005, X.M. Wang leg. (SCAU); 1 ♂, Tongbiguan, Nabang, Yingjiang, 1000 m a.s.l., 22–23 May 2008, X.M. Wang leg. (SCAU).

Distribution

China (Fujian, Guangdong, Hainan, Sichuan, Yunnan) (Fig. 21), Burma, India (Sikkim).

Chilocorus circumdatus (Gyllenhal, 1808)

Figs 10, 21

Coccinella circumdatus Gyllenhal in Schönherr, 1808: 152.

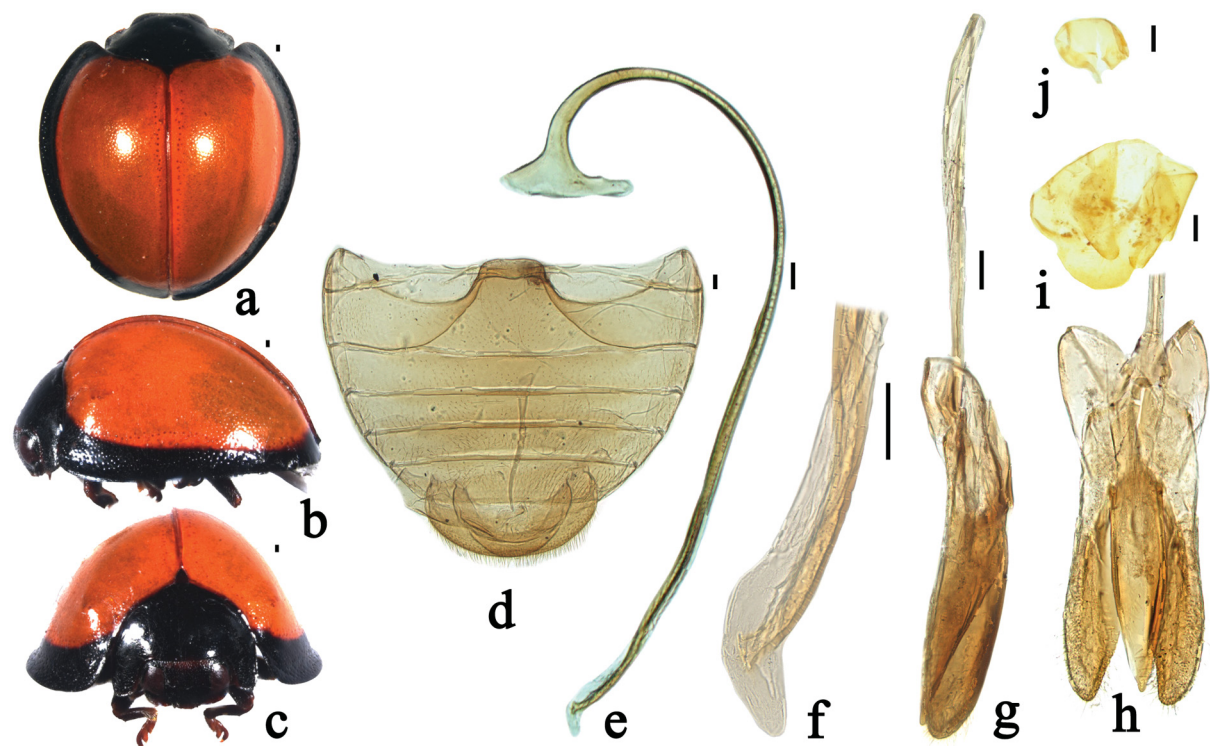


Fig. 9. *Chilocorus hauseri* Weise, 1895. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i–j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

Chilocorus circumdatus – Mulsant 1850: 454. — Crotch 1874: 186. — Korschefsky 1932: 242. — Mader 1955b: 867. — Liu 1963: 77. — Nagaraja & Hussainy 1967: 250. — Miyatake 1970: 323. — Leeper 1976: 287. — Pang & Mao 1979: 83. — Hoáng 1983: 19. — Cao *et al.* 1992:158. — Pang *et al.* 2002: 317; 2004: 28. — Poorani 2002: 311. — Kovář 2007: 593. — Ren *et al.* 2009: 130.

Material examined

CHINA: **Guangdong Prov.**: 1 specimen, Huizhou, 11 May 1988, X.L. Tong leg. (SCAU); 1 specimen, Shenshan, Huidong, 5 May 1988, X.L. Tong leg. (SCAU); 3 specimens, Kuangbianyuan, Yangcun, Jun. 1979 (SCAU); 4 specimens, Shipai, Mar. 1961 (SCAU); 1 specimen, Shipai, Aug. 1956, N.C. Sun leg. (SCAU); 5 specimens, Shipai, Oct. 1956 (SCAU); 1 specimen, Zengcheng, 28 May 1951 (SCAU); 1 ♂, Huangniping, Shimentai, Guangzhou, 7 Oct. 2004, X.M. Wang leg. (SCAU). – **Hainan Prov.**: 8 ♂♂, 3 ♀♀, Diaoluoshan, Jul. 1995, Z.Q. Peng leg. (SCAU); 16 specimens, Diaoluoshan, Jul. 1995, Z.Q. Peng leg. (SCAU); 1 ♂, Diaoluoshan, 9 May 1995, Z.Q. Peng leg. (SCAU); 24 specimens, Nanfengzhen, Danzhou, Aug. 1995, Z.Q. Peng leg. (SCAU); 4 specimens, Liangyuan, Danzhou, Aug. 1995, Z.Q. Peng leg. (SCAU); 1 ♂, Yanglan, Sanya, 22 Sep. 1997, Z.Q. Peng leg. (SCAU); 1 ♂, Wushi, 14 Jul. 1999, Z.Q. Peng leg. (SCAU). – **Yunnan Prov.**: 1 ♂, Mengmao, 21 Oct. 2000, Z.Q. Peng leg. (SCAU).

Distribution

China (Zhejiang, Fujian, Guangdong, Guangxi, Hainan, Yunnan, Hong Kong) (Fig. 21), Indonesia, India, Sri Lanka. Introduced to Australia, America.

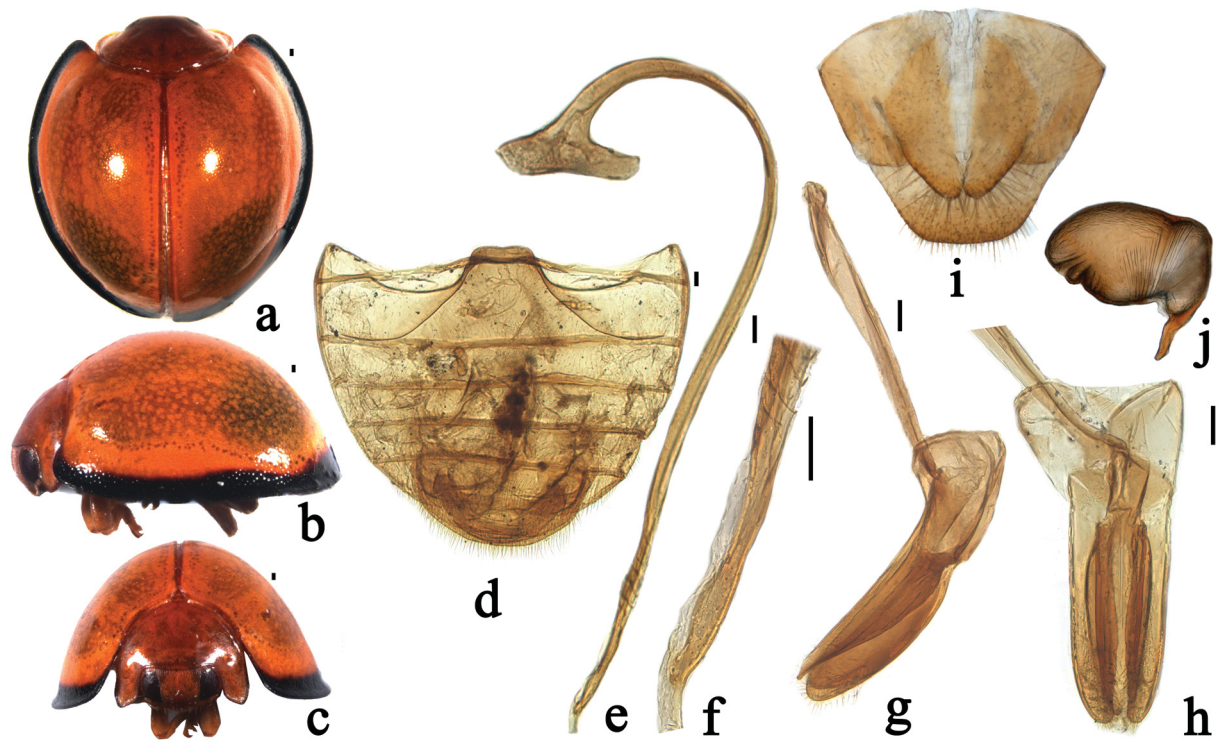


Fig. 10. *Chilocorus circumdatus* (Gyllenhal, 1808). **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i–j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

Chilocorus chalybeatus Gorham, 1892

Figs 11, 22

Chilocorus chalybeatus Gorham, 1892: 24.

Chilocorus chalybeatus – Miyatake 1970: 325. — Pang & Mao 1979: 84. — Hoáng 1983: 21. — Yu *et al.* 1993: 489. — Pang *et al.* 2002: 316; 2004: 27. — Kovář 2007: 593. — Ren *et al.* 2009: 128.

Material examined

CHINA: **Zhejiang Prov.**: 1 ♂, Tianmu Mountain, Linan, 450–1000 m a.s.l., 18 Sep. 2010, X.M. Wang leg. (SCAU). – **Hunan Prov.**: 16 ♂♂, 8 ♀♀, Shennonggu, Yanlin, 1100 m a.s.l., 7 Oct. 2010, X.M. Wang leg. (SCAU). – **Guangxi Prov.**: 1 ♂, Shilidaxiagu, Maoer Mountain, 19 Oct. 2004, X.M. Wang leg. (SCAU). – **Guizhou Prov.**: 1 ♀, Dongtang, Maolan, Libo, 730 m a.s.l., 15–18 Oct. 2008, J.B. Liang leg. (SCAU). – **Anhui Prov.**: 1 ♂, Tianju Mountain, 29 Jul. 2005, X.M. Wang leg. (SCAU); 1 ♀, Tianma Jinzhai, 600 m a.s.l., 3–5 Oct. 2010, X.M. Wang leg. (SCAU). – **Gansu Prov.**: 1 ♂, Dangchuan, Tianshuimaiji, 1800 m a.s.l., 4 Aug. 2009, X.M. Wang leg. (SCAU); 1 ♂, Maiji Mountain, Tianshui, 1500 m a.s.l., 17 Oct. 2007, S.X. Ren leg. (SCAU). – **Shannxi Prov.**: 2 ♂♂, Fengyulinchang, Changan, 1600 m a.s.l., 27 Jul. 2007, X.M. Wang leg. (SCAU); 2 ♂♂, 1 ♀, Longtan village, Fenghuangguzhen, 785 m a.s.l., 26 Jun. 2014, W.J. Li leg. (SCAU); 2 ♂♂, Dabaigou, Caichuanzhen, 1200 m a.s.l., 1 Jul. 2014, W.J. Li leg. (SCAU).

Distribution

China (Anhui, Zhejiang, Fujian, Hunan, Guangdong, Hainan, Sichuan, Guizhou, Yunnan, Shannxi, Gansu, Guangxi) (Fig. 22).

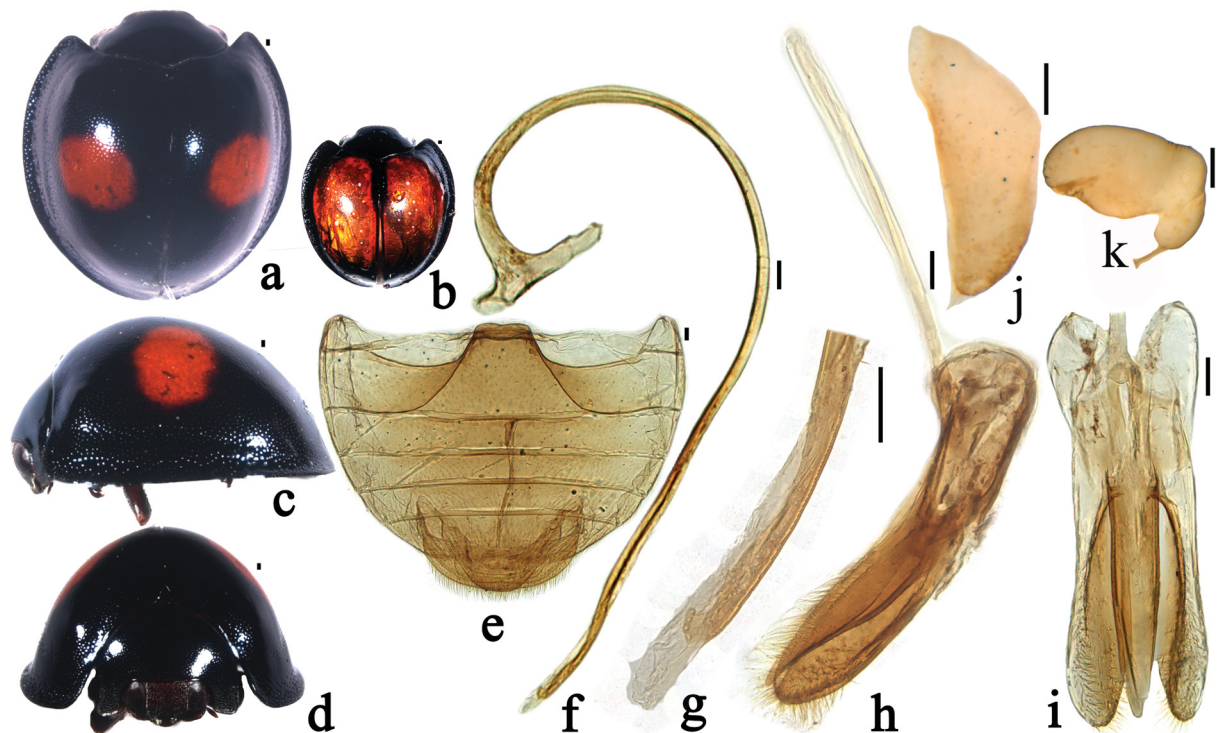


Fig. 11. *Chilocorus chalybeatus* Gorham, 1892. **a–b.** Dorsal view. **c.** Lateral view. **d.** Frontal view. **e.** Abdomen. **f.** Penis. **g.** Apex of penis. **h.** Tegmen, lateral view. **i.** Tegmen, ventral view. **j–k.** Female genitalia. **j.** Coxite. **k.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

***Chilocorus shirozui* Sasaji, 1968**

Figs 12, 22

Chilocorus shirozui Sasaji, 1968a: 22.

Chilocorus shirozui – Miyatake 1970: 327. — Pang *et al.* 2004: 29. — Kovář 2007: 594. — Yu 2011: 69.

Material examined

CHINA: **Taiwan Prov.**: 2 ♂♂, 4 ♀♀, Puli (NCHU).

Distribution

China (Taiwan) (Fig. 22).

***Chilocorus hupehanus* Miyatake, 1970**

Figs 13, 22

Chilocorus hupehanus Miyatake, 1970: 329.

Chilocorus hupehanus – Pang & Mao 1979: 86. — Pang *et al.* 2002: 318; 2004: 28. — Kovář 2007: 593. — Ren *et al.* 2009: 132.

Material examined

CHINA: **Gansu Prov.**: 3 ♂♂, Dongliugou, Sunan, 2500 m a.s.l., 8 Aug. 2007, J.B. Liang leg. (SCAU). – **Zhejiang Prov.**: 2 ♂♂, 2 ♀♀, Cixi, 30 Jul. 1988, G.Y. Yu leg. (SCAU). – **Hunan Prov.**: 1 ♂, Zhubotang,

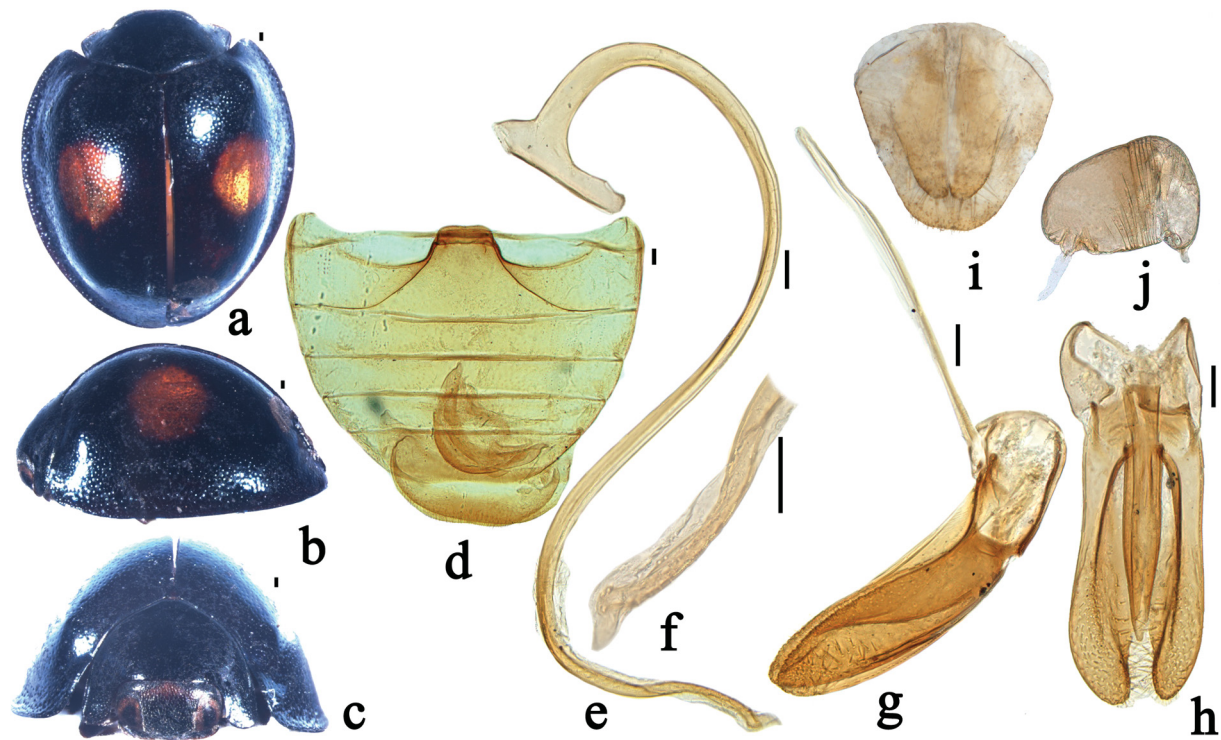


Fig. 12. *Chilocorus shirozui* Sasaji, 1968. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i–j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (NCHU)

Yiyang, 18 Aug. 2001, Z.Q. Peng leg. (SCAU); 1 ♂, Horticultural institute, Changsha, 1984, collector unknown (SCAU). – **Guangdong Prov.**: 1 ♀, Huidong, 11 May 1987, X.F. Pang leg. (SCAU). – **Shandong Prov.**: 1 specimen, 1958, collector unknown (SCAU). – **Sichuan Prov.**: 2 specimens, Oct. 1978, collector unknown (SCAU); 3 specimens, Beita, Oct. 1978, collector unknown (SCAU). – **Guizhou Prov.**: 2 ♂♂, Leigongshan, 30 Jul. 1997, Z.Q. Peng leg. (SCAU); 6 specimens, Huaxi, 18 Aug. 1987, X.F. Pang leg. (SCAU).

Distribution

China (Zhejiang, Fujian, Shandong, Hubei, Hunan, Sichuan, Guizhou, Guangdong, Guangxi, Gansu) (Fig. 22).

Chilocorus strenotubus Li & Wang sp. nov.

urn:lsid:zoobank.org:act:9258A913-6BF6-419B-812E-C80707513E96

Figs 14, 22

Diagnosis

This species is similar to *C. kuwanae* Silvestri, 1909 in the shape of the body, but can be distinguished from it by the male genitalia: penis strongly stout (Fig. 14e); tegmen strongly stout with penis guide subtriangular, widest at base, gradually converging apically to blunted tip in ventral view (Fig. 14h).

Etymology

The specific epithet is derived from Latin and refers to the stout penis.

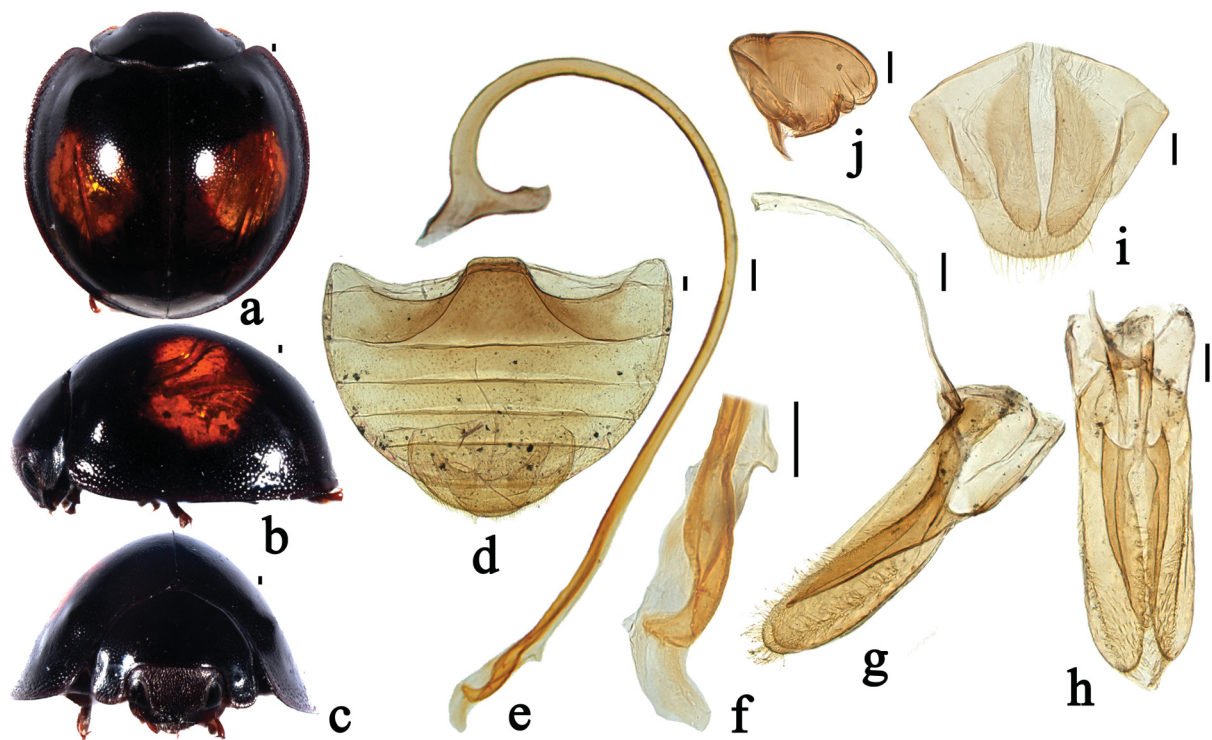


Fig. 13. *Chilocorus hupehanus* Miyatake, 1970. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i–j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

Type material**Holotype**

CHINA: ♂, Inner Mongolia, Youyizhongqi, Keerqin, 19 Aug. 2009, S.X. Ren leg. (SCAU (E) 11037).

Description (male)

MEASUREMENTS. TL: 3.41 mm, TW: 2.93 mm, TH: 1.77 mm, TL/TW: 1.16, PL/PW: 0.51, EL/EW: 1.02.

BODY. Roundish, strongly convex. Head, antenna and mouthparts brown-black, sparsely covered with short, greyish pubescence. Pronotum and scutellum black. Elytra black with a pair of oblong, orange spots, situated at centre, about $\frac{1}{2}$ elytra width (Fig. 14a–c). Underside black except abdomen brown, sparsely covered with short, greyish pubescence. Head relatively large, $0.60 \times$ as wide as pronotum, punctures on frons large and densely distributed, $1.0\text{--}2.0$ diameters apart, surface polished between punctures. Eyes subtriangular, densely faceted, interocular distance $0.55 \times$ as wide as head (Fig. 14c). Pronotum $0.59 \times$ as wide as elytra, pronotal punctures moderately large and sparsely distributed, smaller than those on head, $2.0\text{--}3.5$ diameters apart, surface polished between punctures. Punctures on elytra fine and sparsely distributed, $3.0\text{--}4.0$ diameters apart, smaller than those on pronotum. Prosternal process moderate broad, slightly expanded to apex. Abdominal postcoxal lines incomplete, reaching posterior margin of abdominal ventrite 1 and running along posterior margin and almost reaching lateral margin. Posterior margin of male abdominal ventrite 5 truncate and 6 broadly rounded (Fig. 14d).

MALE GENITALIA. Penis stout and simple, penis capsule with short outer arms and long inner arms, apex of penis truncate and membranous around at $\frac{1}{3}$ to apex (Fig. 14e–f). Tegmen distinctly stout with penis guide subtriangular, widest at base, gradually converging to blunt apex in ventral view and widest at base, gradually converging to blunt apex in lateral view. Parameres distinctly longer than penis guide

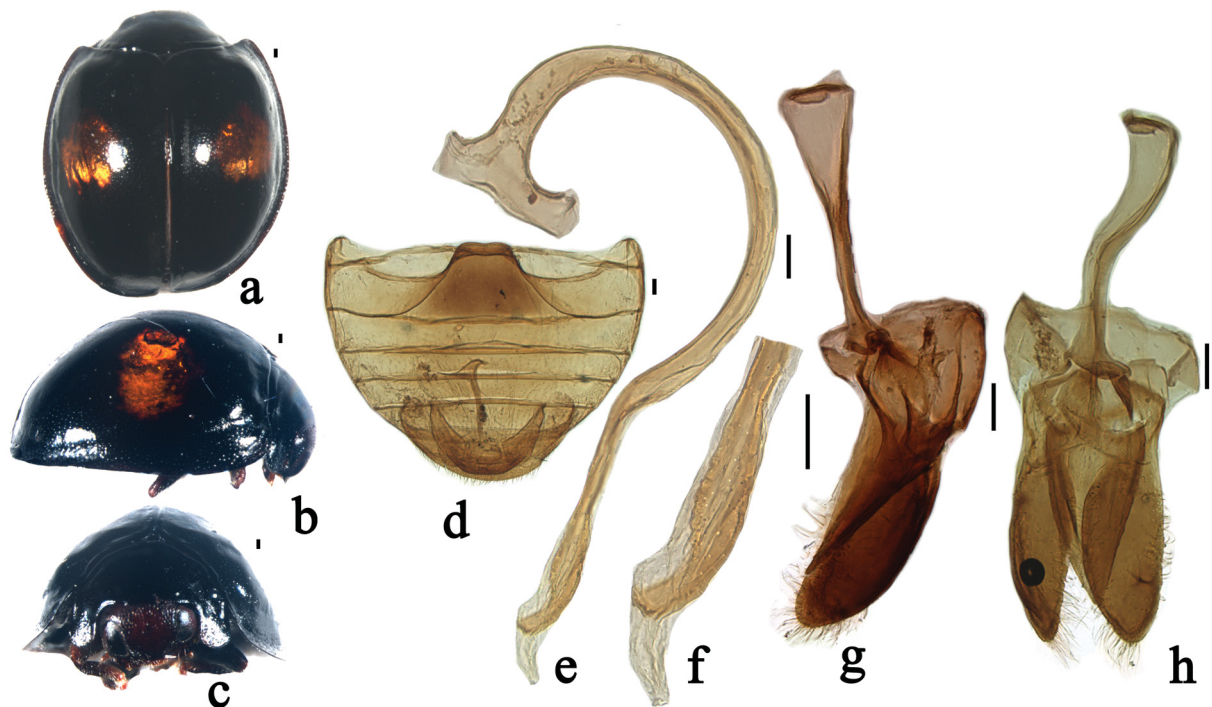


Fig. 14. *Chilocorus strenotubus* Li & Wang sp. nov., holotype **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. Scale bars: 0.1 mm. (SCAU (E) 11037)

with densely covered with long setae at the inner sides and distal end with a group of long setae in lateral view (Fig. 14g–h).

Distribution

China (Inner Mongolia) (Fig. 22).

Chilocorus kuwanae Silvestri, 1909

Figs 15, 22

Chilocorus kuwanae Silvestri, 1909: 126.

Chilocorus similis Lewis, 1896: 31.

Chilocorus similis var. *japonicus* Sicard, 1907a: 211.

Chilocorus renipustulatus Lewis, 1873: 56.

Chilocorus kuwanae – Korschefsky 1932: 563. — Mader 1955a: 78; 1955b: 776. — Kamiya 1959: 100. — Liu 1963: 77. — Nagaraja & Hussainy 1967: 251. — Miyatake 1970: 327. — Sasaji 1971: 226. — Pang & Mao 1979: 87. — Gordon 1985: 652. — Jing 1992: 567. — Cao *et al.* 1992: 160. — Pang *et al.* 2002: 319; 2004: 28. — Kovář 2007: 593. — Ren *et al.* 2009: 132.

Material examined

CHINA: **Inner Mongolia**: 2 ♂♂, Xiangchizi, Gulaben, 1861–2283 m, 7 Aug. 2010, C.W. Li leg. (SCAU); 1 ♀, Honghuaerji, Ewenkeqi, 720 m a.s.l., 22 Aug. 2009, S.X. Ren leg. (SCAU); 1 ♀, Youyizhongqi, Keerqin, 19 Aug. 2009, S.X. Ren leg. (SCAU). – **Xinjiang Uygur Autonomous Region**: 1 ♀, Shanshan, 14 Aug. 2008, S.X. Ren leg. (SCAU); 1 ♀, Bole, 16 Aug. 2008, S.X. Ren leg. (SCAU). – **Ningxia**

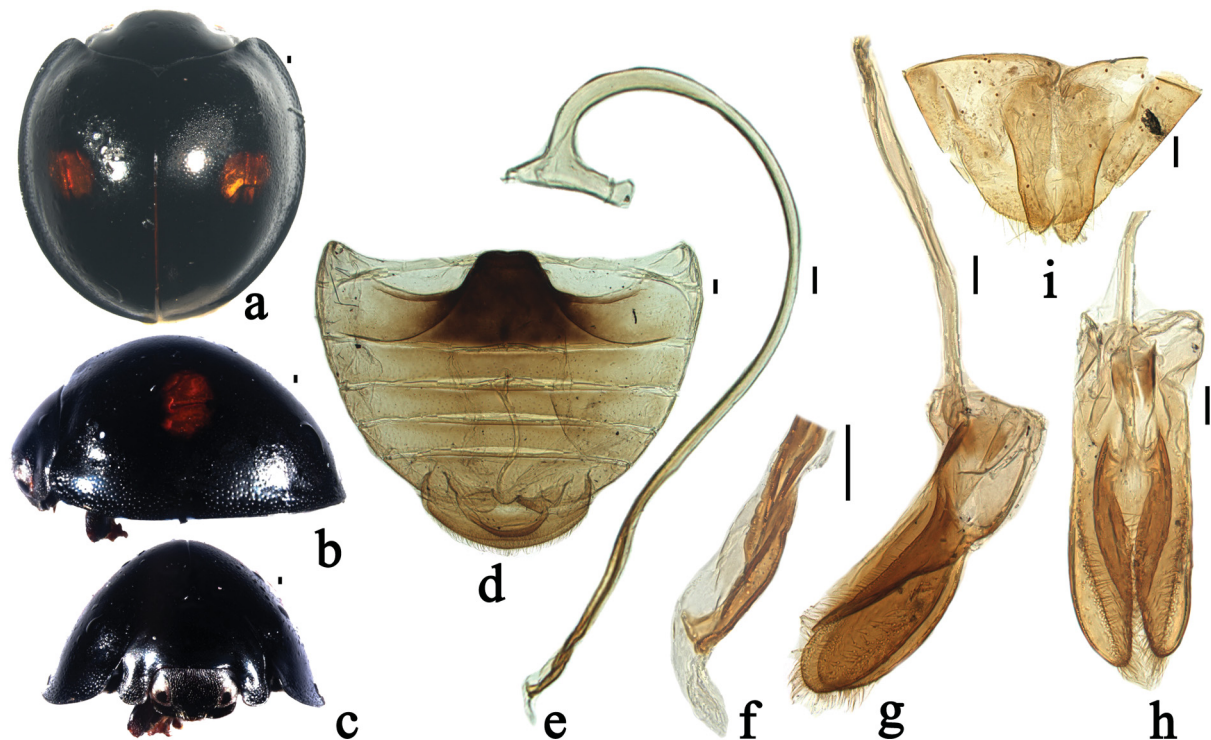


Fig. 15. *Chilocorus kuwanae* Silvestri, 1909. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i.** ovipositor. Scale bars: 0.1 mm. (SCAU)

Hui Autonomous Region: 4 ♀♀, Suyukou, Yinchuan, 1950 m a.s.l., 12 Aug. 2009, X.M. Wang leg. (SCAU). – **Henan Prov.:** 1 ♀, Sanmenxia, 8 Aug. 2008, S.X. Ren leg. (SCAU). – **Hubei Prov.:** 1 ♂, Tiantangzhai, Yingshanxian, 30 Jun. 2014, L.Z. Huo leg. (SCAU); 1 ♂, Qiangtaiguan, Luoyangxian, 2 Jul. 2014, L.Z. Huo leg. (SCAU). – **Guangdong Prov.:** 1 ♂, Shenzhen, 19 May 1988, S.P. Shen leg. (SCAU); 6 ♀♀, Huidong, 11 May 1988, X.F. Pang leg. (SCAU). – **Hunan Prov.:** 1 ♂, Shaowu, 24 Aug. 1984, X.F. Pang leg. (SCAU); 1 ♀, Changsha, 1984, collector unknown (SCAU).

Distribution

China (Beijing, Hebei, Shanxi, Liaoning, Jilin, Heilongjiang, Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong, Henan, Hubei, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, Yunnan, Shanxi, Gansu, Ningxia, Hong Kong, Inner Mongolia, Xinjiang) (Fig. 22), Japan, North Korea. Introduced to America.

Chilocorus esakii Kamiya, 1959

Figs 16, 22

Chilocorus esakii Kamiya, 1959: 102.

Chilocorus esakii – Sasaji 1971: 227. — Pang & Mao 1979: 85. — Pang *et al.* 2004: 28. — Kovář 2007: 593.

Material examined

CHINA: **Inner Mongolia:** 2 ♂♂, 2 ♀♀, Guyang, Baotou, 1300 m a.s.l., 16 Aug. 2009, S.X. Ren leg. (SCAU); 3 ♂♂, Dengkou, Bayannaoer, 14 Aug. 2009, S.X. Ren leg. (SCAU); 2 ♂♂, Helanshan,

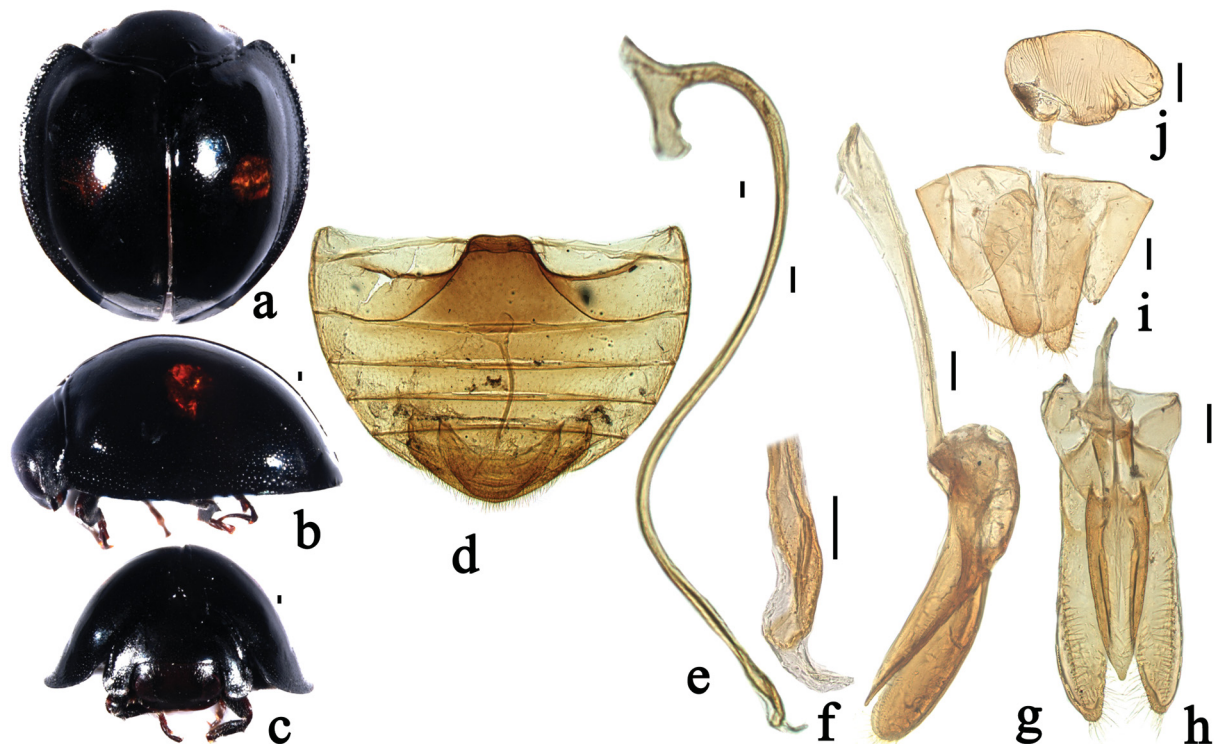


Fig. 16. *Chilocorus esakii* Kamiya, 1959. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i-j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

Alashanzuoqi, 14 Aug. 2009, S.X. Ren leg. (SCAU); 1 ♂, Youyizhongqi, Keerqin, 19 Aug. 2009, S.X. Ren leg. (SCAU); 1 ♂, 2 ♀♀, Xiangchizi, Gulaben, 1861–2283m, 7 Aug. 2010, C.W. Li leg. (SCAU). – **Anhui Prov.**: 1 ♀, Hengdu, Shitai, 230 m a.s.l., 20 Sep. 2010, X.M. Wang leg. (SCAU). – **Zhejiang Prov.**: 1 ♂, 7 ♀♀, Cixi, 30 Jul. 1988, G.Y. Yu leg. (SCAU). – **Hunan Prov.**: 1 ♂ 2 ♀♀, Horticultural institute, 1984, collector unknown (SCAU); 1 ♀, Shaowu, 24 Aug. 1984, X.F. Pang leg. (SCAU). – **Guangdong Prov.**: 2 ♀♀, Huidong, 11 May 1988, X.F. Pang and X.L. Tong leg. (SCAU); 1 ♀, Huidong, 13 Jun. 1988, X.F. Pang leg. (SCAU). – **Henan Prov.**: 1 ♂, Jigong mountain, 10 Jul. 1997, Z.Q. Peng leg. (SCAU); 1 ♀, Boerdeng part, Xinyang, 216 m a.s.l., 5 Jul. 2009, X.M. Wang leg. (SCAU). – **Jiangxi Prov.**: 1 ♂, Taihe, 12 Aug. 2004, X.M. Wang leg. (SCAU). – **Guizhou Prov.**: 1 ♂, Qingzhen, 20 Jul. 1994, M.Y. Tian leg. (SCAU). – **Fujian Prov.**: 1 ♂, Tongmu, 3 Aug. 1983, K.C. Zhang leg. (SCAU). – **Guangxi Zhuang Autonomous Region**: 1 ♂, Nanning, 4 Aug. 1985, H. Pang leg. (SCAU). – **Hebei Prov.**: 1 ♂, Baoding, 24 Nov. 1960, collector unknown (SCAU).

Distribution

China (Inner Mongolia, Hebei, Henan, Shanxi, Shanghai, Liaoning, Shandong, Anhui, Jiangxi, Zhejiang, Hunan, Fujian, Guangdong, Sichuan, Guizhou, Guangxi) (Fig. 22), Japan.

Chilocorus alishanus Sasaji, 1968

Figs 17, 22

Chilocorus alishanus Sasaji, 1968a: 20.

Chilocorus alishanus – Pang & Mao 1979: 89. — Cao *et al.* 1992: 162. — Pang *et al.* 2004: 27. — Kovář 2007: 593. — Yu 2011: 67.

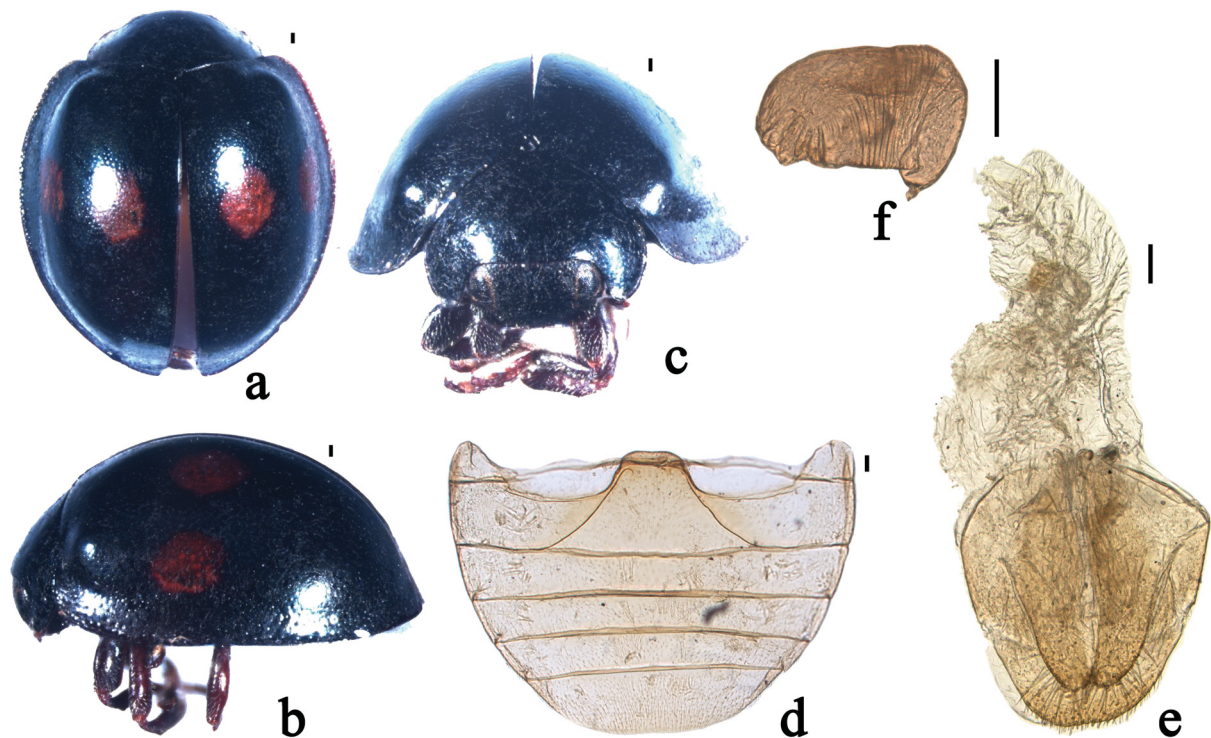


Fig. 17. *Chilocorus alishanus* Sasaji, 1968. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e–f.** Female genitalia. **e.** Ovipositor. **f.** Spermatheca. Scale bars: 0.1 mm. (NCHU)

Material examined

CHINA: **Taiwan Prov.**: 4 ♀♀, Ali Mountain, 1 Jun. 1972, collector unknown (NCHU).

Distribution

China (Yunnan, Taiwan) (Fig. 22).

Chilocorus bijugus Mulsant, 1853 Figs 18, 22

Chilocorus bijugus Mulsant, 1853: 61.

Chilocorus infernalis Mulsant, 1853: 189.

Chilocorus bijugus infernalis Korschefsky, 1932: 242.

Chilocorus bijugus – Crotch 1874: 183. — Korschefsky 1932: 242. — Kapur 1956: 259. — Nagaraja & Hussainy 1967: 249. — Miyatake 1970: 324; 1985: 12. — Pang & Mao 1979: 90. — Jing 1992: 566. — Cao *et al.* 1992: 162. — Pang *et al.* 2004: 27. — Kovář 2007: 593. — Ren *et al.* 2009: 126.

Chilocorus infernalis – Crotch 1874: 183.

Chilocorus renipustulatus – Liu 1963: 79.

Material examined

CHINA: **Yunnan Prov.**: 3 ♂♂, Shanggeri-La, 3000 m a.s.l., 3 Sep. 2005, X.M. Wang leg. (SCAU); 1 ♀, Fenshuiling, Jinping, 2000 m a.s.l., 18 May 2009, S.X. Ren leg. (SCAU); 1 ♀, Part of Xishan, Kunming, 2200 m a.s.l., 22 Aug. 2013, X.S. Chen leg. (SCAU). – **Sichuan Prov.**: 1 ♀, Panzhihua, 1400 m a.s.l., 16 Sep. 2007, X.M. Wang leg. (SCAU); 1 ♂, Fengyongzhai, Baoxing, 1560 m a.s.l.,

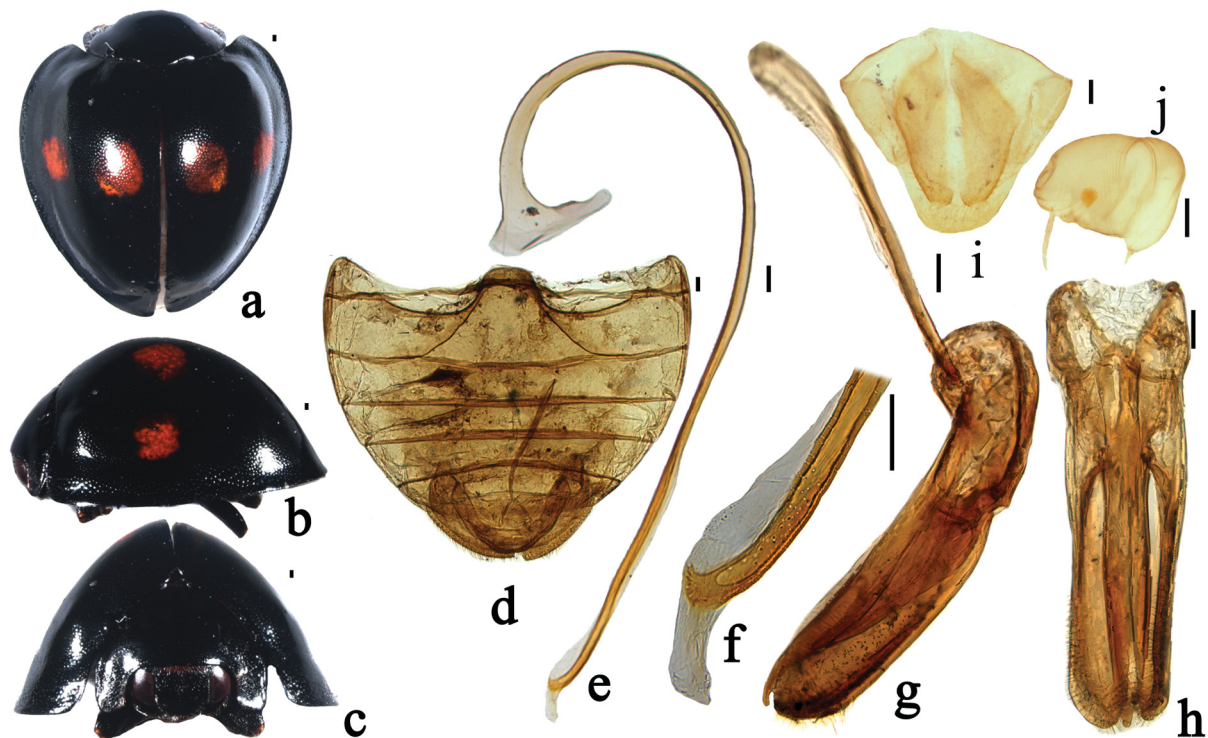


Fig. 18. *Chilocorus bijugus* Mulsant, 1853. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i-j.** Female genitalia. **i.** Ovipositor. **j.** Spermatheca. Scale bars: 0.1 mm. (SCAU)

2–3 Oct. 2007, J.Y. Hao leg. (SCAU). – **Guizhou Prov.**: 6 specimens, Huaxi Guiyang, 12 Aug. 1987, X.F. Pang leg. (SCAU); 4 specimens, Guiyang arboretum, 17–19 Aug. 1987, X.F. Pang XF and B.C. Huang leg. (SCAU); 36 specimens, Qingzhen, 20 Jul. 1994, M.Y. Tian leg. (SCAU); 11 specimens, Ximu, Guiyang, 31 Jul. 1994, M.Y. Tian leg. (SCAU); 2 specimens, Huaxi Guiyang, 3 Aug. 1994, M.Y. Tian leg. (SCAU); 2 ♂♂, Xifeng, 1100 m a.s.l., 9 Aug. 1997, Z.Q. Peng leg. (SCAU). – **Hubei Prov.**: 1 ♀, Pingqian, Shennongjia, 1600 m a.s.l., 27 Jul. 2007, X.M. Wang leg. (SCAU); 1 ♀, Yinyu River, Shennongjia, 1700 m a.s.l., 31 Jul. 2007, X.M. Wang leg. (SCAU); 1 ♂, Laojun Mountain, Shennongjia, 1230 m a.s.l., 5 Aug. 2007, X.M. Wang leg. (SCAU). – **Tibet**: 1 ♂, Mangkang, 2300 m a.s.l., 10 Oct. 2007, X.M. Wang leg. (SCAU); 1 ♂, Mangkang, 3300 m a.s.l., 18 Sep. 2011, L.Z. Huo leg. (SCAU); 1 ♂, Yigong, Bomi, 2100 m a.s.l., 18 Oct. 2011, L.Z. Huo leg. (SCAU); 1 ♂, Milin, Paizhen, 2950 m a.s.l., 21 Oct. 2011, L.Z. Huo leg. (SCAU).

Distribution

China (Jiangsu, Hubei, Sichuan, Guizhou, Yunnan, Tibet, Gansu) (Fig. 22), Japan, India, Nepal, Pakistan, Palaearctic.

Chilocorus bipustulatus (Linnaeus, 1758)

Figs 19, 22

Coccinella bipustulata Linnaeus, 1758: 367.

Chilocorus bipustulatus – Crotch 1874: 185. — Jakobson 1916: 990. — Korschefsky 1932: 239. — Bielawski 1984: 369. — Pang & Mao 1979: 88. — Gordon 1985: 654. — Poorani 2002: 311. — Pang *et al.* 2004: 27. — Kovár 2007: 593. — Ren *et al.* 2009: 128.

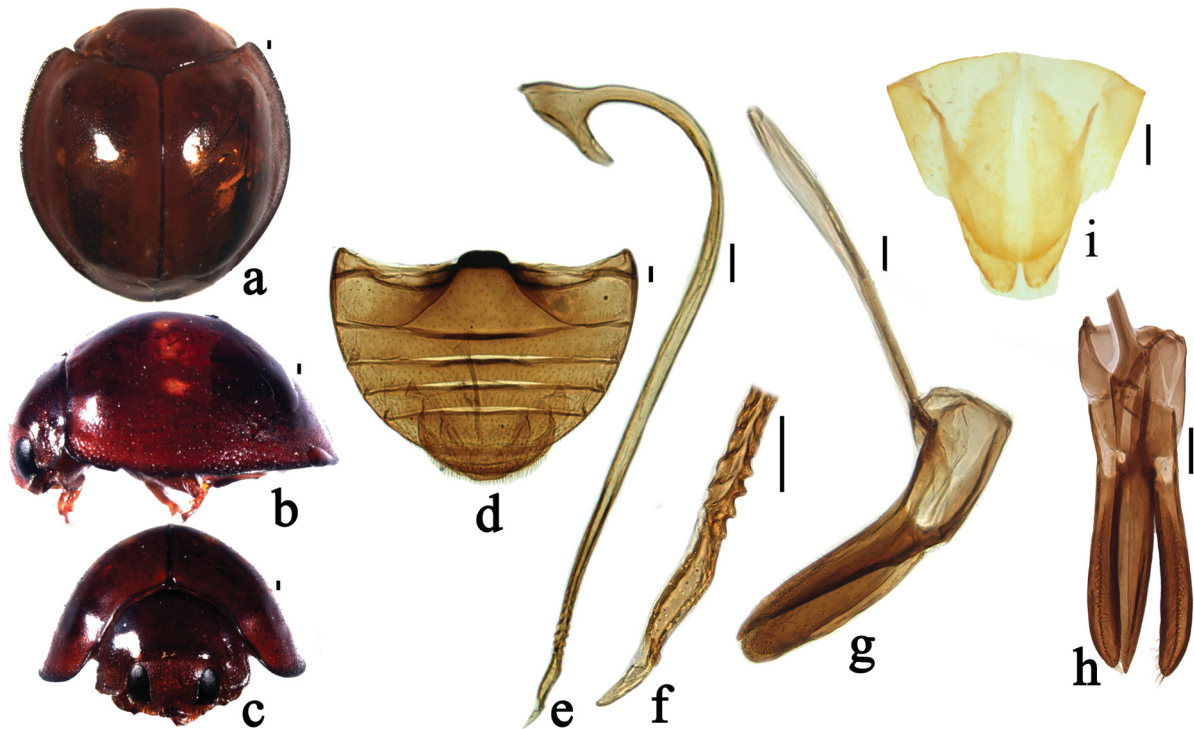


Fig. 19. *Chilocorus bipustulatus* (Linnaeus, 1758). **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i.** ovipositor. Scale bars: 0.1 mm. (SCAU)

Material examined

CHINA: **Xinjiang Uygur Autonomous Region:** 5 ♂♂, 2 ♀♀, Bole, 1000 m a.s.l., 16 Aug. 2008, S.X. Ren leg. (SCAU); 1 ♂, Tianchi, Fukang, 550 m a.s.l., 5 Sep. 2008, X.M. Wang leg. (SCAU); 1 ♀, Shanshan, 14 Aug. 2008, S.X. Ren leg. (SCAU); 1 ♂, Qiaxi, Gongliu, 1430 m a.s.l., 19 Aug. 2008, S.X. Ren leg. (SCAU); 1 ♂, Yining, 950 m a.s.l., 18 Aug. 2008, S.X. Ren leg. (SCAU).

Distribution

China (Xinjiang) (Fig. 22), Europe, Middle East, Central Asia, North Africa.

Chilocorus geminus Zaslavskij, 1962

Figs 20, 22

Chilocorus geminus Zaslavskij, 1962: 398.

Chilocorus geminus – Bielawski 1975: 254; 1984: 370. — Pang & Mao 1979: 88. — Pang *et al.* 2004: 28. — Kovář 2007: 593. — Ren *et al.* 2009: 130.

Material examined

CHINA: **Xinjiang Uygur Autonomous Region:** 1 ♂, Shanshan, 400 m a.s.l., 14 Aug. 2008, S.X. Ren leg. (SCAU); 1 ♂, 1 ♀, Bole, 1000 m a.s.l., 16 Aug. 2008, S.X. Ren leg. (SCAU); 1 ♂, 1 ♀, Qiaxi, Gongliu, 1430 m a.s.l., 19 Aug. 2008, X.M. Wang leg. (SCAU); 1 ♂, Hejing or Bohu, 1100 m a.s.l., 21 Aug. 2008, J.B. Liang leg. (SCAU); 8 ♂♂, 6 ♀♀, Kuche and Luntai, 930 m a.s.l., 23 Aug. 2008, S.X. Ren leg. (SCAU); 2 ♀♀, Xinhe and Wensu, 1160 m a.s.l., 24 Aug. 2008, S.X. Ren leg. (SCAU); 2 ♂♂,

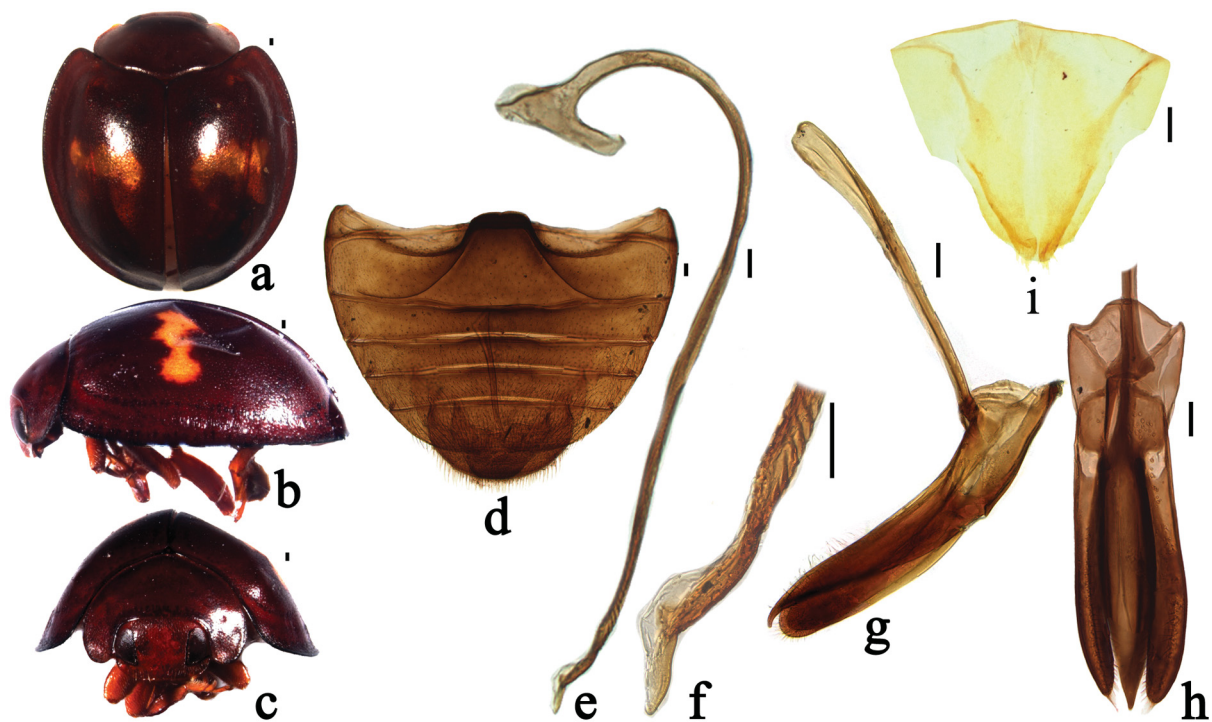


Fig. 20. *Chilocorus geminus* Zaslavskij, 1962. **a.** Dorsal view. **b.** Lateral view. **c.** Frontal view. **d.** Abdomen. **e.** Penis. **f.** Apex of penis. **g.** Tegmen, lateral view. **h.** Tegmen, ventral view. **i.** ovipositor. Scale bars: 0.1 mm. (SCAU)

1 ♀, Awati, 1070 m a.s.l., 25 Aug. 2008, S.X. Ren leg. (SCAU); 1 ♀, Akesu, 1000 m a.s.l., 27 Aug. 2008, X.M. Wang leg. (SCAU).

Distribution

China (Gansu, Xinjiang) (Fig. 22), Mongolia, Uzbekistan, Turkey, Central Asia.

The world checklist of *Chilocorus* Leach, 1815

- C. adustus* Weise, 1898a: 119. Gabon, Cameroon, West Africa.
C. alishanus Sasaji, 1968a: 20. China.
C. amamensis Kamiya, 1959: 103. Japan.
C. angolensis Crotch, 1874: 186. Angola, Central & southern Africa.
C. bennigseni Weise, 1900: 128. Tanzania, Central East Africa.
C. bijugus Mulsant, 1853: 61. China, Japan, India, Nepal, Pakistan, Palearctic.
C. bipustulatus (Linnaeus, 1758): 367. China, Europe, Middle East, Central Asia, North Africa.
C. braeti Weise, 1895b: 154. Himalaya, India.
C. cacti (Linnaeus, 1767): 584. America.
C. calvus Weise, 1898b: 228. Mozambique, South Africa.
C. canariensis Crotch, 1874: 185. Canary Islands.
C. cerberus Mulsant, 1853: 148. Malaysia, Indonesia, Philippines, Sumatra.
C. chalybeatus Gorham, 1892: 24. China.

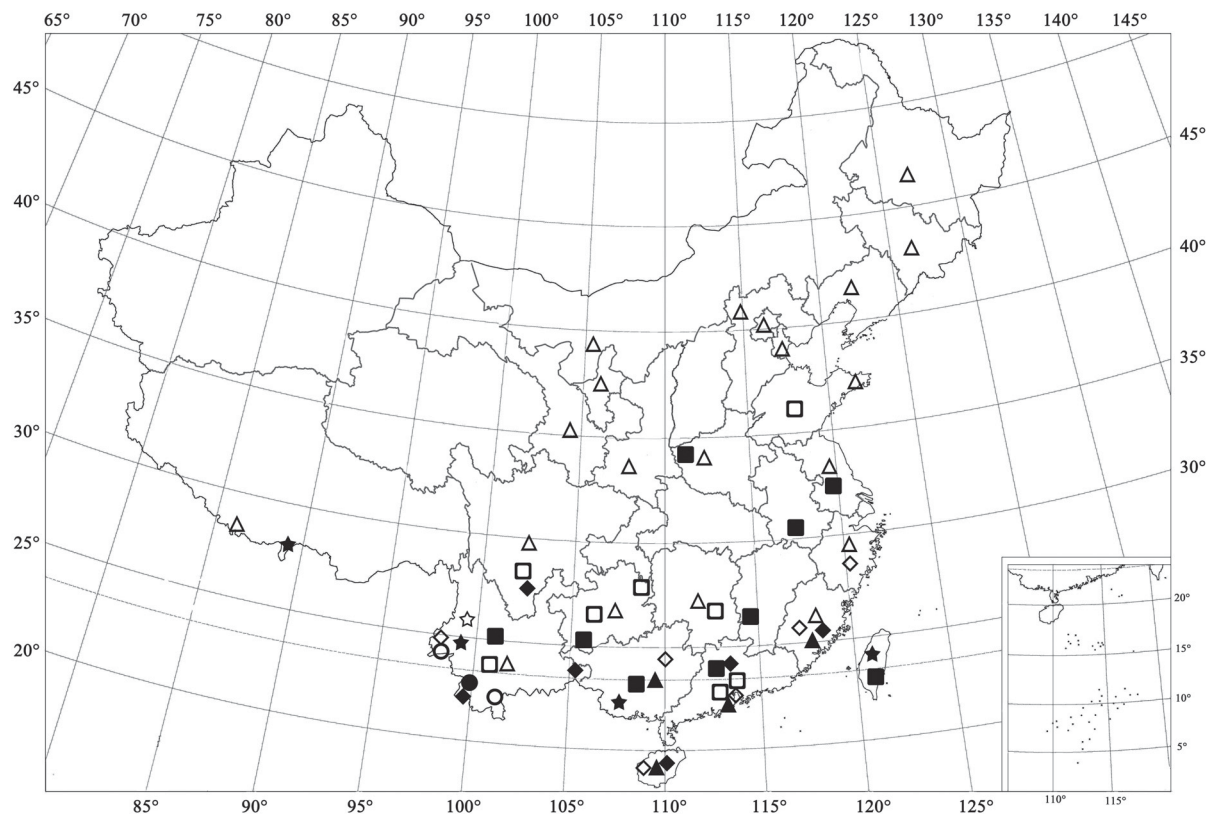


Fig. 21. Distribution map. (★) = *Chilocorus politus* Mulsant, 1850; (☆) = *C. yunlongensis* Cao & Xiao, 1984; (●) = *C. nigriceruleus* Li & Wang sp. nov.; (○) = *C. nigrita* (Fabricius, 1798); (▲) = *C. melas* Weise, 1898; (△) = *C. rubidus* Hope, 1831; (■) = *C. chinensis* Miyatake, 1970; (□) = *C. rufitarsis* Motschulsky, 1853; (◆) = *C. hauseri* Weise, 1895; (◇) = *C. circumdatus* (Gyllenhal, 1808).

- C. chinensis* Miyatake, 1970: 322. China.
C. circumdatus (Gyllenhal, 1808): 152. China, Indonesia, India, Sri Lanka. Introduced to Australia, America.
C. coelosimilis Kapur, 1967: 171. India.
C. cooki Casey, 1899: 165. Liberia.
C. crotchii Li & Ślipiński in Li *et al.*, 2014: 598. Indonesia.
C. cruentatus Gorham, 1901: 413. Zimbabwe.
C. distigma (Klug, 1835): 49. Angola, Ethiopia.
C. dohrni Mulsant, 1850: 456. Guinea, Nigeria, Senegal, Zimbabwe.
C. elegans Mader, 1954: 75. Democratic Republic of the Congo.
C. esakii Kamiya, 1959: 102. Japan.
C. fraternus LeConte, 1860: 70. America.
C. geminus Zaslavskii, 1962: 398. China, Mongolia, Uzbekistan, Turkey, Central Asia.
C. gracilior Booth, 1998: 365. Indonesia.
C. haematocephalus Sicard, 1909: 92. Madagascar.
C. hauseri Weise, 1895a: 135. China, Burma, India, Myanmar.
C. hexacyclus Smith, 1959: 446. Canada.
C. hupehanus Miyatake, 1970: 329. China.
C. insularis Weise, 1906: 208. Madagascar.
C. ishigakensis Kamiya, 1959: 104. Japan.

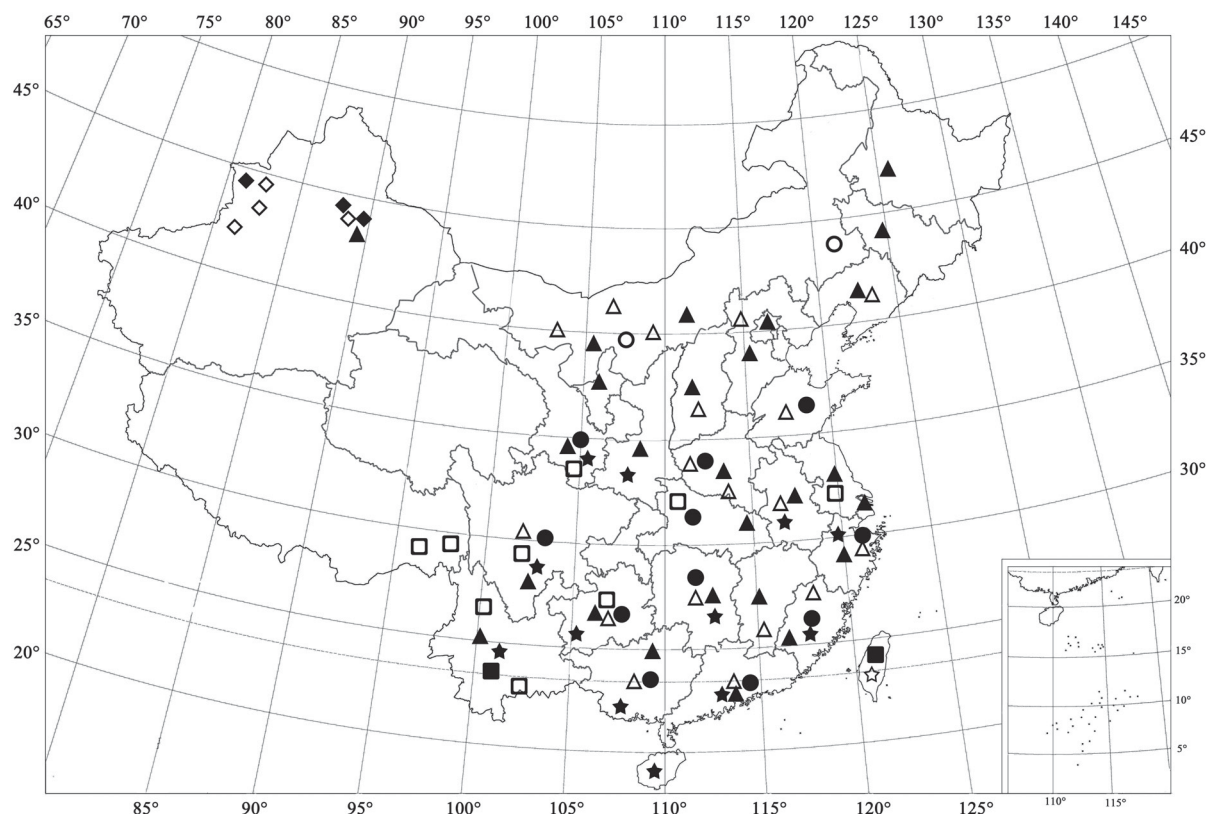


Fig. 22. Distribution map. (★) = *Chilocorus chalybeatus* Gorham, 1892; (☆) = *C. shirozui* Sasaji, 1968; (●) = *C. hupehanus* Miyatake, 1970; (○) = *C. strenotubus* Li & Wang sp. nov.; (▲) = *C. kuwanae* Silvestri, 1909; (△) = *C. esakii* Kamiya, 1959; (■) = *C. alishanus* Sasaji, 1968; (□) = *C. bijugus* Mulsant, 1853; (◆) = *C. bipustulatus* (Linnaeus, 1758); (◇) = *C. geminus* Zaslavskij, 1962.

- C. kirgisicus* Iablokoff-Khnzorian, 1976: 305. Palaearctic.
- C. kuwanae* Silvestri, 1909: 126. China, Japan, North Korea, Italy. Introduced to America.
- C. malasiae* Crotch, 1874: 187. Australia, New Guinea.
- C. maculatus* Ślipiński & Giorgi, 2006: 270. Australia.
- C. marshalli* Gorham, 1901: 414. Angola, Zimbabwe.
- C. matsumurai* Miyatake, 1985: 13. Nepal.
- C. melanophthalmus* Mulsant, 1850: 455. Indonesia (Java).
- C. melas* Weise, 1898b: 229. China, Burma, Thailand, Laos, India, Nepal, Bhutan, Indonesia.
- C. metallescens* Sicard, 1909: 94. Madagascar.
- C. micrus* Ślipiński & Giorgi, 2006: 272. Melville Island (Australia).
- C. midas* Klug, 1833: 214. Madagascar.
- C. nigricaeruleus* Li & Wang sp. nov. China.
- C. nigripes* Mader, 1954: 73. Tanzania.
- C. nigrita* (Fabricius, 1798): 79. China, Far East, Indian subcontinent, Oriental region, Australian region, America, Brazil, Africa.
- C. orbus* Casey, 1899: 105. America.
- C. pilosus* Sicard, 1920: 212. São Tomé and Príncipe.
- C. platycephalus* Mulsant, 1850: 464. Cuba.
- C. politus* Mulsant, 1850: 455. China, Thailand, Laos, India, Nepal, Bhutan, Indonesia.
- C. quadriguttatus* Weise, 1888: 93. South Africa.
- C. quadrimaculatus* Weise, 1910: 45. East Africa.
- C. reinecki* Weise, 1905: 140. South Africa.
- C. renipustulatus* (Scriba, 1791): 105. Europe.
- C. rubidus* Hope, 1831: 31. China, Mongolia, Korea, Japan, India, Nepal, Indonesia, Siberia.
- C. rubrocinctus* Sicard, 1909: 93. Madagascar.
- C. rufitarsis* Motschulsky, 1853: 50. China, Vietnam.
- C. rufithorax* Mader, 1954: 78. Democratic Republic of the Congo.
- C. schioedtei* Mulsant, 1850: 456. Guinea, Sierra Leone, Uganda.
- C. semiaeneus* Weise, 1891: 284. Tsibodas ('Tzibodes' in Weise 1891, perhaps Cibodas in Indonesia).
- C. seminulum* Weise, 1910: 46. Kisar Island (Indonesia).
- C. sexguttatus* Weise, 1912: 115. Angola, Democratic Republic of the Congo, Tanzania.
- C. shirozui* Sasaji, 1968 a: 22. China.
- C. silvestrii* Weise, 1913: 221. Democratic Republic of the Congo, Guinea.
- C. similis* Rossi, 1790: 68. Italy.
- C. simoni* Sicard, 1907b: 413. South Africa.
- C. solitus* Wiese, 1899: 62. Mozambique.
- C. stigma* (Say, 1835): 202. America. Introduced to Hawaii, Australia, Chile, Italy, Mauritania.
- C. stillatus* Sicard, 1912: 411. Democratic Republic of the Congo.
- C. strenotubus* Li & Wang sp. nov. China.
- C. subaenescens* Weise, 1898b: 227. Tanzania.
- C. subindicus* Booth, 1998: 365. India, Maldives, Sri Lanka.
- C. sublineatus* Crotch, 1874: 187. Indonesia.
- C. takara* Nakane & Araki, 1959: 52. Japan.
- C. tibialis* Weise, 1897: 300. Tanzania.
- C. tricyclus* Smith, 1959: 446. America.
- C. trimaculatus* Crotch, 1874: 187. Indonesia.
- C. tumidus* Leng, 1908: 37. America.
- C. wahlbergi* Mulsant, 1850: 462. Democratic Republic of the Congo, South Africa, Tanzania, Zanzibar.
- C. wallacii* Crotch, 1874: 187. Indonesia.
- C. yunlongensis* Cao & Xiao, 1984: 117. China.

Discussion

The morphological characters of the genus *Chilocorus* are relatively heterogeneous at species level. Chapin (1965) and Miyatake (1970) thought that it should be further subdivided. However, four genera in Chilcorini, *Phaenochilus* Weise, 1895 distributed in Oriental region, *Simmondsius* Ahmad & Ghani, 1966 distributed in Pakistan, *Anisorcus* Crotch, 1874 distributed in Australian region and *Egius* Mulsant, 1850 distributed in Cuba, are very similar to *Chilocorus* in morphological characters. A more detailed analysis of the phylogeny of the genera of Chilcorini is needed to reveal the relationships between the five groups and determine whether *Chilocorus* is a natural group.

Acknowledgements

We are particularly grateful to Wioletta Tomaszewska (Museum and Institute of Zoology PAS, Warsaw, Poland) and Michael Geiser (Natural History Museum, London, UK) for their kind help during Wenjing Li's visit to the museums. We are grateful to Shaukat Ali (South China Agriculture University, Guangzhou, China) for checking a draft of this paper. This research was supported by the National Natural Science Foundation of China (31501884), Science and Technology Partnership Program, Ministry of Science and Technology of China (KY201402014) and Science and Technology Program of Guangzhou, China (201509010023).

References

- Bielawski R. 1957. Coccinellidae (Coleoptera) von Ceylon. *Verhandlungen der naturforschenden Gesellschaft in Basel* 68: 72–96.
- Bielawski R. 1975. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei, Nr. 352. Coccinellidae V and VI (Coleoptera). *Fragmenta Faunistica (Warszawa)* 20: 247–271.
- Bielawski R. 1984. Coccinellidae (Coleoptera) of Mongolia. *Annales Zoologici (Warszawa)* 38: 281–460. Available from http://rcin.org.pl/Content/58507/WA058_10823_P255-T38_Annal-Zool-Nr-14.pdf [accessed 23 Aug. 2018].
- Blackburn T. 1889. Further notes on Australian Coleoptera, with descriptions of new species. *Transactions of the Royal Society of South Australia* 11: 175–214.
- Booth R.G. 1998. A review of the species resembling *Chilocorus nigrita* (Coleoptera: Coccinellidae): potential agents for biological control. *Bulletin of Entomological Research* 88 (4): 361–367.
- Booth R.G. & Pope R.D. 1989. A review of the type material of Coccinellidae (Coleoptera) described by F.W. Pope and by E. Mulsant in the Hope Entomological Collections, Oxford. *Entomologica Scandinavica* 20 (3): 343–370.
- Casey T.L. 1899. A revision of the American Coccinellidae. *Journal of the New York Entomological Society* 7: 71–169.
- Cao C.Y. & Xiao N.N. 1984. New species of Coccinellidae from Yunnan, China. *Entomotaxonomia* 6: 109–132. [In Chinese.]
- Cao C.Y., Pan Y.Z. & Wang H. 1992. *Coccinellidae of Yunnan*. Yunnan Science & Technology Publishing House, Kunming. [In Chinese.]
- Chapin E.A. 1965. The genera of the Chilcorini (Coleoptera, Coccinellidae). *Bulletin of the Museum of Comparative Zoology, Harvard University* 133: 227–271.
- Chazeau J., Étienne J. & Fürsh H. 1974. Les Coccinellidae de l'île de La Réunion (Insecta Coleoptera). *Bulletin du Museum national d'Histoire naturelle* 140: 265–297.

Chen L.H., Zhang S.Q., Li Y., Liang D., Pang H., Ślipiński A. & Zhang P. 2017. Genome-wide survey of nuclear protein-coding markers for beetle phylogenetics and their application in resolving both deep and shallow-level divergences. *Molecular Ecology Resources* 1–17. <https://doi.org/10.1111/1755-0998.12664>

Crotch G.R. 1874. A Revision of the Coleopterous Family Coccinellidae. *E. W. Department of Agriculture, Government Research Institute, Taihoku* 55: 1–359.

Escalona H.E., Zwick A., Li H.S., Li J.H., Wang X.M., Pang H., Hartley D., Jermin L.S., Nedvěd O., Misof B., Niehuis O., Ślipiński A. & Tomaszewska W. 2017. Molecular phylogeny reveals food plasticity in the evolution of true ladybird beetles (Coleoptera: Coccinellidae: Coccinellini). *BMC Evolutionary Biology* 17 (1): 151. <https://doi.org/10.1186/s12862-017-1002-3>

Fabricius J.C. 1798. *Supplementum entomologiae systematicae*. Proft and Storch, Copenhagen.

Faldermann F. 1835. Coleopterorum ab ill. Bungio in China boreali, Mongolia et montibus Altaicis collectorum, nee non ab ill. Turczaninoffio et Stschukino e provincia Irkutsk missorum illustrationes. *Memoires de l'Académie impériale des Sciences des Saint Petersburg* 2: 337–464.

Giorgi J.A., Vandenberg N.J., Mchugh J.V., Forrester J.A., Ślipiński S.A., Miller K.B., Shapiro L.R. & Whiting M.F. 2009. The evolution of food preferences in Coccinellidae. *Biological Control* 51: 215–231. <https://doi.org/10.1016/j.biocontrol.2009.05.019>

Gordon R.D. 1985. The Coccinellidae (Coleoptera) of America north of Mexico. *Journal of the New York Entomological Society* 93: 1–912.

Gorham H.S. 1892. Coleoptera from Central China and the Korea. *The Entomologists* 25 (4) (Supplement): 81–85.

Gorham H.S. 1901. Descriptions of genera and species of Coleoptera from South Africa. *Annals and Magazine of Natural History* 7: 401–415.

Gyllenhal L. 1808. [New taxa.] In: Schönherr C.J. (ed.) *Synonyma Insectorum, oder: Versuch einer Synonymie aller bisher bekannten Insecten; nach Fabricii Systema Eleutheratorum & c. geordnet. Erster Band. Eleutherata oder Käfer. Zweiter Theil. Sprechus-Cryptocephalus*. C.F Marquard, Stockholm.

Hoáng D.N. 1983. *Coccinellidae of Vietnam. Part. 2*. Department of Science and Technology, Hanoi, 1–159. [In Vietnamese with English summary.]

Hope F.W. 1831. *Synopsis of the new species of Nepaul insects in the collection of Major General Hardwicke*. In: Gray J.E. (ed.) *Zoological Miscellany*: 21–32. Treutel, Wurtz and Co, London.

Hu J.F. 1937. *Coleoptera-Coccinellidae, Catalogus Insectorum Sinensium, Vol. 3*: 553–587. The Fan Memorial Institute of Biology, Peiping. [In Chinese.]

Iablokoff-Khnzorian S.M. 1976. Dva novykh vida zhestkokrylyhk-kokcinellid iz aziatskoy chasti SSSR (Coleoptera, Coccinellidae). *Doklady Akademii Nauk Armyanskoy SSR* 62: 305–309.

Jakobson G.G. 1916. *Die Käfer Russlands und Westeuropas. Ein Handbuch zum Bestimmen der Käfer*; 865–1024. Imperial Academy of Sciences, Petrograd.

Jing X. 1992. Coleoptera: Coccinellidae. In: Chen S. (ed.) *Insects of the Hengduan Mountains Region*: 541–574. Science Press, Beijing. [in Chinese with English summary.]

Kamiya H. 1959. A revision of the tribe Chilocorini of Japan and the Loochoos (Coleoptera: Coccinellidae). *Kontyu* 27 (2): 99–105.

- Kapur A.P. 1956. Systematic and biological notes on the ladybird beetles predacious on the San Jose scale in Kashmir with description of a new species (Coleoptera: Coccinellidae). *Records of the Indian Museum* 52 (1954): 257–274.
- Kapur A.P. 1967. The Coccinellidae (Coleoptera) of the Andamans. *Proceedings of the National Institute of Sciences of India* 32 (B) (1966): 148–189.
- Kapur A.P. 1972. The Coccinellidae (Coleoptera) of Goa. *Records of the Zoological Survey of India* 66: 309–320.
- Klug J.C.F. 1833. Bericht über eine auf Madagascar veranstaltete Sammlung von Insecten aus der Ordnung Coleoptera. *Abhandlungen der Königlischen Akademie der Wissenschaften, Berlin* (1832–1833): 91–223.
- Klug J.C.F. 1835. In: Erman, A.: *Reise um die Erde durch Nord-Asien und die beiden Oceane in den Jahren 1828–30*: 27–50. Naturhistorischer Atlas. Berlin.
- Korschefsky R. 1932. Pars 120: Coccinellidae. II. In: Junk W. & Schenkling S. (eds) *Coleopterorum Catalogus*: 225–659. W. Junk, Berlin.
- Kovář I. 2007. New nomenclatorial and taxonomic acts and comments Coccinellidae. In: Löbl I. & Smetana A. (eds) *Catalogue of Palaearctic Coleoptera*: 568–631. Apollo Books, Stenstrup.
- Łączyński P. & Tomaszewska W. 2012. *Chapinaria*, new genus of Chilcorini for *Endochilus meridionalis* Sicard from Africa (Coleoptera: Coccinellidae). *Annales Zoologici (Warszawa)* 62 (1): 1–9. <https://doi.org/10.3161/000345412X633658>
- Leach W.E. 1815. Entomolgy. In: Brewster D. (ed.) *The Edinburgh Encyclopaedia*. Volume 9: 57–172. Balfour, Edinburgh.
- LeConte J.L. 1860. Report on explorations and surveys, etc. from the Mississippi River to the Pacific Ocean. No.1. *Report upon Insects Collected on the Survey* 9: 1–72.
- Leeper J.R. 1976. A review of the Hawaiian Coccinellidae. *Proceedings of the Hawaiian Entomological Society* 22: 279–305.
- Leng C.W. 1908. Notes on Coccinellidae. III. *Journal of the New York Entomological Society* 16: 33–44.
- Lewis G. 1873. Notes on Japanese Coccinellidae. *Entomologists' Monthly Magazine* 10: 54–56.
- Lewis G. 1896. On the Coccinellidae of Japan. *Annals and Magazine of Natural History* (6) 17: 22–41.
- Li J.H., Tomaszewska W. & Ślipiński A. 2014. Ladies in stripes: taxonomic confusion in a potential mimicry complex among Wallacean Coccinellidae (Coleoptera: Coccinellidae). *Zootaxa* 3900 (4): 592–600. <https://doi.org/10.11646/zootaxa.3900.4.9>
- Li W.J., Huo L.Z., Ahrens D., Ren S.X. & Wang X.M. 2017. *Renius cornutus*, a new genus and species of Chilcorini from Tibet, China (Coleoptera, Coccinellidae). *ZooKeys* 678: 121–128. <https://doi.org/10.3897/zookeys.678.11862>
- Linnaeus C. 1758. *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species cum chatacteribus, differentiis, synonymis, locis*. Holmiae: Laurentii Salvii Vol. 1 Edn 10 (reformat).
- Linnaeus C. 1767. *Systema Nature, per Regna Tria Naturae, secundum Classes, Ordines, Genera, Species, cum Characteribus, Differentiis, Synonymis, Locis*. Tom I. Pars I. Editio Decima tertia, ad Editionem duodecimam reformatam Holmiensem. Vindobonae, Typis Ioannis Thomae nob. de Trattern.
- Liu C.L. 1963. *Coleoptera: Coccinellidae. Economic Entomology of China*, 5. Science Press, Beijing. [In Chinese.]

- Mader L. 1954. *Coccinellidae. III. Teil. In: Exploration du Parc National Albert, mission G.F. De Witte (1933–1935). Institut des Parc Naitonaux du Congo belge, Brussels.*
- Mader L. 1955a. Neue Coleopteren aus Fukien (China). Helotidae, Languriidae, Erotylidae, Endomychidae, Coccinellidae. *Koleopteraologische Rundschau* 33: 62–78.
- Mader L. 1955b. Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen in Wort und Bild. 2. *Entomologische Arbeiten aus dem Museum G. Frey Tutzing bei München* 6: 765–1035.
- Magro A., Lecompte E., Magne F., Hemptinne J. & Crouau-Roy B. 2010. Phylogeny of ladybirds (Coleoptera: Coccinellidae): are the subfamilies monophyletic? *Molecular Phylogenetics and Evolution* 54: 833–848. <https://doi.org/10.1016/j.ympev.2009.10.022>
- Miwa Y. 1931. A Systematic Catalogue of Formosan Coleoptera. *Report of the Department of Agriculture Government Research Institute (Taihoku)* 55: 1–359.
- Miyatake M. 1970. The East-Asian Coccinellid beetles preserved in the California Academy of Sciences. Tribe Chilocorini. *Memoirs of the College of Agriculture, Ehime University* 14 (3): 19–56.
- Miyatake M. 1985. Coccinellidae collected by the Hokkaido University Expedition to Nepal Himalaya, 1968 (Coleoptera). *Insecta Matsumurana (New Series)* 30: 1–33.
- Motschulsky V. 1853. Diagnoses de Coléoptères nouveaux, trouvés par M.M. Tatarinoff et Gasckéwitsch aux environs de Pékin. *Etudes entomologiques* 2: 44–51.
- Mulsant M.E. 1850. *Species des Coléoptères Trimères Sécuripalpes*. Annales des Sciences physiques et naturelles, d'Agriculture et d'Industrie, Société nationale d'Agriculture, Lyon, deuxième série 2.
- Mulsant M.E. 1853. Supplément à la Monographie des Coléoptères Trimeres Sécuripapes. *Annales de la Société linnéenne de Lyon (Nouvelle Série)* (2) 2: 129–333.
- Nagaraja H. & Hussainy S.U. 1967. A study of six species of *Chilocorus* (Coleoptera: Coccinellidae) predaceous on San Jose and other scale insects. *Oriental Insects* 1: 249–256.
- Nakane T. 1963. New taxa. In: Nakane T., Obhayashi K., Nomura S. & Kurosawa Y. (eds) *Iocographia Insectorum Japonicum Vol. 2 (Coleptera)*. Hokuryukan, Tokyo. [In Japanese.]
- Nakane T. & Araki M. 1959. Entomological results from the scientific survey of the Tokara Islands. VI. Coleoptera: Coccinellidae. *Scientific Reports of Kyoto Prefectural University (Natural and Living Science)* 3A: 45–52.
- Pang H., Pang X.F. & Huang B.K. 2002. *Coccinellidae. Insect Fauna of Fujian IV*: 281–357. Fujian Science and Technology Press, Fujian.
- Pang H., Ren S.X., Zeng T. & Pang X.F. 2004. *Biodiversity and their Utilization of Coccinellidae in China*. Science and Technology Press of Guangdong, Guangzhou. [In Chinese.]
- Pang X.F. & Mao J.L. 1979. *Coleoptera: Coccinellidae II. Economic Entomology of China, 14*. Science Press, Beijing. [In Chinese.]
- Poorani J. 2002. An annotated checklist of the Coccinellidae (Coleoptera) (excluding Epilachninae) of the Indian Subregion. *Oriental Insects* 36: 307–383.
- Ren S.X., Wang X.M., Pang H., Peng Z.Q. & Zeng T. 2009. *Colored Pictorial Handbook of Ladybird Beetles in China*. Science Press, Beijing. [In Chinese.]
- Rossi P. 1790. *Fauna Etrusca, sistens Insecta, quae in provinciis Florentina et Pisana praesertim collegit. Tomus primus*. Thomae Masi & Sociorum, Liburni.
- Sasaji H. 1968a. A revision of the Formosan Coccinellidae (II) tribes Stethorini, Aspidimerini and Chilocorini (Coleoptera). *Etizenia* 32: 1–24.

- Sasaji H. 1968b. Phylogeny of the family Coccinellidae (Coleoptera). *Etizenia* 35: 1–37.
- Sasaji H. 1971. *Fauna Japonica. Coccinellidae (Insecta: Coleoptera)*. Academic Press of Japan, Tokyo.
- Say T. 1835. Descriptions of new American coleopterous insects, and observations on some already described. *Boston Journal of Natural History* 1: 151–203.
- Seago A.E., Giorgi J.A., Li J.H. & Ślipiński A. 2011. Phylogeny, classification and evolution of ladybird beetles (Coleoptera: Coccinellidae) based on simultaneous analysis of molecular and morphological data. *Molecular Phylogenetics and Evolution* 60: 137–151. <https://doi.org/10.1016/j.ympev.2011.03.015>
- Scriba L.G. 1791. *Beiträge zu der Insecten-Geschichte. Zweites Heft*: 66–194. Varrentrapp & Wenner, Frankfurt.
- Sicard A. 1907a. Coleoptères Coccinellidés du Japon, recueillis par MM. Harmand et Gallois. Liste et description d'espèces nouvelles. *Bulletin du Museum national d'Histoire naturelle* 13: 210–212.
- Sicard A. 1907b. Espèces nouvelles de Coccinellides d'Afrique. *Annales de la Société entomologique de France* 76: 412–418.
- Sicard A. 1909. Révision des Coccinellides de la faune malgache. *Annales de la Société entomologique de France* 78: 63–165.
- Sicard A. 1912. Deux Coccinellides nouveaux du Congo belge. *Revue de Zoologie et de Botanique africaine* 1: 411–412.
- Sicard A. 1913. Notes sur quelques Coccinellides de l'Inde et de Birmanie appartenant à la collection de M. Andrews, de Londres et description d'espèces et de variétés nouvelles. *Annales de la Société entomologique de France* 81 (1912): 495–506.
- Sicard A. 1920. Descriptions d'espèces et variétés nouvelles de Coccinellides de San Thomé. *Bulletin de la Société portugaise Sciences naturelles* 8: 211–214.
- Silvestri F. 1909. Nuovo Coccinellide introdotto in Italia. *Rivista Coleotterologica Italiana* 7: 126–129.
- Ślipiński A. 2007. *Australian Ladybird Beetles (Coleoptera: Coccinellidae), their Biology and Classification*. ABRS, Canberra.
- Ślipiński A. & Giorgi J.A. 2006. Revision of the Australian Coccinellidae (Coleoptera). Part 6. Tribe Chilcorini. *Annales Zoologici (Warszawa)* 56 (2): 265–304.
- Ślipiński A. & Tomaszewska W. 2010. Coccinellidae Latreille, 1802. In: Leschen R.A.B.R., Beutel G. & Lawrence J.F. (eds) *Handbook of Zoology, Vol. 2, Coleoptera*: 454–472. Walter de Gruyter GmbH and Co. KG, Berlin/New York.
- Smith S.G. 1959. The cytogenetic basis of speciation in Coleoptera. *10th International Conference of Genetics* 1: 444–450. Canadian Forest Service Publications, Ottawa.
- Weise J. 1885. Coccinellidae, II. Auflage. Mit Berücksichtigung der Arten aus dem nördlichen Asien. In: Reitter E. (ed.) *Bestimmungs-Tabellen der europäischen Coleopteren. II. Heft*. H. Busing, Modling.
- Weise J. 1887. Neue sibirische Chrysomeliden und Coccinelliden nebst Bemerkungen über früher beschriebene Arten. *Archiv für Naturgeschichte* 53: 164–214.
- Weise J. 1888. Ueber Coccinelle aus Afrika, hauptsächlich von Herrn Major v. Mechow gesammelt. *Deutsche Entomologische Zeitschrift* 32: 81–96.
- Weise J. 1891. Neue Coccinelliden. *Deutsche Entomologische Zeitschrift* [1891]: 282–288.
- Weise J. 1895a. Neue Coccinelliden, sowie Bemerkungen zu bekannten Arten. *Annales de la Société entomologique de Belgique* 39: 120–146.

- Weise J. 1895b. Insectes du Bengale. 36^{ième} mémoire, Coccinellidae. *Annales de la Société entomologique de Belgique* 39: 151–157.
- Weise J. 1897. Coccinellen aus Ostafrika (Usambara). *Deutsche Entomologische Zeitschrift* 289–304.
- Weise J. 1898a. Coccinelliden aus Kamerun. *Deutsche Entomologische Zeitschrift* 97–125.
- Weise J. 1898b. Üeber bekannte und neue Coccinelliden. *Archiv für Naturgeschichte* 64 (1): 225–238.
- Weise J. 1899. Coccinelliden aus Deutsch-Ostafrika. *Archiv für Naturgeschichte* 65: 49–70.
- Weise J. 1900. Kurze Mittheilungen über Ostafrikanische Coccinelliden und Beschreibungen neuer Arten. *Deutsche Entomologische Zeitschrift* 113–131.
- Weise J. 1902. Coccinelliden aus der Sammlung des ungarischen National Museums. *Természetrájsi Füzetek* 25: 489–520.
- Weise J. 1905. *Chilocorus reinecki* [n.sp.]. *Deutsche Entomologische Zeitschrift* 140.
- Weise J. 1906. Coccinelliden aus Madagaskar. *Deutsche Entomologische Zeitschrift* 203–208.
- Weise J. 1910. Chrysomeliden und Coccinelliden. *Verhandlungen des Naturforschenden Vereins in Brünn* 48: 25–53.
- Weise J. 1912. Über Hispinen und Coccinelliden. *Archiv für Naturgeschichte A* 78(2): 100–120.
- Weise J. 1913. Coccinelliden aus Westafrika. *Bollettino del Laboratorio di Zoologia General e Agraria di Portici* 7: 221–249.
- Yu G.Y. 2011. *The Coccinellidae of Taiwan*. Chemical Industry Press, Beijing. [In Chinese with English summary.]
- Yu G.Y., Pang H. & Pang X.F. 1993. Coccinellidae collected from Chebaling National Nature Reserve. In: Xu Y.Q. (ed.) *Collected papers for investigation in National Chebaling Nature Reserve*: 467–511. Science and Technology Press of Guangdong, Guangzhou. [In Chinese.]
- Zaslavskij V.A. 1962. Novyy palearkticheskiy vid *Chilocorus* (Coleoptera, Coccinellidae). *Entomologicheskoe Obozrenie* 41: 398–401.

Manuscript received: 28 October 2017

Manuscript accepted: 11 June 2018

Published on: 23 October 2018

Topic editor: Gavin Broad

Section editor: Max Barclay

Desk editor: Kristiaan Hoedemakers

Printed versions of all papers are also deposited in the libraries of the institutes that are members of the EJT consortium: Muséum national d'Histoire naturelle, Paris, France; Botanic Garden Meise, Belgium; Royal Museum for Central Africa, Tervuren, Belgium; Natural History Museum, London, United Kingdom; Royal Belgian Institute of Natural Sciences, Brussels, Belgium; Natural History Museum of Denmark, Copenhagen, Denmark; Naturalis Biodiversity Center, Leiden, the Netherlands; Museo Nacional de Ciencias Naturales-CSIC, Madrid, Spain; Real Jardín Botánico de Madrid CSIC, Spain; Zoological Research Museum Alexander Koenig, Bonn, Germany.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [European Journal of Taxonomy](#)

Jahr/Year: 2018

Band/Volume: [0469](#)

Autor(en)/Author(s): Li Wenjing, Huo Lizhi, Wang Di, Ahrens Dirk, Wang Xingmin

Artikel/Article: [Contribution to the genus *Chilocorus* Leach, 1815 \(Coleoptera: Coccinellidae: Chilocorini\), with descriptions of two new species from China 1-34](#)