

## A review of the genus *Cryptopleurum* from China (Coleoptera: Hydrophilidae)

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**Abstract.** Species of the genus *Cryptopleurum* Mulsant, 1844 (Coleoptera: Hydrophilidae: Sphaeridiinae: Megasternini) occurring in China are revised. Five species are reported, three of which are reported from China for the first time: *C. coomani* d'Orchymont, 1926 from Guangdong, *C. sulcatum* Motschulsky, 1863 from Hainan and Yunnan, and *C. ferrugineum* Motschulsky, 1863 from Guangdong. *Cryptopleurum minutum* (Fabricius, 1775) is reported for the first time from Qinghai and Gansu, *C. subtile* Sharp, 1884 from Fujian, Guangdong, Guangxi, Guizhou, Hebei, Hubei, Hunan, Nei Mongol, Qinghai, Shaanxi, Shanghai, Shanxi and Yunnan. Diagnosis of each species and a key to all Chinese species of *Cryptopleurum* are provided.

**Key words.** Coleoptera, Hydrophilidae, *Cryptopleurum*, new records, China, Oriental Region, Palaearctic Region

### Introduction

*Cryptopleurum* Mulsant, 1844 is a small genus of the family Hydrophilidae, with a total of twenty-four described species (HANSEN 1999, SHORT & FIKÁČEK 2011). Seven species are known from the Oriental Region, six species from the Nearctic, eight species from the Afrotropics, three species from the Palaearctics, three species from the Australian Region, and one species from the Pacific (HANSEN 1999, SHORT & FIKÁČEK 2011). All species but two are known only from a single region, the exceptions being *C. subtile* Sharp, 1884 occurring in the Oriental, Palaearctic and Nearctic Regions (d'ORCHYMONT 1926, HANSEN 1999) and *C. minutum* (Fabricius, 1775) occurring in the Palaearctic and Nearctic Region (SMETANA 1978, HANSEN 1999). All known species inhabit terrestrial habitats, especially rotting material and excrements of mammals. Since 2000, only two new species have been described (HEBAUER 2001). Another species, *Cryptopleurum sichuanensis* Ryndevich, 2005 described

from Sichuan, China (RYNDEVICH 2005) was transferred to *Nipponocercyon* Satô, 2015 by FIKÁČEK et al. (2015b).

Until now, four species have been recorded from China (FIKÁČEK et al. 2015a) of which *C. pygmaeum* d'Orchymont, 1913 is only known from Taiwan and *C. ferrugineum* Motschulsky, 1863 is wrongly reported from Taiwan.

## Materials and methods

Specimens of each species were dissected, and the genitalia placed in a drop of glycerol on glass slides. After photography, the genitalia were transferred to a plastic plate attached to the respective specimen. Habitus photographs were taken using an Axioskop 40 compound microscope. Photographs of genitalia were taken using an Olympus SZX7 stereomicroscope, and subsequently combined with Auto-Montage software. SEM photographs were taken using a Phenom Prox scanning electronic microscope. Exact label data are cited for the type material. Label data in Chinese are translated into English. In type material, full label data are provided, using a forward slash (/) to separate different lines and a double slash (//) different labels of data, and brackets ([...]) for the comments attached by the authors.

Examined specimens are deposited in the following collections:

- BMNH Natural History Museum, London, UK (M. Barclay);  
 ISNB Institut Royal des Sciences naturelles de Belgique, Bruxelles, Belgium (P. Limbourg);  
 NMPC National Museum, Prague, Czech Republic (M. Fikáček);  
 SHNU Shanghai Normal University, China (L.-Z. Li);  
 SYSU Entomological collection of Sun Yat-sen University, Guangzhou, China (F.-L. Jia).

The genus diagnosis is provided by HANSEN (1991).

## Taxonomy

### *Cryptopleurum minutum* (Fabricius, 1775)

(Figs 1–8)

*Sphaeridium minutum* Fabricius, 1775: 68.

*Cryptopleurum minutum*: HANSEN (1999: 309): catalogue, complete synonymy.

**Type locality.** Anglia [= Great Britain: England].

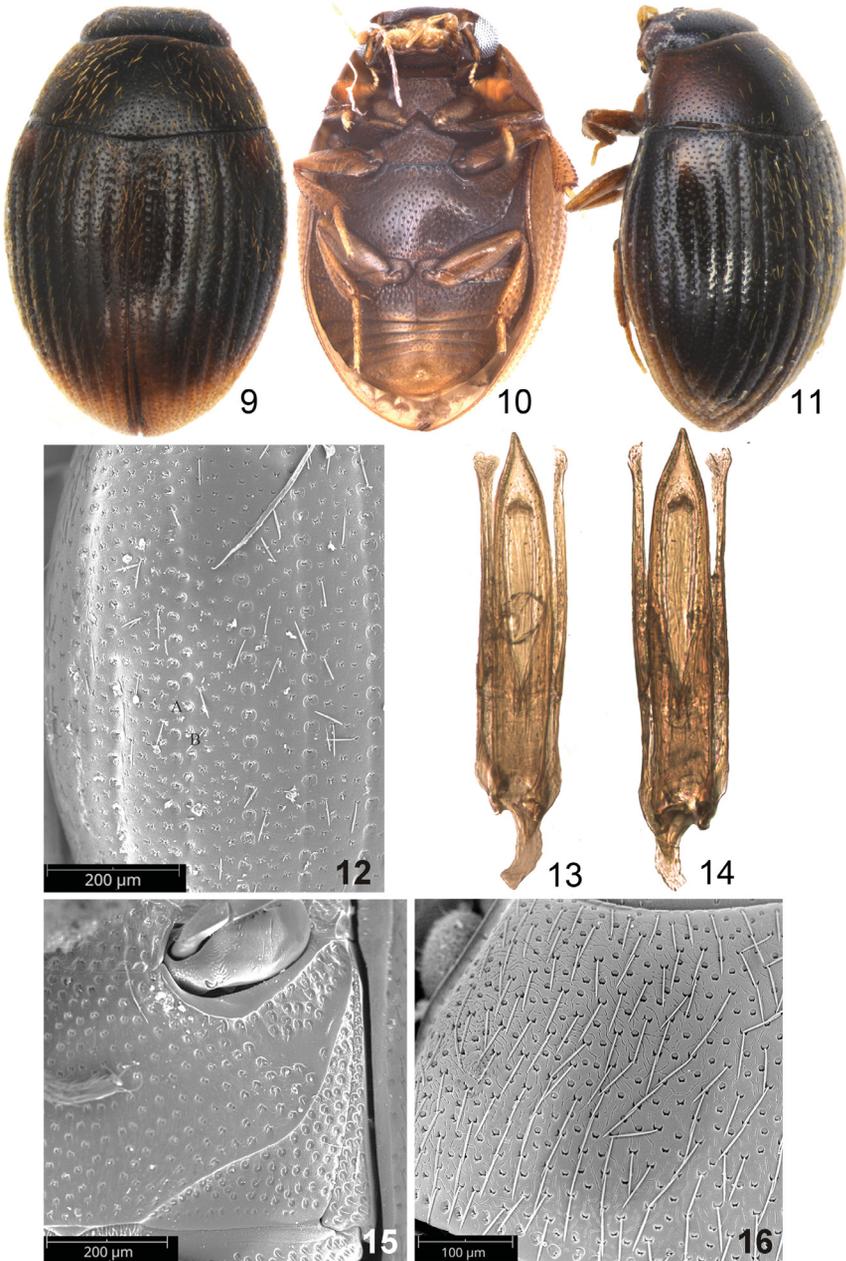
**Material examined.** CHINA: QINGHAI: 64 spec. (SYSU): China, Qinghai, Huzhu County, Beishan Shiepan, 37°02'13"N, 102°15'26.27"E, 2912 m, 3.iv.2013, F.L. Jia, R.B. Angus & Y. Zhang lgt. (with English and Chinese labels). NEI MONGOL: 1 male, 1 unsexed spec (SYSU): Yitulihe, 50°38'24"N, 121°35'24"E, 13–15.viii.2008, F.L. Jia lgt. (transcribed from Chinese). GANSU: 7 spec. (NMPC): China: Gansu province, Lazikou valley, 2120–2510 m, 34°09.9–10.1'N 103°48.2–51.9'E, 28.vi.2005, J. Hájek, D. Král & J. Růžička lgt.; 5 spec. (NMPC): China: Gansu province, Dacanglhamo (=Langmusi), 3464–3644 m, 23–25.vi.2005, 34°04.6–05.1'N 102°37.7–38.1'E, J. Hájek, D. Král & J. Růžička lgt.

**Published records.** CHINA: NEI MONGOL: without specified locality (FIKÁČEK et al. 2015a).

**Redescription.** Length 1.6–2.3 mm. Dark brown or black with light subhumeral spots, seldom reddish with lateral and basal darkening, or uniformly reddish. Pronotum without microsculpture except on extreme lateral portion (Fig. 4), punctures on head, pronotum and elytra coarse and distinct. Scutellum with punctures. Fifth abdominal ventrite in female without tubercle. Elytra with interval eight low and narrower than neighbouring intervals, but series of punctures



Figs 1–8. *Cryptopleurum minutum* Fabricius, 1775. 1–3 – habitus (1 – dorsal; 2 – ventral; 3 – lateral view). 4 – pronotal punctation. 5 – dorsolateral part of right elytron (A – seventh stria; B – eighth stria). 6 – mesoventral plate and metaventricle; 7–8 – aedeagus (7 – dorsal; 8 – ventral view).



Figs 9–16. *Cryptopleurum subtile* Sharp, 1844. 9–11 – habitus (9 – dorsal; 10 – ventral; 11 – lateral view). 12 – dorsolateral part of left elytron (A – eighth stria; B – seventh stria). 13–14 – aedeagus (13 – dorsal; 14 – ventral view). 15 – metaventrите. 16 – pronotal punctation.

distinctly separated (Fig. 5); intervals almost flat basally, becoming convex both apically and laterally (Figs 1, 3, 5) but less distinctly than in *C. coomani* and *C. sulcatum*. Metaventricle with coarser and dense punctures. Aedeagus (Figs 7, 8) with parameres ca. 1.2× as long as phallobase; parameres gradually narrowed from base to basal third, then almost parallel to subapex, apex narrowly sharpened; median lobe broad, basal two thirds almost parallel, and then gradually narrowed apicad.

**Differential diagnosis.** This species is similar to *C. subtile*, but can be distinguished from the latter by the darker color, and the pronotum, elytra and metaventricle with coarser and more dense punctures. The head and metaventricle are without fine longitudinal microsculpture, and the pronotum only has very fine scale-like microsculpture extremely laterally.

**Biology.** Living in rotting organic material, such as rotting grass, excrements of mammals, also among various plant debris; in Europe also recorded from bird nests (RYNDEVICH & LUNDYSHEV 2005).

**Distribution.** Widespread in Palaearctic Region except north Africa, introduced to the Nearctic (SMETANA 1978, HANSEN 1999). In China only known from northern parts (Gansu, Nei Mongol, Qinghai). **New record for Gansu and Qinghai.**

### *Cryptopleurum subtile* Sharp, 1884

(Figs 9–16)

*Cryptopleurum subtile* Sharp, 1884: 461.

*Cryptopleurum subtile*: HANSEN (1999: 310): catalogue, complete synonymy.

**Type locality.** Japan: Hokkaido Is., Otaru.

**Material examined.** CHINA: NEI MONGOL: 2 spec. (SYSU): Hailar City, 49°12'36"N, 119°44'24"E, 23–26.vii.2003, Fenglong Jia lgt. QINGHAI: 1 spec. (SHNU): Beishan, Huzhu Co., Xining City, alt. 2450 m, 36°50'24"N, 101°57'36"E, 28.vii.2004, Tang & Hu & Zhu lgt. (transcribed from Chinese). BEIJING: 1 spec. (BMHM): CHINA, b.m. 1980–491, P.M. Hammond, PEIKING, Badaling, 40°21'36"N, 116°01'12"E, 9.ix.[19]80, *Cryptopleurum subtile* Sharp, det. Ryndevich S.K., 2007. HEBEI: 96 spec. (SYSU): Handan, City, Piancheng, County, 36°4'02"N, 113°39'30"E, 1109 m, 1.viii.2013, Xie & Lin lgt. (with English and Chinese labels). SHANXI: 20 spec. (SYSU): Lishan, Nature Reserve, Yicheng County, Douduo village, 35°26'22"N, 112°00'36"E, 1558 m, 25.vii.2013, Jia, Xie & Lin lgt. (with English and Chinese labels). SHAANXI: 6 spec. (SYSU, SHNU): China, Shaanxi Prov., Ankang City, Ningshaan County, Houditang, Forestry Centre, 33°26'N, 108°27'E, alt. 1500–1700 m, 12.vii.2012, Li Li-zhen lgt. HUBEI: 39 spec. (SYSU): Dabieshan Mts, Wujianshan, 31°7.6'N, 115°45.1'E, 29.vi.2009, light trap, Zhenhua Liu lgt. (transcribed from Chinese). HUNAN: 5 spec. (SYSU): Zhuzhou, Yanling County, Taoyuandong, Xihua village, 26°31'23"N, 114°05'75"E, 25.v.2014, Xiaolin Liu, Renchao Lin & Chang Pan lgt. (transcribed from Chinese); 5 spec. (SYSU): Yanling County, Taoyuandong scenic area, service centre, 26°30'06"N, 114°00'53"E, 25.v.2014, Xiaolin Liu, Chang Pan & Weicai Xie lgt. (transcribed from Chinese); 1 male (SYSU): Hunan, Qianban, Anjiang, 27°18'36"N, 110°08'24"E, 17.vi.1965, Zhenyao Chen lgt. (transcribed from Chinese). GUIZHOU: 1 spec. (SYSU): Guizhou Prov. Weng'ang, Town, Maolan Nature, Reserve. 814 m, 25°15'08"N, 107°53'56"E, 24.vii.2015, Renchao Lin & Yudan Tang lgt. SICHUAN: 7 spec. (SYSU): Ya'an, Liziping Natural Reserve, Gongyihai Station, 2065 m, 29°01'32.14"N, 102°23'03.87"E, 24–25.vii.2016, Yudan Tang & Ruijuan Zhang lgt. (transcribed from Chinese); 26 spec. (SYSU): Ya'an, Liziping Natural Reserve, Menghuocheng, 2644m, 28°53'16.5"N, 102°21'21.26"E, 26.vii.2016, Yudan Tang & Ruijuan Zhang lgt. (transcribed from Chinese). ZHEJIANG: 1 spec. (SHNU): Longwangshan N. R., Anji County, alt. 250 m, 30°24'36"N, 119°25'12"E, 26.iv.2006, Zhuling lgt.; 6 spec. (SYSU): Tianmushan, 30°19'12"N, 119°25'48"E, 27.vii–10.viii.2009, Fenglong Jia lgt. (transcribed from Chinese). SHANGHAI: 2 spec. (SHNU): Botanic Garden, Shanghai City, 31°23'48"N, 121°28'12"E, 16.iv.2006, Hu & Tang lgt. JIANGXI: 3 spec. (SYSU): Jinggangshan, Jingzhushan scenic area, 26.54°N 114.12°E, 04.x.2010, Fenglong Jia lgt. (transcribed from Chinese); 8 spec. (SYSU): CHINA: Jiangxi Prov., Jinggangshan Mts., Baiyinhu env., 26°36.8'N, 114°11.1'E, 800 m, Fenglong Jia lgt. (with

English and Chinese labels); 14 spec. (SYSU): Jinggangshan, Xiangzhou, 349 m, 26°36.0'N, 114°16.0'E, Lijun Yang lgt. (with English and Chinese labels); 3 spec. (SYSU): same data as the former but collected by Fenglong Jia; 1 spec. (SYSU): Jinggangshan, Xiaoxidong, 26.48°N 114.19°E, 02.viii.2011, Lijun Yang lgt.; 1 spec. (SYSU): Jiangxi, Shangrao, Sanqingshan, 28°54'36"N, 118°04'12"E, 15–20.iv.2007, Fenglong Jia lgt. (transcribed from Chinese); 1 spec. (SYSU): China, Jiangxi, Sanqingshan, 28.93°N 118.05°E, Living lgt.; 3 spec. (SYSU): Jiangxi Prov. Ji'an City, Anfu, County, Wugongshan, 27.19°N 114.13°E, 400 m, 5.viii.2015, Renchao Lin & Yudan Tang lgt.; 2 male, 11 spec. (NMPC): Jinggangshan Mts., Xiangzhou (forest valley S of the village), 26.58°N 114.27°E, 374 m, 26. iv. 2011, Fikáček & Hájek lgt. **FUJIAN**: 1 male (SYSU): Fujian, Nanjing, Hexi town, (cow dung), 24.65°N 117.05°E, 13.vii.2010, Fenglong Jia lgt. (transcribed from Chinese). **GUANGDONG**: 5 spec. (SYSU): Guangdong, Xingning, Luofu-Huangmaozhang Nature Reserve, 23.25°N 114.03°E, 02.vii.2004, Fenglong Jia lgt. (transcribed from Chinese); 1 spec. (SYSU): Guangzhou, Shipai, 23.13°N 113.26°E, 18.x.1964, Zhaojian Liang lgt. (transcribed from Chinese); 4 spec. (SYSU): Guangdong, Fengkai, Heishiding, 23.46°N 111.90°E, 05.x.2011, Living lgt. (transcribed from Chinese); 2 spec. (SYSU): Guangdong, Gaoming, Yangmei town, 23.62°N 113.42°E, 23–26.iv.2006, Fenglong Jia lgt. (transcribed from Chinese); 1 spec. (SYSU): Guangdong, Puning, 23.30°N 116.16°E, 3.i.1959, Zhelong Pu lgt. (transcribed from Chinese); 1 spec. (SYSU): Guangdong, Dadongshan, 24.84°N 112.52°E, 28.vi.2011, Living lgt. **GUANGXI**: 1 spec. (SYSU): Guangxi, Yangshuo, 24.82°N 111.26°E, 1958, Shoujian Chen lgt. (transcribed from Chinese). **YUNNAN**: 1 spec. (SYSU): Yingjiang County, Tongbiguan, Kaibangya lake, 24.58°N 97.67°E, 1289m, 25.v.2016, Yudan Tang & Ruijuan Zhang lgt. (transcribed from Chinese); 1 spec. (NMPC): Gaoligong Mts. NNR. Baihualing, 25.26°N 98.80°E, at light 1535 m, 6–8.vi.2016, Hájek & Růžička lgt. **JAPAN**: 1 spec. (SYSU): Japan, Hokkaido, Hokodate, 41.77°N 140.73°E, viii.2003, F.L. Jia lgt.; 1 male (SYSU): Naga-Numa, Shika-Numa, Atsuma, Hokkaido Japan, 42.72°N 141.88°E, 12.vi.1994, M. Ohara, (decaying vegetable); 2 spec. (SYSU): Ishigaki-jima, Nansei, Iss., Japan. 42.83°N 143.36°E, 4.ii.1996, K. Tokahashi, collected by Track trap; 1 spec. (SYSU): Otaru (Osyoro), Hokkaido, Japan, 43.22°N 142.86°E, 3.ix.1991, M. Ohara lgt.

**Published records.** **CHINA**: **BEIJING, JIANGXI, TAIWAN, ZHEJIANG** (without specified localities; FIKÁČEK et al. 2015a).

**Redescription.** Length 1.6–2.3 mm. Yellowish red to reddish brown with black head and sternites; head, pronotum, and metaventral elevation with distinct longitudinal microsculptural lines (Fig. 16). Punctures on pronotum and elytral intervals fine and sparse. Elytral striae seven and eight more or less fused but series of punctures distinctly separated (Fig. 12), intervals flat basally but somewhat convex apically and laterally (Figs 9, 11). Paramere (Figs 13, 14) ca. 1.25× as long as phallobase, gradually narrowed from base to middle, almost parallel from middle to subapex, distinctly expanded outwards, with membrane and setae subapically inwards. Median lobe broad, almost parallel at basal four-fifth, abruptly narrowed at apical fifth and gradually narrowed apicad, gonopore situated subapically.

**Differential diagnosis.** This species is similar to *C. minutum*, but it can be easily distinguished from the latter by its light color, and the pronotum, elytra and metaventrite with finer and moderately dense punctures. The head, and disc of the pronotum and metaventrite have distinct short longitudinal microsculpture between punctures.

**Biology.** Living in decaying organic material, particularly in compost heaps, barn manure, excrements of mammals (e.g. horse and cattle dung), among various plant debris, also in nests of birds (RYNDEVICH & LUNDYSHEV 2005). This species can be easily collected at light from April to November in South China.

**Distribution.** Widespread in Eastern Palearctic and China, in early 20th century introduced to North America, and in 1960's to Europe (SMETANA 1978, HANSEN 1999). In China previously recorded from Beijing, Jiangxi, Taiwan and Zhejiang. **Newly recorded for Fujian, Guangdong, Guangxi, Guizhou, Hebei, Hubei, Hunan, Nei Mongol, Qinghai, Shaanxi, Shanghai, Shanxi, Sichuan, Yunnan.**

***Cryptopleurum coomani* d'Orchymont, 1926**

(Figs 17–23)

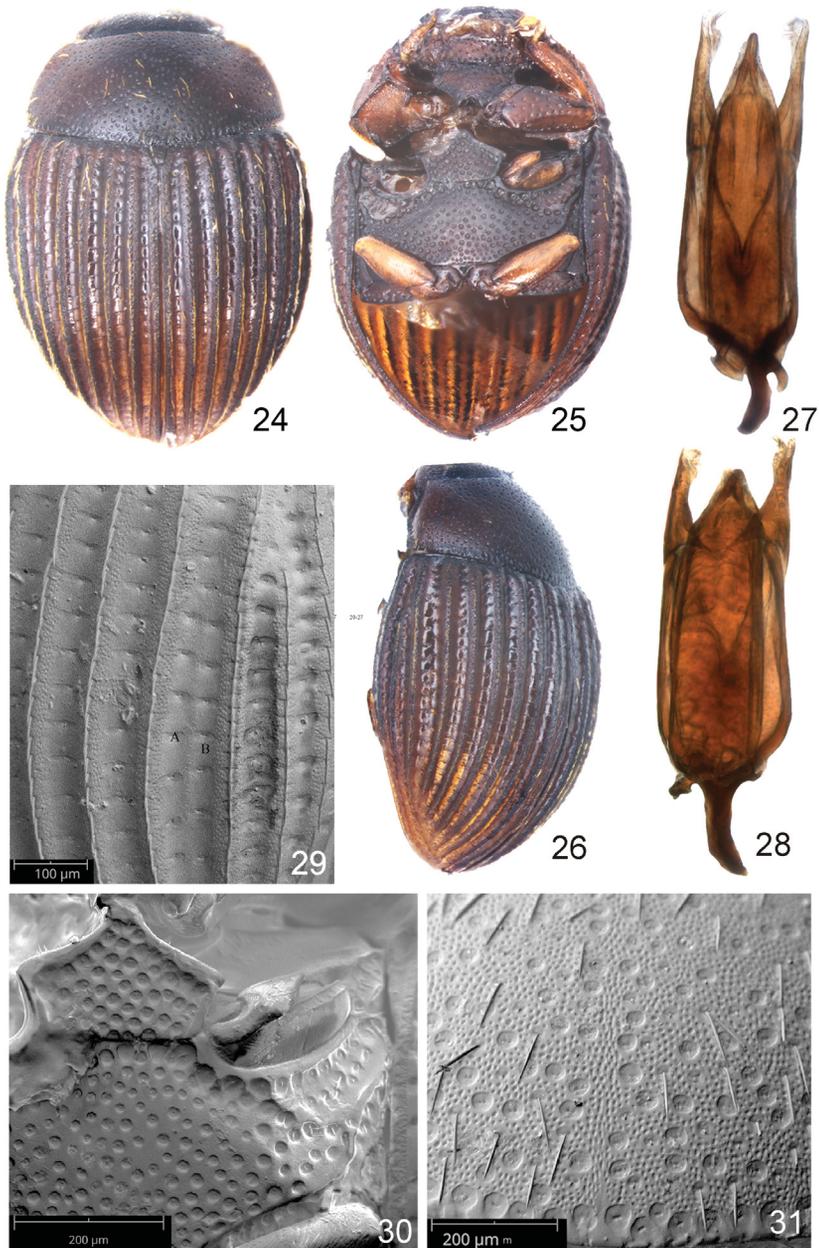
*Cryptopleurum Coomani* d'Orchymont, 1926: 229.*Cryptopleurum coomani*: HANSEN (1999: 309): catalogue.**Type locality.** Vietnam, Tonkin, Lac Tho (near Hoa Binh).**Type material examined.** PARATYPE: male (ISNB): Coll. A. d'Orchym. // LACTHO / Tonkin/ de Coomani // A. D'Orchymont det. [handwritten] / *Cryptopleurum* [handwritten] / Coomani (handwritten)/ Co-type d'Orchym // Coll. A. Knisch / COTYPUS.**Additional material examined.** CHINA: GUANGDONG: 1 male and 2 females (SYSU): China, Guangdong, Gao-ming, Yangmei town (transcribed from Chinese), 23.62°N 113.42°E, 23–26.iv.2006, lgt. Fenglong Jia (transcribed from Chinese).**Redescription.** Length 1.9–2.0 mm. Pronotum with distinct double-sized punctures, slightly shagreened between punctures (Fig. 23). Elytra with intervals distinctly elevated from base to apex (Figs 17, 19), but distinctly broader than those of *C. sulcatum*, each elytral interval with dense irregular punctures at least on basal half (Figs 17, 20), seventh and eighth striae very close and in a same groove, interval eight not elevated, punctural striae distinctly narrower than other intervals (Fig. 20). Elevation of metaventrite strongly shagreened between coarse punctures. Aedeagus (Fig. 21). *Dorsal view*: Paramere ca. 1.4× as long as phallobase, gradually narrowed from base to middle and almost parallel from base to subapex, apex narrowly rounded and curved inwards subapically, with membrane inwards subapically; median lobe ca. 10× as long as width at midlength, distinctly narrowed about apical third, ca. as wide as paramere apically.**Differential diagnosis.** This species is similar to *C. sulcatum*, but can be easily distinguished from the later by each elytral interval having dense irregular punctures at least on the basal half (Fig. 20), the punctural striae are distinctly narrower than the intervals (Fig. 20), and elytral intervals are highly convex but not costate.**Biology.** Chinese specimens were collected in excrements of cattle that is not too fresh, but is wet enough.**Distribution.** Previously only known from Vietnam. **First record for China (Guangdong).*****Cryptopleurum sulcatum* Motschulsky, 1863**

(Figs 24–31)

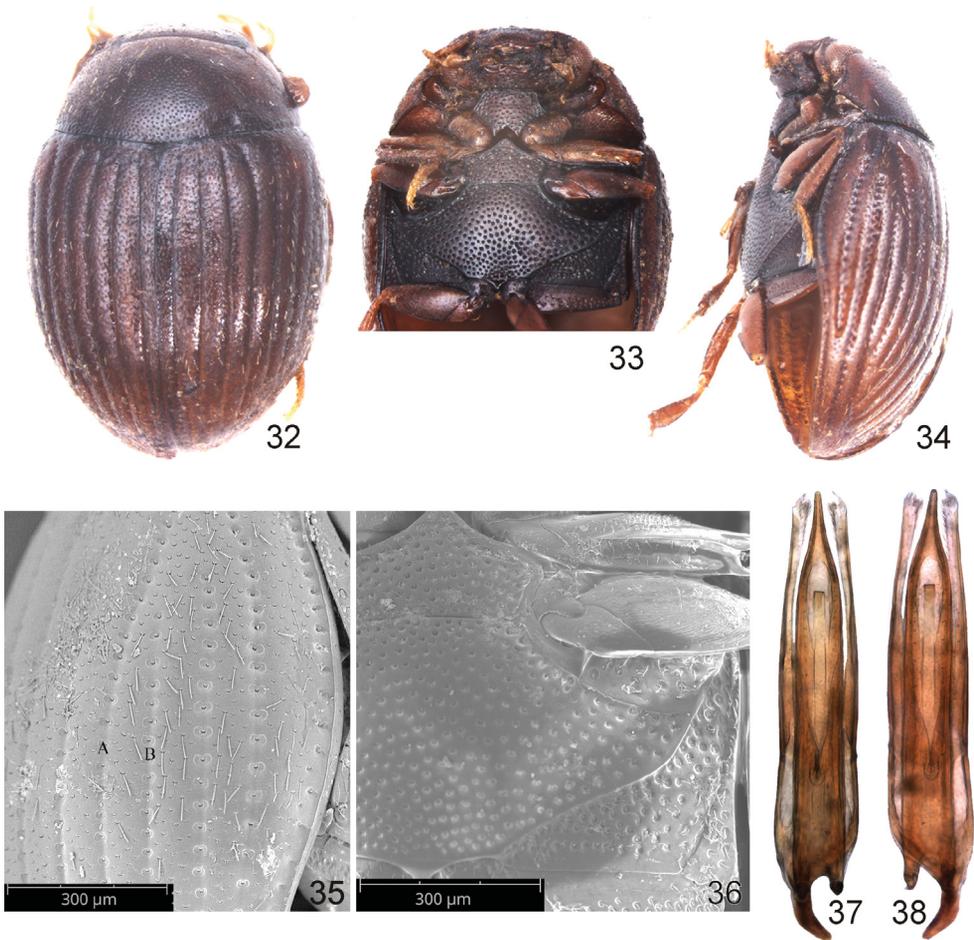
*Cryptopleurum sulcatum* Motschulsky, 1863: 448.*Cryptopleurum sulcatum*: HANSEN (1999: 310): catalogue.**Type locality.** Ceylan [= Sri Lanka].**Material examined.** CHINA: HAINAN: 1 male (SYSU): Hainan Prov. Ledong, Jiayi Nature Reserve, 18.83°N 109.18°E, 10–11.ix.2013, Coll. Weicai Xie lgt. (transcribed from Chinese). YUNNAN: 1 male (SYSU): Yingjiang County, Nabang, 24.75°N 97.56°E, 239 m, 27.v.2016, Yudan Tang & Ruijuan Zhang lgt.; 1 spec. (NMPC): Tongbiguan vill., at light, 1340 m, 24.60°N 97.65°E, 24–26.vi.2016. Hájek & Růžička lgt.**Redescription.** Length 1.8 mm. Dark yellow brown with apical portion of elytra pale; ventral side black with reddish-brown legs. Head and pronotum strongly shagreened between punctures (Fig. 31); a few smaller punctures mixed among coarse punctures on pronotum (Fig. 31). Elytra with intervals strongly elevated and gradually narrowed from base to apex (Figs



Figs 17–23. *Cryptopleurum coomani* d'Orchymont, 1926. 17–19 – habitus (17 – dorsal; 18 – ventral; 19 – lateral view). 20 – dorsolateral part of right elytron (A – seventh stria; B – eighth stria). 21 – aedeagus (dorsal, lateral and ventral view). 22 – meso- and metaventrite. 23 – pronotal punctation.



Figs 24–31. *Cryptopleurum sulcatum* Motschulsky, 1863. 24–26 – habitus (24 – dorsal; 25 – ventral; 26 – lateral view). 27–28 – aedeagus (27 – ventral, 28 – dorsal view). 29 – dorsolateral part of right elytron (A – seventh stria, B – eighth stria). 30 – meso- and meta-ventrite. 31 – pronotal punctation.



Figs 32–38. *Cryptopleurum ferrugineum* Motschulsky, 1863. 32–34 – habitus (32 – dorsal; 33 – ventral; 34 – lateral view). 35 – lateral part of right elytron (A – seventh stria; B – eighth stria). 36 – meso- and metaventrite. 37–38 – aedeagus (37 – dorsal, 38 – ventral view).

24, 26, 29) (stronger and narrower than those of *C. coomani*), striae much deeper than other known species from the Oriental and Palearctic Regions, each interval with a regular row of small punctures (Fig. 29); seventh and eighth striae very close, both situated in the same groove (Fig. 29), interval eight only slightly elevated as a threadlet, punctured striae wider than intervals in posterior quarter. Elevation of metaventrite distinctly shagreened between coarse punctures. Aedeagus (Figs 27, 28): stout, length of parameres and phallobase combined ca. 4× as long as basal width of both parameres. Paramere ca. 2.3× as long as phallobase, ca. 8× as long as wide medially, apex narrowly rounded and curved inwards subapically, with

membrane projecting inwards subapically. Median lobe ca.  $5.3\times$  as long as width at midlength, distinctly narrowed about apical eighth, apex ca. as wide as paramere at level of paramere.

**Differential diagnosis.** This species is similar to *C. coomani*, but can be distinguished from the latter by each elytral interval only having a row of fine setiferous punctures, the punctural striae being distinctly wider than the intervals on the basal half (Fig. 29) and being as wide as or slightly wider than the interval on in the posterior fourth (Fig. 26). The elytral intervals are sharply costate.

**Biology.** Unknown.

**Distribution.** The Oriental species known from India, Sri Lanka, Vietnam, peninsular Malaysia and Singapore. **First record for China (Yunnan, Hainan).**

### *Cryptopleurum ferrugineum* Motschulsky, 1863

(Figs 32–38)

*Cryptopleurum ferrugineum* Motschulsky, 1863: 448.

*Cryptopleurum ferrugineum*: HANSEN (1999: 309): catalogue, complete synonymy.

**Type locality.** Continent indien [= India].

**Type material.** Not examined.

**Additional material examined.** CHINA: GUANGDONG: 2 males, 3 females (SYSU): Canton, South China, Honam Island, Panyu District, 22.94°N 113.38°E, 9.iii.1948 (hand-written).

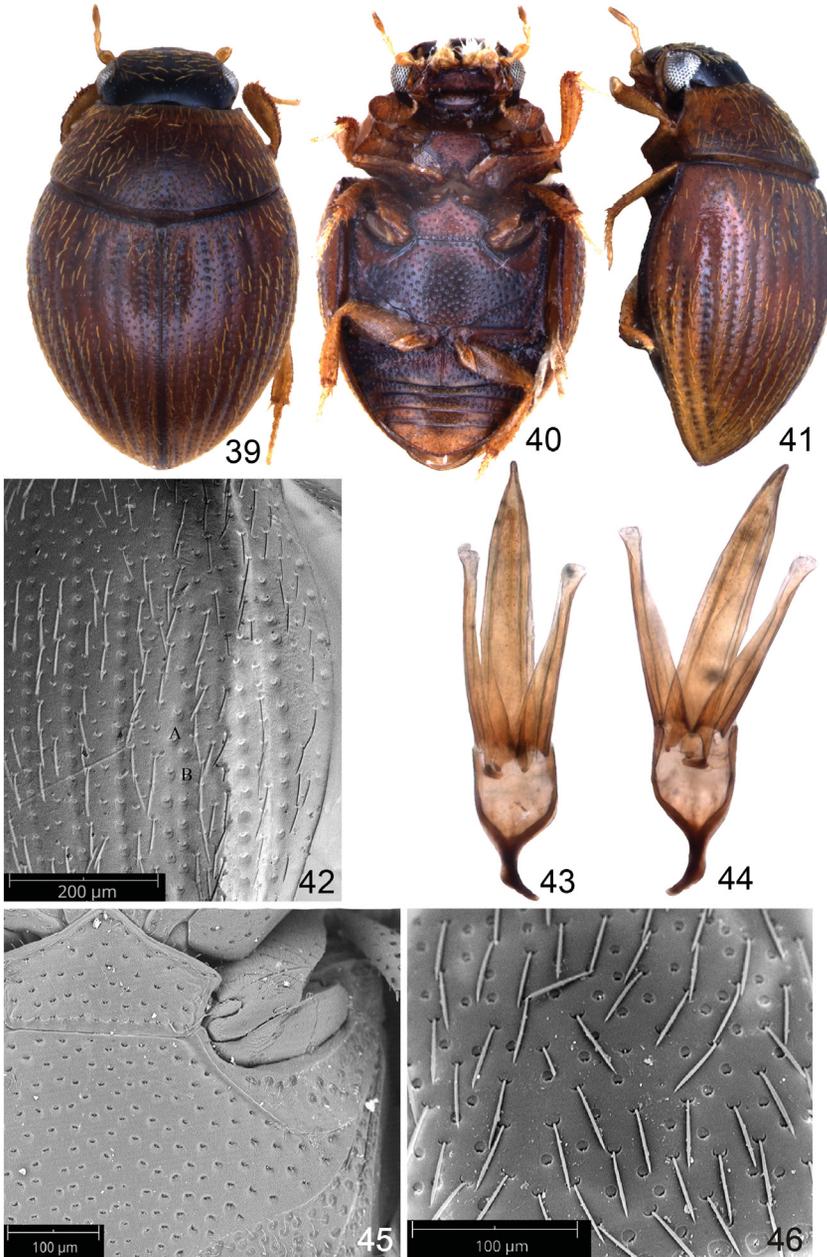
**Redescription.** Length 1.9–2.1 mm. Dark yellow brown with light color apically. Elytra with intervals elevated apically (Figs 32, 34), intervals much broader than striae, with irregular punctures on intervals (Figs 32, 35), the seventh and eighth striae completely separated (Fig. 35), interval eight as wide as neighbor intervals. Metaventricle with a curved fine elevated line enclosing mesocoxal cavity that derived from femoral line near anterolateral angle of metaventricle (Figs 36), middle portion of elevation smooth between coarse punctures but shagreened around edges. Aedeagus (Figs 37, 38): length of parameres and phallobase combined ca.  $7\times$  as long as basal width of both parameres. Paramere ca.  $1.7\times$  as long as phallobase, apex narrowly rounded and curved inwards subapically, with membrane projecting slightly inwards subapically. Median lobe ca.  $7.2\times$  as long as width at midlength, abruptly narrowed at apical fifth, apical portion thin.

**Differential diagnosis.** This species can be easily distinguished from other known species occurring in the Oriental Region by these two characters combined: elytra with the seventh and eighth striae completely separate, interval eight as wide as the neighboring intervals (Figs 34, 35); and the metaventricle with a curved elevated line enclosing the mesocoxal cavity, being sharply defined mesally, and laterally connected to the femoral lines near the anterolateral angle (Fig. 36).

**Biology.** Unknown.

**Distribution.** Widespread Oriental species so far recorded from India, Sri Lanka, Vietnam, Singapore and Sumatra (Indonesia), in the west reaching up to Saudi Arabia. **Newly recorded from China (Guangdong).**

**Remark.** *Cryptopleurum ferrugineum* was recorded with a question mark by d'ORCHYMONT (1913) from Taiwan (Taihorin), which was adopted by KNISCH (1924) and FIKÁČEK et al. (2015a). However, d'ORCHYMONT (1926) stated that this record actually refers to *C. subtile*,



Figs 39–46. *Cryptopleurum pygmaeum* d'Orchymont, 1913. 39–41 – habitus (39 – dorsal; 40 – ventral; 41 – lateral view). 42 – lateral part of right elytron (A – seventh stria, B – eighth stria). 43–44 – aedeagus (43 – dorsal, 44 – ventral view). 45 – meso- and metaventrete. 46 – pronotal punctation.

which was correctly reflected by HANSEN (1999). Therefore, previous records of *C. ferrugineum* from Taiwan are based on misidentification, and the species is not known to occur in Taiwan at the moment.

### *Cryptopleurum pygmaeum* d'Orchymont, 1913

(Figs 39–46)

*Cryptopleurum pygmaeum* d'Orchymont, 1913: 15.

*Cryptopleurum pygmaeum*: HANSEN (1999: 309): catalogue.

**Type locality.** Formosa [= Taiwan], Taihorin.

**Type material examined.** PARATYPE: 1 spec. (ISNB): 'Taihorin / Formosa / H. Sauter, 23.90°N 121.08°E, VII, 1911 // Coll. A. d'Orchymont // *Cryptopleurum / pygmaeum / Co-type d'Orch // Para- / type.*'; 1 spec. (ISNB): 'Taihorin / Formosa / H. Sauter, 23.90°N 121.08°E, VII.1911 // Coll. A. d'Orchymont // *Para- / type.*'

**Additional material examined.** None.

**Redescription.** Length 1.5 mm. Yellow brown with head black. Elytra with intervals elevated apically and laterally (Fig. 41), intervals much broader than striae, with vague irregular punctures on intervals, seventh and eighth striae very close and in a same groove, interval eight much lower and narrower than others (Fig. 42). Metaventrite with a curved fine elevated line enclosed mesocoxal cavity that derived from femoral line near anterolateral angle of metaventrite (Fig. 45), middle portion of elevation smooth between coarse punctures but slightly shagreened around edges. Aedeagus (Figs 43, 44): length of parameres and phallobase combined ca. 4.3× as long as basal width of both parameres. Paramere ca. 1.1× as long as phallobase, apex broadened with membrane projecting slightly inwards subapically. Median lobe ca. 6.2× as long as width at midlength, gradually narrowed apically.

**Differential diagnosis.** This species can be easily distinguished from the other known species except *C. ferrugineum* by its smaller size and the metaventrite with a curved elevated line enclosing the mesocoxal cavity, being sharply defined mesally, and laterally connected to the femoral lines near anterolateral angle. It can be separated from *C. ferrugineum* by its smaller size, elytra with the seventh and eighth striae being very close in the same groove, and interval eight being distinctly narrower than the neighboring intervals.

**Biology.** Unknown.

**Distribution.** So far only known from China (Taiwan) and Vietnam.

### A key to the Chinese species of *Cryptopleurum*

(modified from d'ORCHYMONT 1926)

- 1 Elytra with the seventh and eighth striae completely separate, interval eight as wide as neighboring intervals (Figs 34, 35). Metaventrite with a curved elevated line enclosing mesocoxal cavity, sharply defined mesally and laterally connected to femoral lines near anterolateral angle (Fig. 36). Apical sixth of median lobe strongly narrowed (Figs 37, 38). ..... *C. ferrugineum* Motschulsky, 1863
- Elytra with the seventh and eighth striae very close in the same groove, interval eight distinctly narrower than neighboring intervals (Figs 5, 12, 20, 29, 42). Metaventrite with or without fine elevated line enclosing mesocoxal cavity. .... 2

- 2 Size 1.3–1.5 mm. Metaventricle with a curved fine elevated line totally enclosing meso-coxal cavity and laterally connected to the femoral line (Fig. 45). ..... *C. pygmaeum* d'Orchymont, 1913
- Size 1.6–2.2 mm. Metaventricle with anterolateral portion bearing different microsculpture, not delimited by a line at all, or at most slightly delimited by a short elevated line laterally (Figs 6, 15, 22, 30). ..... 3
- 3 Pronotum with double punctation, shagreened between punctures (Figs 23, 31). Elytral striae strongly impressed from base to apex, elytral intervals 2–5 and 7–9 highly convex or costiform, punctures on intervals fine, at most as coarse as the smaller ones on pronotum. .... 4
- Pronotum with punctures of the same size only (Figs 4, 16, 46), interstices smooth or with short longitudinal microsculpture. Elytral striae weakly impressed in basal half, somewhat impressed apically, intervals simple or moderately convex apically (Figs 1, 3, 9, 11), punctures on intervals almost as coarse as those on pronotum. .... 5

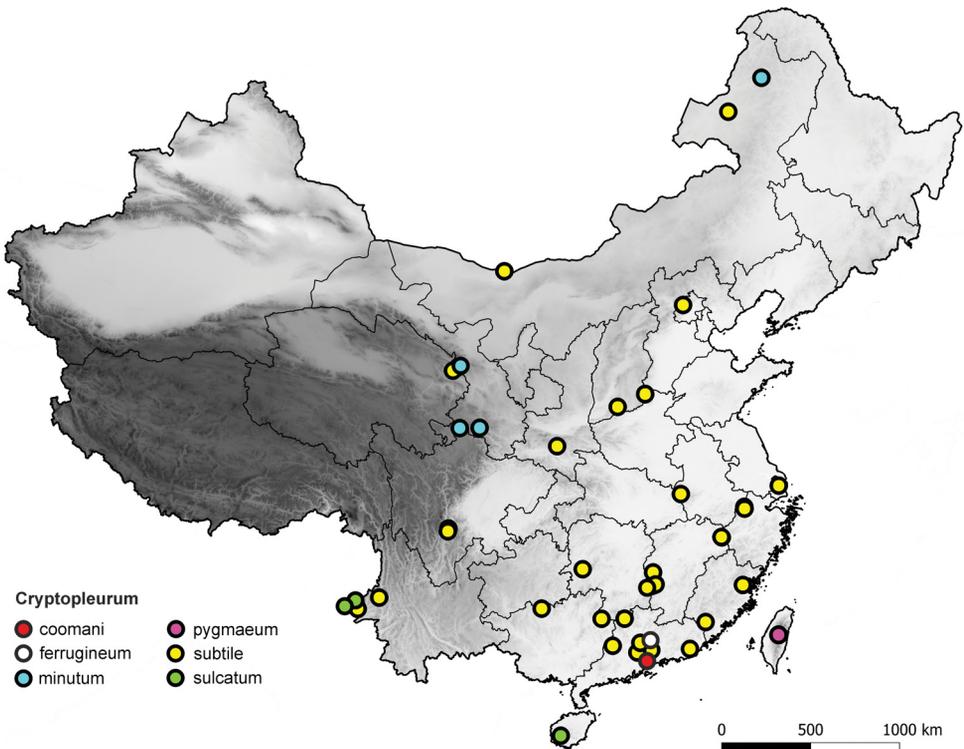


Fig. 47. Distribution of *Cryptopleurum* species in China.

- 4 Each elytral interval with dense irregular punctures at least on basal half (Fig. 20), punctural striae distinctly narrower than interval (Fig. 20). Elytral intervals highly convex but not costate. Aedeagus slender, length of parameres and phallobase combined ca. 5.5× as long as basal width of both parameres combined. Median lobe ca. 10.0× as long as width at middle, distinctly narrowed in ca. apical third. Parameres ca. 1.4× as long as phallobase (Fig. 21). ..... *C. coomani* d'Orchymont, 1926
- Each elytral interval only with a row of fine setiferous punctures, punctural striae distinctly wider than intervals on basal half (Figs 26, 29) and as wide as or slightly wider than interval on posterior fourth (Fig. 26). Elytral intervals sharply costate. Aedeagus stout, length of parameres and phallobase combined ca. 4× as long as basal width of both parameres. Median lobe ca. 5.3× as long as width of middle, distinctly narrowed about apical eighth. Parameres ca. 2.3× as long as phallobase (Figs 27, 28). ..... *C. sulcatum* Motschulsky, 1863
- 5 Elytra yellowish brown (Fig. 9), dark individual more or less brown except apex (Fig. 11). Pronotum, elytra and metaventricle with finer and moderate dense punctures (Figs 12, 15, 16). Head, pronotum and metaventricle with distinct short longitudinal microsculpture between punctures (Fig. 16). Parameres distinctly expanded outwards subapically, median lobe broad, almost parallel at basal fourth to fifth, abruptly narrowed at apical fifth and gradually narrowed apicad (Figs 13, 14). ..... *C. subtile* Sharp, 1884
- Elytra black or blackish brown. Pronotum, elytra and metaventricle with coarser and dense punctures (Figs 4, 5, 6). Head and metaventricle without fine longitudinal microsculpture (Fig. 6), pronotum only with very fine scale-like microsculpture extremely laterally (Fig. 4). Parameres not expanded outwards subapically, median lobe broad, basal two-thirds almost parallel, and then gradually narrowed apically (Figs 7, 8). ..... *C. minutum* (Fabricius, 1775)

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