

ORIGINAL ARTICLE

Review of the bee genus *Icteranthidium* Michener, 1948 (Hymenoptera: Apoidea: Megachilidae: Anthidiini) from China

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Abstract The taxonomy of Chinese bees of the genus *Icteranthidium* Michener, 1948 is revised here, including five species. Species information are modified in detail, such as incorrect publication date, misspelling, misidentification and their synonymic relationships. Flower association and general distribution of each species are also provided. Illustrations for these species, of which specimens deposited in Institute of Zoology, Chinese Academy of Sciences, are presented. A key to all Chinese known species of *Icteranthidium* is provided.

Key words Apiformes, Anthidiini, fauna, illustration, taxonomy.

1 Introduction

The genus *Icteranthidium* was erected by Michener (1948) as a genus in Anthidiini. In 1980, Warncke placed all nonparasitic Anthidiini of the western Palaearctic Region in the genus *Anthidium*, degraded *Icteranthidium* as a subgenus, and reported 15 west Palaearctic species under it. However, most scholars (Pasteels, 1969; Michener & Griswold, 1994; Banaszak & Romasenko, 1998; Michener, 2000, 2007; Wu, 2006; Ornos *et al.*, 2008; Proshchalykin, 2013; Nadimi *et al.*, 2014; Murao *et al.*, 2015) did not follow the treatment and still treated *Icteranthidium* as an independent genus.

Michener (2000, 2007) included *Icteranthidium* in his series A, one of the two informal groups of Anthidiini, of which the female bees have three or four teeth, or the teeth rounded and at least part of them separated by rounded emarginations if the female has more than four teeth. He also commented that *Icteranthidium* contains species with rich yellow markings or mostly yellow, the body form similar to *Dianthidium*, and the body size variable. *Icteranthidium* ranges from Morocco and Portugal to Mongolia; it is particularly well represented in the xeric areas of Asia, also occurs in southern Europe (north to Hungary), northern Africa south in the Sahel to Senegal, Mali, Chad, and northern Kenya, and southeast to Baluchistan in Pakistan (Michener, 2000, 2007).

According to the database of Apoidea, the genus *Icteranthidium* contains 25 species worldwide, but only two species were recorded in China, *I. laterale* (Latreille, 1809) and *I. limbiferum* (Morawitz, 1875) (Ascher & Pickering, 2020). In 2006, Wu recorded and redescribed five species from China, with a key to them in her *Fauna Sinica*. However, some incorrect information of these species were present, such as misspelling, incorrect publication date and misidentification. Here, based on the information of the previous publications and the reexamination of the specimens from the Insect Collection of Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS), we confirm five species of *Icteranthidium* occurring in China (Table 1), verify the information of Chinese species, and illustrate the Chinese species of the genus *Icteranthidium*.

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Table 1. Species of *Icteranthidium* currently recognized from China with information on the known sexes and distributions.

Species	Name in Wu (2006)	Sexes known	Distribution in China
<i>I. croceum</i> (Morawitz, 1877)	<i>I. crocerum</i> (Morawitz, 1878), misspelling	♀, ♂	China (Inner Mongolia)
<i>I. ferrugineum</i> (Fabricius, 1787)	<i>I. flavipes</i> (Morawitz, 1895), synonym	♀, ♂	China (Xinjiang)
<i>I. grohmanni</i> (Spinola, 1838)	<i>I. latreillei</i> (Lepelletier, 1841), synonym	♀, ♂	China (Xinjiang)
<i>I. laterale</i> (Latreille, 1809)	<i>I. laterale</i> (Latreille, 1809)	♀, ♂	China (Xinjiang)
<i>I. limbiferum</i> (Morawitz, 1875)	<i>I. venustum</i> (Morawitz, 1878), misidentification	♀, ♂	China (Xinjiang)

2 Materials and Methods

All specimens examined in this study are deposited in the Insect Collection of the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS). The specimens were examined with a Nikon SMZ 1500 stereomicroscope and images were recorded with a Nikon D7000 digital camera. Final images represent a composite of several photographs taken at different focal planes and combined using the program Helicon Focus 6. All images were post-processed for contrast and brightness using Adobe Photoshop®. The morphological terminology follows Michener (2007). Abbreviations T and S denote terga and sterna, respectively.

3 Systematics

Icteranthidium Michener, 1948

Icteranthidium Michener, 1948: 25. Type species: *Anthidium limbiferum* Morawitz, 1875, by original designation.

Diagnosis. According to Michener (2007), the diagnosis of the genus is as follows: Moderate-sized (body length: 7.5–18.0 mm); mandible with 4 short and large teeth in female and with 3 large teeth in male; maxillary palpus two-segmented; subantennal suture straight or nearly so; preoccipital ridge not carinate above but strongly so laterally, the carina slanting forward to the posterior mandibular articulation; pronotal lobe strongly lamellate; axilla usually pointed posteriorly; omaulus lamellate, but not continued onto venter of thorax; propodeum without fovea behind spiracle and row of pits across upper margin; arolia absent; basal vein of forewing nearly straight and meeting vein Cu at acute angle, jugal lobe of hind wing less than half as long as vannal lobe; T2 without a strong carina across summit of basal concavity; posterior margins of terga not depressed; T6 of female concave in profile, the margin convex with a median notch; T7 of male with a midapical projection, sometimes also a tooth or projecting lobe at each side.

Key to Chinese known species of *Icteranthidium*.

- Flagellum 10-segmented, female 2
Flagellum 11-segmented, male..... 6
- Body length 13.0–15.0 mm (Fig. 26); paraocular area black (Fig. 27)..... ***I. laterale* (Latreille, 1809)**
Body length less than 13.0 mm; paraocular area yellow or ferruginous 3
- Paraocular area maculation reaching top of eye (Fig. 2); paraocular area ferruginous; posterior margin of T2 with poorly developed median process..... 4
Paraocular area maculation not reaching top of eye (Figs 16, 36); paraocular area yellow; posterior margin of T2 either truncate or with well recognized triangle median process..... 5
- Body length 8.5–10.0 mm (Fig. 1); ventral scopa golden-yellow (Fig. 1); T1 laterally with sparse punctation, interstices reach several puncture diameters ***I. croceum* (Morawitz, 1877)**
Body length 7.5 mm; ventral scopa yellowish-brown, with very narrow white hairs at side; T1 laterally with dense punctation, interstices not reach puncture diameters..... ***I. ferrugineum* (Fabricius, 1787)**
- Body length 7.0–9.0 mm (Fig. 16); frons without yellow maculation or with a very little maculation under middle ocellus (Fig. 17); mesepisternum black, without yellow maculation (Fig. 16); posterior margin of T2 truncate (Fig. 22); T1 laterally with dense punctation, interstices not reach puncture diameters ***I. grohmanni* (Spinola, 1838)**
Body length 7.0 mm (Fig. 36); frons with a large rounded yellow maculation under middle ocellus (Fig. 37); mesepisternum with a large triangular yellow maculation (Fig. 36); posterior margin of T2 with a broad triangle median process (Fig. 42); T1 laterally with sparse punctation, interstices reach several puncture diameters ***I. limbiferum* (Morawitz, 1875)**

6. Body length 15.0–16.0 mm (Fig. 29); posterior margin of T7 deeply emarginate, midapical projection narrow and long (Fig. 35)..... *I. laterale* (Latreille, 1809)
 Body length less than 10.0 mm (Figs 4, 11); posterior margin of T7 truncate, midapical projection broad and short (Figs 10, 15, 25). 7
7. Paraocular area maculation reaching top of eye (Figs 5, 12); metasomal terga yellow or ferruginous except maculation (Figs 9, 14) 8
 Paraocular area maculation not reaching top of eye (Figs 20, 40)); metasomal terga black except maculation (Figs 24, 44) 9
8. Body length 6.0–8.0 mm (Fig. 11); metasomal terga yellow except maculation (Fig. 14); T1 laterally with dense punctation, interstices not reach puncture diameters..... *I. ferrugineum* (Fabricius, 1787)
 Body length 8.0–9.0 mm (Fig. 4); metasomal terga ferruginous except maculation (Fig. 9); T1 laterally with sparse punctation, interstices reach several puncture diameters *I. croceum* (Morawitz, 1877)
9. Body length 8.0–9.0 mm (Fig. 19); mesepisternum black, without yellow maculation (Fig. 19); T1 laterally with dense punctation, interstices not reach puncture diameters; T7 rectangularly rounded *I. grohmanni* (Spinola, 1838)
 Body length 6.0 mm (Fig. 39); mesepisternum with a large triangular yellow maculation (Fig. 39); T1 laterally with sparse punctation, interstices reach several puncture diameters; T7 rounded laterally *I. limbiferum* (Morawitz, 1875)



Figures 1–6. *Icteranthidium croceum* (Morawitz, 1877). 1–3. Female. 1. Body in lateral view; 2. Head in frontal view; 3. Mesosoma in dorsal view. 4–6. Male. 4. Body in lateral view; 5. Head in frontal view; 6. Mesosoma in dorsal view. Scale bars=1 mm.

***Icteranthidium croceum* (Morawitz, 1877)** (Figs 1–10)

Anthidium croceum Morawitz, 1877: 59, ♀. Type locality: Azerbaijan (Chemakhlinskaya).

Anthidium croceum Morawitz, 1878: Warncke, 1980: 127, ♀ (key), 172, incorrect publication date of species.

Icteranthidium croceum (Morawitz, 1877): Malysheva, 1986: 796, ♂ (new description), figs 1, 4, 7, 10, 13.

Icteranthidium crocerum (Morawitz, 1878): Wu, 2006: 137, ♀ (key), ♂ (key), 141 ♀, ♂, redescription, fig. 70, incorrect spelling of species name and incorrect publication date of species.

Icteranthidium croceum (Morawitz, 1878): Güler, 2011: 737, incorrect publication date of species.

Icteranthidium croceum Morawitz, 1877: Maharramov *et al.*, 2014: 145, incorrect nomenclature.

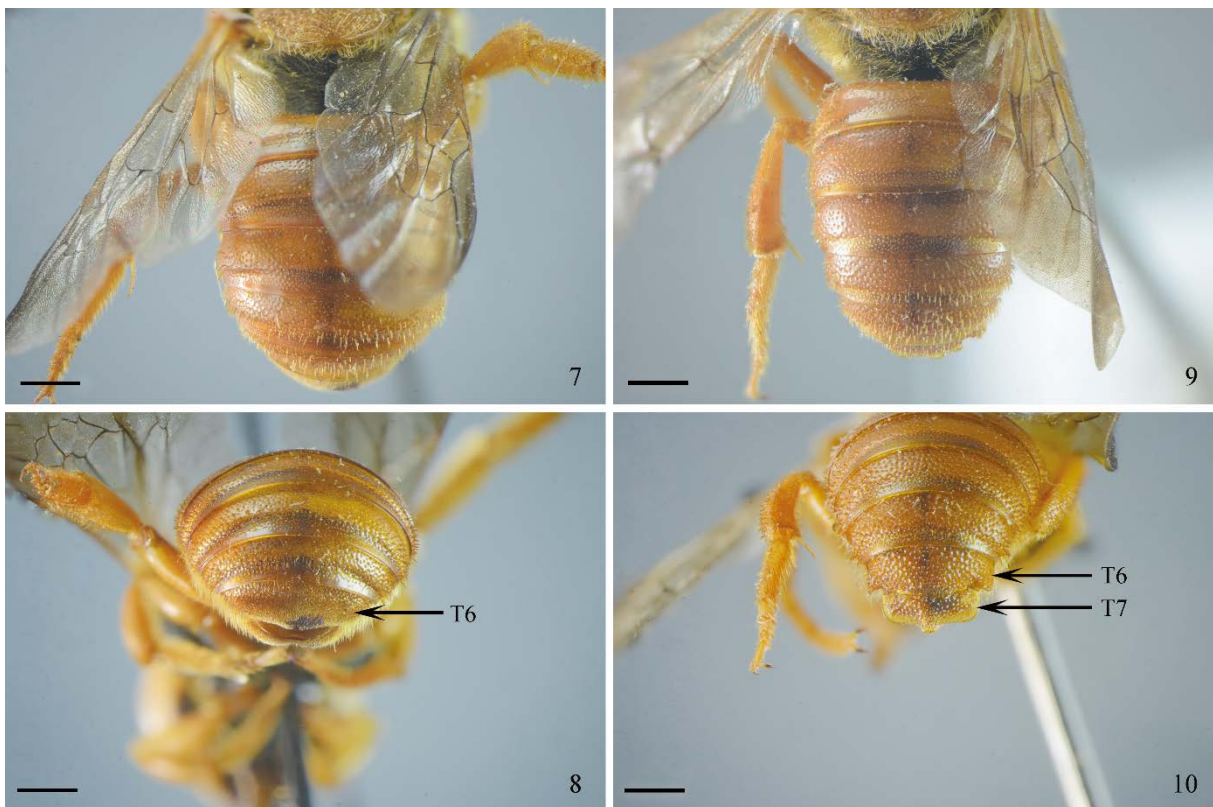
Diagnosis. The female has the paraocular area ferruginous, with the maculation reaching the top of eye; the posterior margin of T2 with poorly developed median process; ventral scopa golden-yellow; the T1 laterally with sparse punctation, interstices reach several puncture diameters. The male has the metasomal terga ferruginous except maculation; the T1 laterally with sparse punctation, interstices reach several puncture diameters.

Material examined. China, Inner Mongolia: Xilin Gol Meng, Erenhot Shi (43°48'N, 112°00'E), 2♀, VII.1971, 1♀1♂, VI.1966, 1♀, VIII.1966, leg. no information on label; Bayannur Meng, Hohhot Shi (40°48'N, 111°42'E), 1♀1♂, 6.VIII.1985, leg. no information on label; Ulanqab Meng, Siziwang Qi (41°30'N, 111°42'E), 1♀, 30.VII.1971, leg. no information on label.

Flower association. *Malva sylvestris* (Malvaceae), *Crataegus meyeri* (Rosaceae) (Maharramov *et al.*, 2014), *Medicago sativa* (Fabaceae), *Medicago polychroa* (Fabaceae) (Malysheva, 1986).

Distribution. China (Inner Mongolia), Turkey, Azerbaijan, Kazakhstan.

Remarks. Wu (2006) incorrectly identified all female specimens as male in her material examined. Ornosa (2001) confirmed the publication date of Morawitz was 1879, but Pesenko & Astafurova (2003) further confirmed the publication date was 1877.



Figures 7–10. *Icteranthidium croceum* (Morawitz, 1877). 7–8. Female. 7. Metasoma in dorsal view; 8. Apex of metasoma in dorsal view, showing the T6. 9–10. Male. 9. Metasoma in dorsal view; 10. Apex of metasoma in dorsal view, showing the T6–7. Scale bars = 1 mm.

***Icteranthidium ferrugineum* (Fabricius, 1787)** (Figs 11–15)*Apis ferruginea* Fabricius, 1787: 303, ♀. Type locality: Spain.*Anthidium discoidale* Latreille, 1809: 46, 225, ♂. Type locality: Algeria.*Anthidium flavum* Latreille, 1809: 46, 225, ♂. Type locality: Algeria. Synonymized by Warncke, 1980: 175.*Anthidium thoracicum* Klug, 1832, taf. 28, fig. 7, ♂. Type locality: Egypt. Synonymized by Warncke, 1980: 175.*Anthidium cinctum* Klug, 1832, taf. 28, fig. 8, ♂. Type locality: Arabian. Synonymized by Warncke, 1980: 175.*Anthidium posticum* Klug, 1832, taf. 28, fig. 12, ♀. Type locality: Arabia. Synonymized by Warncke, 1980: 175.*Anthidium subochraceum* Walker, 1871: 49, ♂. Type locality: Egypt (Mount Sinai). Synonymized by Warncke, 1980: 175.*Anthidium flavipes* Morawitz, 1895: 26, ♂. Type locality: Turkmenistan. Synonymized by Warncke Warncke, 1980: 175.*Anthidium ferrugineum* var. *aegypticolum* Alfken, 1932: 111, ♀. Type locality: Egypt. Synonymized by Warncke, 1980: 176.*Anthidium ferrugineum* var. *subzonatum* Alfken, 1932: 111, ♀. Type locality: Egypt. Synonymized by Warncke, 1980: 176.*Anthidium ferrugineum* var. *azarense* Mavromoustakis, 1934: 47, ♀. Type locality: Nigeria.*Dianthidium ferrugineum* spp. *subhyalinum* Mavromoustakis, 1947: 431, ♀, ♂. Type locality: Israel. Synonymized by Warncke, 1980: 176.*Dianthidium ferrugineum* (Fabricius, 1787): Mavromoustakis, 1951: 621, ♀, ♂.*Icteranthidium bilobatum* Pasteels, 1969: 416, ♀. Type locality: Egypt. Synonymized by Warncke, 1980: 176.

Figures 11–15. *Icteranthidium ferrugineum* (Fabricius, 1787), male. 11. Body in lateral view. 12. Head in frontal view. 13. Mesosoma in dorsal view. 14. Metasoma in dorsal view. 15. Apex of metasoma in dorsal view, showing the T6–7. Scale bars = 1 mm.

Anthidium ferrugineum spp. *ferrugineum* Fabricius, 1787: Warncke, 1980: 175.

Anthidium ferrugineum spp. *discoideale* Latreille, 1809: Warncke, 1980: 175.

Anthidium ferrugineum (Fabricius, 1787): Warncke, 1980: 128, ♀ (key), 142, ♂ (key), 174.

Icteranthidium flavipes (Morawitz, 1895): Wu, 2006: 137, ♂ (key), 140, ♂, redescription, fig. 69; incorrect publication date of species, should be in 1894.

Icteranthidium ferrugineum (Fabricius, 1787): Malysheva, 1986: 796, ♂, figs 2, 5, 8, 11; Rasmont *et al.*, 1995: 55; Ormosa *et al.*, 2008: 71; Murao *et al.*, 2015: 10.

Icteranthidium ferrugineum discoideale (Latreille, 1809): Özbek & Zanden, 1993: 201; Ormosa *et al.*, 2008: 71.

Icteranthidium ferrugineum subhyalinum Mavromoustakis, 1947: Özbek & Zanden, 1993: 201

Icteranthidium ferrugineum ferrugineum (Fabricius, 1787): Ormosa *et al.*, 2008: 71.

Diagnosis. The species is very similar to *I. croceum* (Morawitz, 1877), but has the body smaller. Its female has the ventral scopa yellowish-brown, with very narrow white hairs at side; the T1 laterally with dense punctation, interstices not reach puncture diameters, while the male has the metasomal terga yellow except maculation; the T1 laterally with dense



Figures 16–21. *Icteranthidium grohmanni* (Spinola, 1838). 16–18. Female. 16. Body in lateral view; 17. Head in frontal view; 18. Mesosoma in dorsal view. 19–21. Male. 19. Body in lateral view; 20. Head in frontal view; 21. Mesosoma in dorsal view. Scale bars = 1 mm.

punctuation, interstices not reach puncture diameters.

Material examined. China, Xinjiang: Ürümqi Shi (43°48'N, 87°36'E), 20–800 m, 1♂, 21.VI.1958, leg. Afu Tian; Toksun Xian (42°42'N, 88°36'E), 82 m, 6♂, 19.VI.1958, leg. Guang Wang; Shufu Xian (39°24'N, 75°48'E), 1200 m, 1♂, 20.VI.1959, leg. Guang Wang.

Flower association. *Chondrilla* sp. (Asteraceae) (Muraio *et al.*, 2015).

Distribution. China (Xinjiang), Algeria, Nigeria, Senegal, Mauritania, Burkina Faso, Morocco, Spain, Tunisia, Egypt, Israel, Russia (South of European part, North Caucasus), Turkey, Saudi Arabia, Yemen, Oman, United Arab Emirates, Iran, Turkmenistan, Afghanistan, Kazakhstan, Pakistan.

Remarks. All specimens from IZCAS are male; Wu (2006) identified them as *I. flavipes* (Morawitz, 1895) and redescribed the male. However, *I. flavipes* (Morawitz, 1895) was synonymized by Warncke (1980) as *I. ferrugineum* (Fabricius, 1787).

***Icteranthidium grohmanni* (Spinola, 1838)** (Figs 16–25)

Anthidium grohmanni Spinola, 1838: 524, ♀, ♂. Type locality: Italy.

Anthidium numida Lepeletier, 1841: 392, ♀, ♂. Type locality: Algeria.

Anthidium latreillei Lepeletier, 1841: 393, ♀, ♂. Type locality: France.

Anthidium provinciale Lepeletier, 1841: 395, ♀, ♂. Type locality: Spain.

Anthidium rubiginosum Lepeletier, 1841: 396, ♀, ♂. Type locality: Spain.

Anthidium comptum Lepeletier, 1841: 398, ♀. Type locality: Algeria.

Anthidium lepeletieri Fonscolombe, 1846: 43, ♀, ♂. Type locality: France.

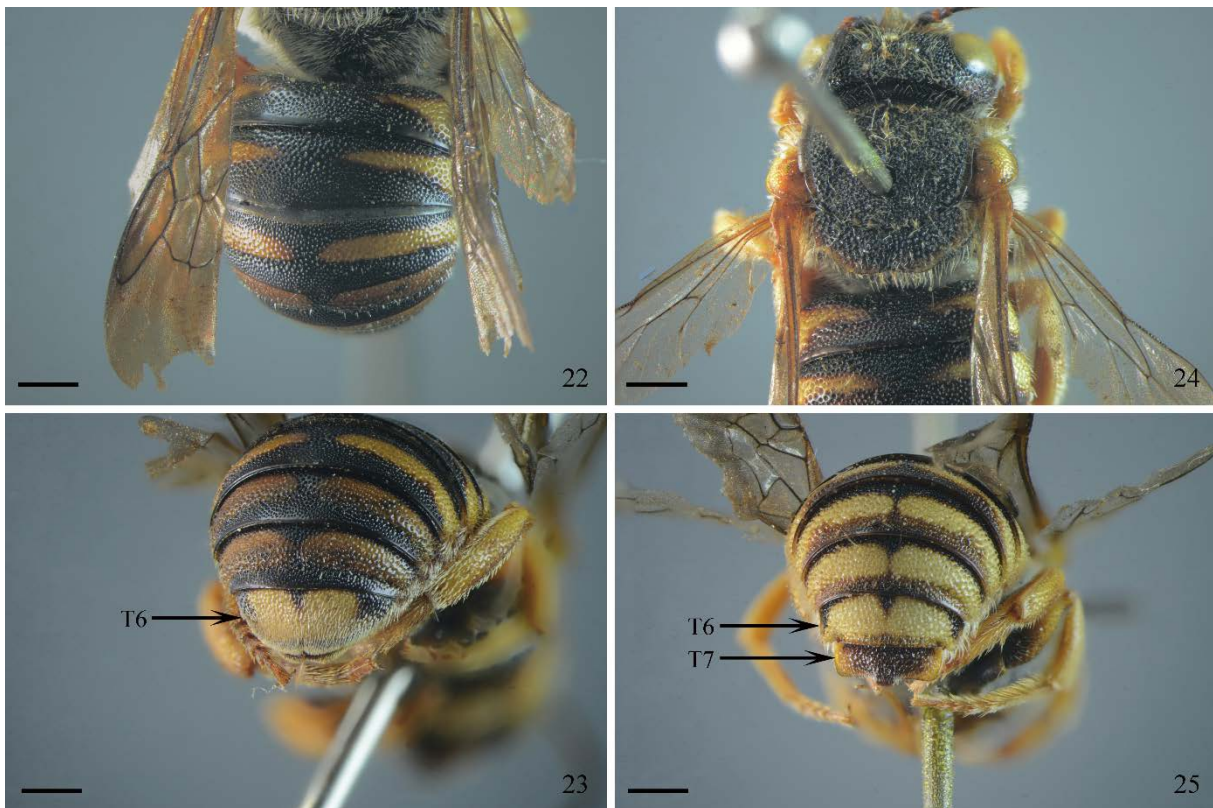
Anthidium coronatum Smith, 1854: 204, ♀. Type locality: Albania (homonym, non Dufour, 1853).

Anthidium latreillei var. *obscurum* Dusmet, 1908: 108. Type locality: Spain.

Icteranthidium tergale Pasteels, 1969: 414, ♀, ♂. Type locality: Greece; Synonymized by Warncke (1980: 171).

Anthidium grohmanni Spinola, 1838: Warncke, 1980: 127, ♀ (key), 142, ♂ (key), 171.

Icteranthidium latreillei (Lepeletier, 1841): Wu, 2006: 137, ♀ (key), ♂ (key), 139, ♀, ♂, redescription, fig. 68.



Figures 22–25. *Icteranthidium grohmanni* (Spinola, 1838). 22–23. Female. 22. Metasoma in dorsal view; 23. Apex of metasoma in dorsal view, showing the T6. 24–25. Male. 24. Metasoma in dorsal view; 25. Apex of metasoma in dorsal view, showing the T6–7. Scale bars = 1 mm.

Icteranthidium grohmanni (Spinola, 1838): Özbek & Zanden, 1993: 201; Rasmont *et al.*, 1995: 55; Ornos *et al.*, 2008: 71; Nadimi *et al.*, 2014: 421; Güler *et al.*, 2014: 261.

Diagnosis. The female has the paraocular area yellow, with the maculation not reaching the top of eye; the frons without yellow maculation or with a very little maculation under middle ocellus; the mesepisternum black, without yellow maculation; the posterior margin of T2 truncate; the T1 laterally with dense punctation, interstices not reach puncture diameters. The male has the mesepisternum black, without yellow maculation; the punctation on T1 same as female; the T7 rectangular rounded.

Material examined. China, Xinjiang: Altay Shi, Talat (47°53'N, 87°55'E), 930 m, 2♂5♀, 14.VIII.1960, leg. Shuyong Wang.

Flower association. *Eryngium campestre* L. var. *virens* Link (Apiaceae) (Güler *et al.*, 2014).

Distribution. China (Xinjiang), Algeria, Morocco, Tunisia, Spain, France, Italy, Bulgaria, Greece, Russia (South of European part, North Caucasus), Turkey, Syria, Lebanon, Israel, Armenia, Iran, Kyrgyzstan.

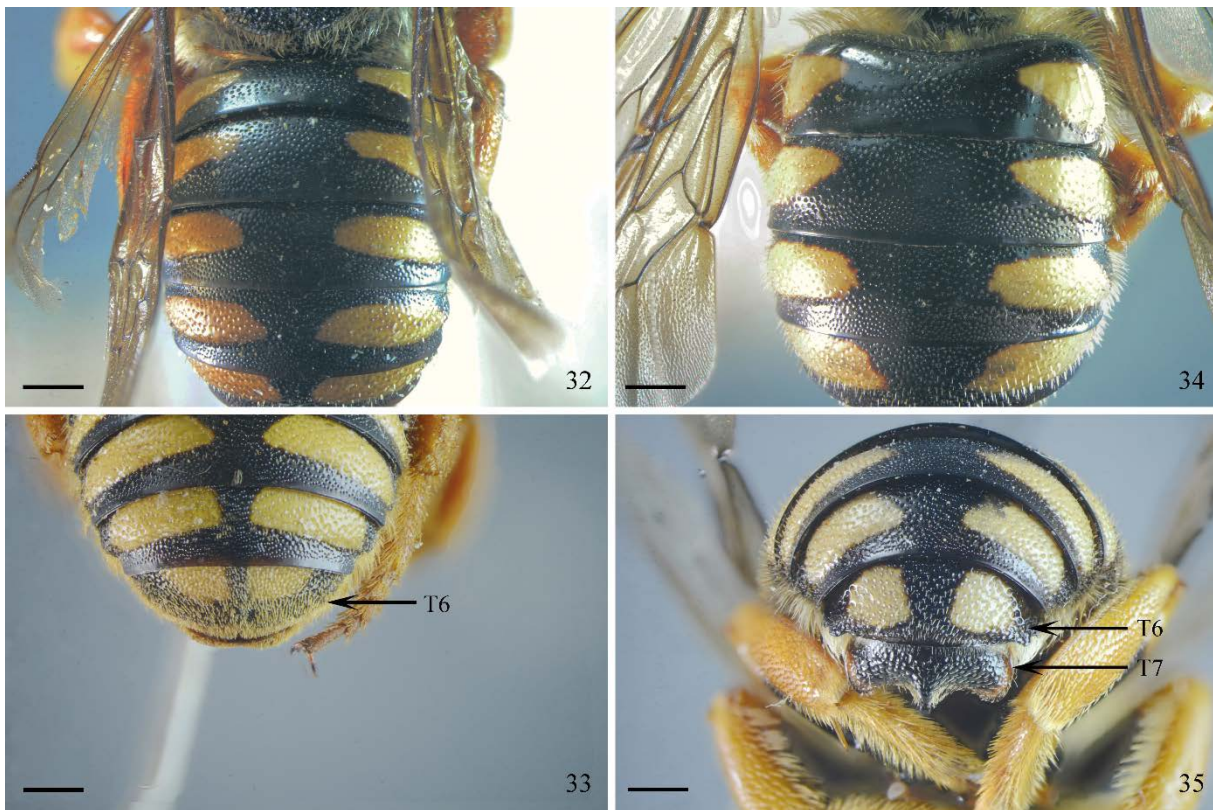


Figures 26–31. *Icteranthidium laterale* (Latreille, 1809). 26–28. Female. 26. Body in lateral view; 27. Head in frontal view; 28. Mesosoma in dorsal view. 29–31. Male. 29. Body in lateral view; 30. Head in frontal view; 31. Mesosoma in dorsal view. Scale bars=1 mm.

***Icteranthidium laterale* (Latreille, 1809)** (Figs 26–35)*Anthidium laterale* Latreille, 1809: 40, 209, ♀. Type locality: France.*Anthidium scutellare* Latreille, 1809: 42, 215, ♀, ♂. Type locality: Spain.*Anthidium quadrilobum* Lepeletier, 1841: 401, ♀. Type locality: France.*Anthidium auripes* Eversmann, 1852: 82, ♀, ♂. Type locality: Russia (Ural).*Anthidium annulare* Schenck, 1870: 334, ♀, ♂. Type locality: Austria.*Anthidium sexmaculatum* Chévrier, 1872: 502, ♀, ♂. Type locality: Switzerland.*Anthidium perrisii* Dours, 1873: 196, ♂. Type locality: France.*Anthidium laterale* var. *confluens* Alfken, 1931: 57. Type locality: Spain (Sierra Nevada).*Anthidium ifranicum* Cockerell, 1931: 209, ♀, ♂. Type locality: Morocco.*Anthidium laterale* spp. *scutellare* Latreille, 1809: Warncke, 1980: 173.*Anthidium laterale* Latreille, 1809: Warncke, 1980: 141, ♂ (key), 173.*Icteranthidium laterale* (Latreille, 1809): Özbek & Zanden, 1993: 201; Rasmont *et al.*, 1995: 55; Banaszak & Romasenko, 1998: 43, fig. VI-3; Wu, 2006: 137, ♀ (key), ♂ (key), 138, ♀, ♂, redescription, fig. 67; Ormosa *et al.*, 2008: 72; Proshchalykin, 2013: 154; Nadimi *et al.*, 2014: 422; Muraio *et al.*, 2015: 10, fig. 9.*Icteranthidium laterale laterale* (Latreille, 1809): Ormosa *et al.*, 2008: 72.*Icteranthidium laterale scutellare* (Latreille, 1809): Ormosa *et al.*, 2008: 72.

Diagnosis: The species has the body larger than other species from China, by the female body length 13.0–15.0 mm, male 15.0–16.0 mm. It has the paraocular area of female black, the T7 posterior margin of male deeply emarginated and the midapical projection narrow and long.

Material examined. China, Xinjiang: Habahe Xian (48°00'N, 86°24'E), 500 m, 2♂, 1.IX.1960, 1♀, 31.VIII.1960, leg. Shuyong Wang; Burqin Xian (47°42'N, 86°54'E), 480 m, 1♀1♂, 25.VIII.1960, 1♂, 27.VIII.1960, leg. Shuyong Wang; Altay Xian (47°48'N, 88°06'E), 1050 m, 1♀, 10.VIII.1960, leg. Shuyong Wang; Altay Xian (47°48'N, 88°06'E), 1050 m, 1♂, 31.VII.1955, leg. Shijun Ma, Kailing Xia, Yonglin Chen; Tacheng, Yumin Xian, Tasiti (43°36'N, 82°30'E), 1109 m, 1♀, 9.VIII.2016, leg. Chaodong Zhu, Dan Zhang.



Figures 32–35. *Icteranthidium laterale* (Latreille, 1809). 32–33. Female. 32. Metasoma in dorsal view; 33. Apex of metasoma in dorsal view, showing the T6. 34–35. Male. 34. Metasoma in dorsal view; 35. Apex of metasoma in dorsal view, showing the T6–7. Scale bars = 1 mm.

Flower association. *Carduus* sp. (Asteraceae) (Nadimi *et al.*, 2014), *Centaurea* sp. (Asteraceae) (Wu, 2006), *Cirsium* sp. (Asteraceae) (Muraio *et al.*, 2015), *Helianthus* sp. (Asteraceae) (Banaszak & Romasenko, 1998), *Salvia* sp. (Lamiaceae) (Wu, 2006).

Distribution. China (Xinjiang), Morocco, Spain, France, Italy, Austria, Switzerland, Bosnia and Herzegovina, Romania, Turkey, Caucasus, Iran, Russia (to East Siberia), Turkmenistan, Kazakhstan, Kyrgyzstan.

***Icteranthidium limbiferum* (Morawitz, 1875)** (Figs 36–44)

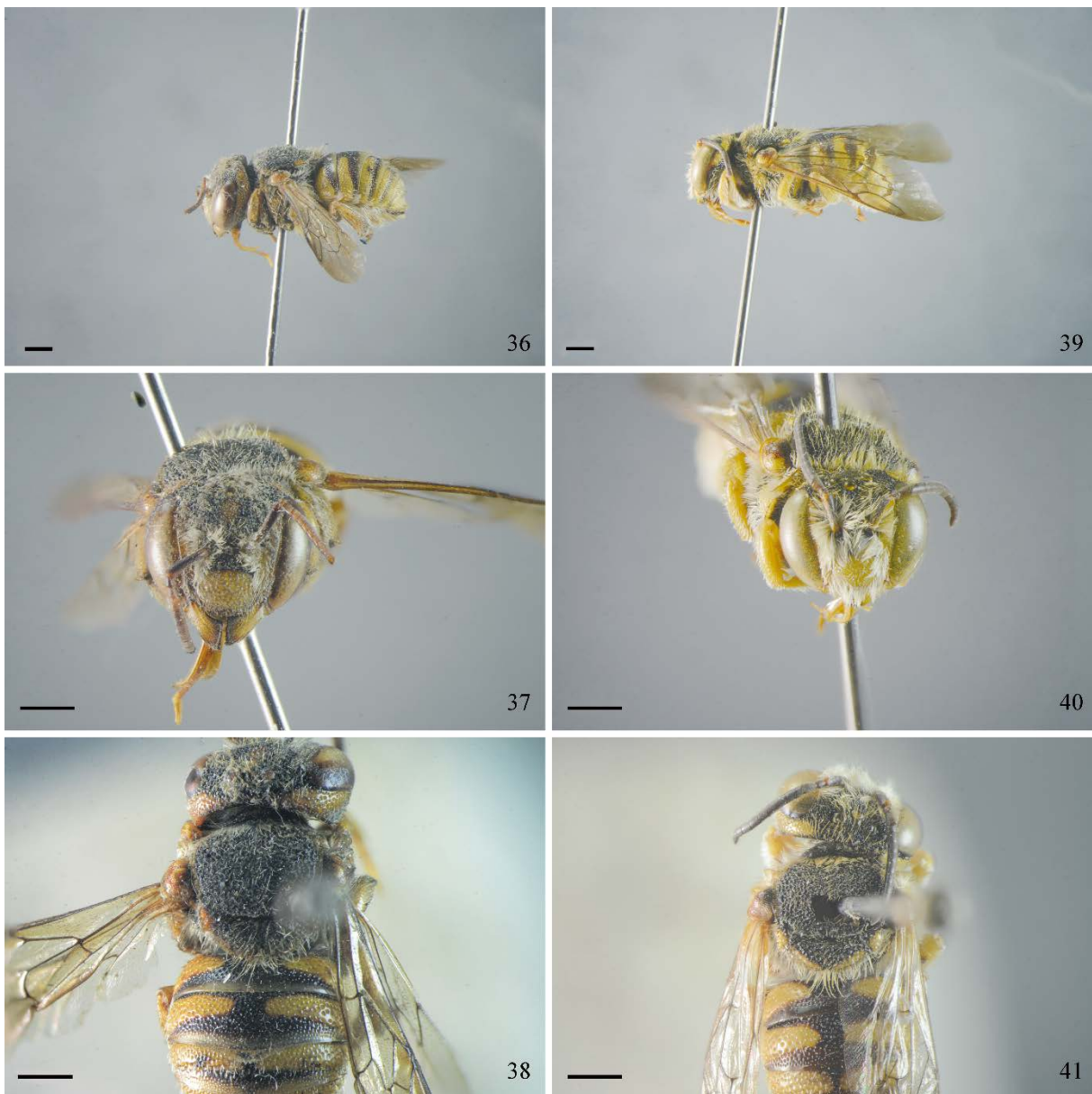
Anthidium limbiferum Morawitz, 1875: ♀, ♂, 120 (key), 123, ♀, ♂. Type locality: Uzbekistan.

Anthidium limbiferum Morawitz, 1875: Warncke, 1980: 128, ♀ (key), 141, ♂ (key), 174.

Icteranthidium limbiferum (Morawitz, 1875): Michener, 1948: 26; Malysheva, 1986: 796, ♂, figs 3, 6, 9, 12; Özbek & Zanden, 1993: 202;

Güler *et al.*, 2014: 261; Nadimi *et al.*, 2014: 422; Muraio *et al.*, 2015: 10.

Icteranthidium venustum (Morawitz, 1878): Wu, 2006: 137, ♀ (key), 141, ♀, redescription, ♂, new description; misidentification, incorrect publication date of species, the correct publication time was 1877.



Figures 36–41. *Icteranthidium limbiferum* (Morawitz, 1875). 36–38. Female. 36. Body in lateral view; 37. Head in frontal view; 38. Mesosoma in dorsal view. 39–41. Male. 39. Body in lateral view; 40. Head in frontal view; 41. Mesosoma in dorsal view. Scale bars = 1 mm.

Diagnosis. The species is similar to *I. grohmanni* (Spinola, 1838), but the female can be distinguished from the latter by following: the frons with a large rounded yellow maculation under the middle ocellus; the mesepisternum with a large triangular yellow maculation; the posterior margin of T2 with a broad triangle median process; the T1 laterally with sparse punctation, interstices reach several puncture diameters. Meanwhile, the male has the mesepisternum with a large triangular yellow maculation; the T1 laterally with sparse punctation, interstices reach several puncture diameters; the T7 rounded laterally.

Material examined. China, Xinjiang: Manas Xian (44°18'N, 86°12'E), 580 m, 1 ♀, 28.VIII.1959, leg. Afu Tian; Shihezi Shi (44°12'N, 86°00'E), 590 m, 1 ♂, 25.VIII.1959, leg. Afu Tian; Mosuowan (44°48'N, 86°15'E), 350 m, 1 ♂, 7.VIII.2016, leg. Zeqing Niu, Qingtao Wu; Ili (43°54'N, 81°18'E), 1 ♀, 15.VIII.1990, leg. no information on label; Kelamayi, Xiao Guai Village (45°11'N, 85°18'E), 268 m, 1 ♀ 2 ♂, 10.VIII.2016, leg. Chaodong Zhu, Dan Zhang.

Flower association. *Chondrilla* sp. (Asteraceae), Lamiaceae gen. et sp., *Tamarix* sp. (Tamaricaceae) (Muraio *et al.*, 2015), *Eryngium campestre* L. var. *virens* Link (Apiaceae) (Güler *et al.*, 2014).

Distribution. China (Xinjiang), Turkey, Iran, Turkmenistan, Uzbekistan, Kazakhstan, Pakistan, Afghanistan.

Remarks. The male specimens, examined by Wu (2006), lack T7, S5–S8 and genitalia. Wu (2006) misidentified these specimens as *Icterantheidium venustum* (Morawitz, 1878), which is not distributed in China actually.



Figures 42–44. *Icterantheidium limbiferum* (Morawitz, 1875). 42–43. Female. 42. Metasoma in dorsal view; 43. Apex of metasoma in dorsal view, showing the T6. 44. Female, Metasoma in dorsal view. Scale bars = 1 mm.

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