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Review of *Cosmocomoidea* (Hymenoptera: Mymaridae) from China, with descriptions of two new species

ZHULIDEZI AISHAN[1], SERGUEI V. TRIAPITSYN[2], MEI XU[3], NAI-QUAN LIN[4] & HONG-YING HU[1*]

[1]*College of Life Science and Technology, Xinjiang University, Urumqi, Xinjiang, China.*
E-mail: 307917017@qq.com; hoohyi-69@163.com
[2]*Entomology Research Museum, Department of Entomology, University of California, Riverside, California, 92521, USA.*
E-mail: serguei.triapitsyn@ucr.edu
[3]*Jiangsu Entry-exit inspection and quarantine Bureau, Nanjing, Jiangsu, China.*
[4]*Biological Control Research Institute, Fujian Agriculture and Forestry University, Fuzhou, Fujian, China.*
E-mail: green48@163.com
[*]*Corresponding author*

Abstract

Seven species of *Cosmocomoidea* Howard (Hymenoptera: Mymaridae) from China are keyed and illustrated. The two new species are *C. rugosa* Aishan, Triapitsyn & Xu **sp. n.** (Guangdong and Yunnan) and *C. tenuis* Xu, Lin & Hu **sp. n.** (Fujian). Three species are newly recorded from China, *C. atra* (Foerster) *s.l.*, *C. kikimora* (Triapitsyn), and *C. oxypygus* (Foerster).

Key words: Chalcidoidea, fairyfly, Gonatocerini, taxonomy, distribution

Introduction

Currently, the fairyfly genus *Cosmocomoidea* Howard (Hymenoptera: Mymaridae) contains 82 described, valid species including 79 extant taxa (Huber 2015) from around the world except for the Afrotropical and Australasian regions (Triapitsyn *et al.* 2010; Huber 2015). It is far more diverse and speciose in the Neotropical region (Triapitsyn *et al.* 2010) than in the Old World. Its only confirmed previous records from mainland China (Beijing Municipality) were those of *C. kodaiana* (Mani & Saraswat) and *C. ?latipennis* (Girault) by Triapitsyn (2013a), as *Gonatocerus* (*Cosmocomoidea*) *?kodaianus* (Mani & Saraswat) and *G.* (*Cosmocomoidea*) *?latipennis* Girault, respectively. Triapitsyn & Shih (2014) also recorded a *Cosmocomoidea* sp., as *Gonatocerus* (*Cosmocomoidea*) sp., from eggs of the leafhopper *Kolla paulula* (Walker) (Hemiptera: Cicadellidae) in Taiwan.

Because China is situated in two ecozones, the Palearctic (northern provinces) and Oriental (southern provinces), any study of its fairyfly fauna requires good knowledge of at least the fauna of the entire Eurasia but preferably of the entire Old World. Fortunately, the revisions of Zeya & Hayat (1995) of the Indian species and of Triapitsyn (2013a) of the Palearctic species of Gonatocerini have made it possible for us to identify most Chinese species with confidence, although recent random descriptions of several taxa (not in a revisionary context) in India have made some identifications more challenging.

The history of taxonomic and biological studies of Mymaridae in China was overviewed by Lin (2002). Specimens of Gonatocerini (as *Gonatocerus* Nees ab Esenbeck) from China can be identified to genus using the key in Lin & Xu (2000), and those of *Cosmocomoidea* using the key in Huber (2015). In this communication we describe for China two new *Cosmocomoidea* species, provide three new species records, and key the seven known species.

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Material and methods

All specimens studied were collected by sweeping. The specimens from Xinjiang, Hubei and Guangxi are deposited mostly in the insect collection of College of Life Science and Technology, Urumqi, Xinjiang, China (ICXU), but also a few in the Entomology Research Museum, Department of Entomology, University of California, Riverside, California, USA (UCRC). The other specimens, which were borrowed from the Fujian Agriculture and Forestry University, Fuzhou, Fujian, China (FAFU), had been previously sorted to morphospecies by Mei Xu (Xu 2002) under *Gonatocerus* (*s.l.*). In the course of this study we re-identified these according to recent advances in the knowledge of the genus.

All measurements were taken from slide-mounted specimens at 100×, 200×, or 400× magnification with an Olympus biological microscope and an eyepiece reticle. Photographs were taken from slide-mounted specimens using a Nikon Ni-E system, and images were processed using Adobe Photoshop.

Terminology for morphological features mainly follows Triapitsyn *et al.* (2010), Triapitsyn (2013a) and Huber (2015). Abbreviations used are **mps**, multiporous plate sensillum (longitudinal sensilla, of authors) on the antennal flagellar segments (Triapitsyn 2013a), and **F**, funicle segment of the female antenna or flagellomere of the male antenna. Redescriptions of previously described species are based on specimens from China. In the descriptions of the new species, a measurement or a ratio of the holotype is followed by the respective range of the paratypes. In the lists of the examined material, for clarity full names of the Chinese collectors are given in parentheses, with the last names first, when they are first mentioned.

Taxonomy

Cosmocomoidea Howard, 1908

Cosmocomoidea Howard 1908: 68–69 (type species: *Cosmocomoidea morrilli* Howard, by monotypy); Huber 2015: 15–22 (revived status, diagnosis, redescription, discussion, distribution, list of species in the world).

Gonatocerus (*Cosmocomoidea*): Triapitsyn *et al.* 2010: 94–95 (as a subgenus under *Gonatocerus*); Triapitsyn 2013a: 117–119 (taxonomic history, diagnosis, key to Palearctic species).

Diagnosis. Specimens of most species are relatively large for fairyflies, average body length more than 1 mm; subantennal sulci strongly convergent and close together at mouth margin; ocellar triangle with 2 setae; female antenna with funicle 8-segmented; pronotum divided into two abutting lobes; dorsellum triangular to rhomboidal; propodeum with two submedian carinae; fore wing often with a large bare area behind marginal vein.

Cosmocomoidea was erected by Howard (1908) with *C. morrilli* Howard as its type species. Annecke & Doutt (1961) classified it as a subgenus under *Lymaenon* Walker. Both Matthews (1986) and Huber (1988) treated *Cosmocomoidea* as the *ater* species group of *Gonatocerus*. Zeya & Hayat (1995) revised the Indian species of *Cosmocomoidea* also within the *ater*-group of *Gonatocerus*, as did Zeya & Khan (2012) and Manickavasagam & Rameshkumar (2013). Triapitsyn *et al*. (2010) and Triapitsyn (2013a, b) classified *Cosmocomoidea* as a subgenus under *Gonatocerus* and reviewed its species from the Neotropical, Palaearctic, and Nearctic regions, respectively. Huber (2015) divided *Gonatocerus* into several genera within the tribe Gonatocerini. In his classification, which we follow here, *Cosmocomoidea* is regarded as a valid genus, though phylogenetic relationships among the closely related genera of Gonatocerini remain largely uncertain and may require a combined morphological and molecular analysis to resolve them more clearly.

Key to species of *Cosmocomoidea* in China (females)

1	Ovipositor markedly exserted beyond apex of gaster (Fig. 22)	*C. oxypygus* (Foerster)
	Ovipositor not or at most slightly exserted beyond apex of gaster (Figs 4, 8, 12, 16, 26, 31)	2
2(1)	F2 with 2 mps on both antennae	*C. rugosa* Aishan, Triapitsyn & Xu **sp. n.**
	F2 with at most 1 mps	3
3(2)	F2 with 1 mps	4
	F2 without mps	5

4(3) Funicle segments relatively short and broad (Fig. 5); propodeum (Fig. 6) with submedian carinae extending to anterior margin and connecting there to each other . . . . . *C. kikimora* (Triapitsyn)
Funicle segments relatively long and narrow (Fig. 9); propodeum (Fig. 10) with submedian carinae not extending to anterior margin and not connecting to each other. . . . . *C. kodaiana* (Mani & Saraswat)
5(3) F5 the longest funicle segment . . . . . *C. ?latipennis* (Girault)
F5 not the longest funicle segment 6
6(5) Clava relatively short and broad (Fig. 1), at most 3.5× as long as wide. . . . . *C. atra* (Foerster) *s.l.*
Clava relatively long and narrow (Fig. 28), at least 4.9× as long as wide . . . . . *C. tenuis* Xu, Lin & Hu **sp. n.**

Cosmocomoidea atra (Foerster, 1841) *s.l.*

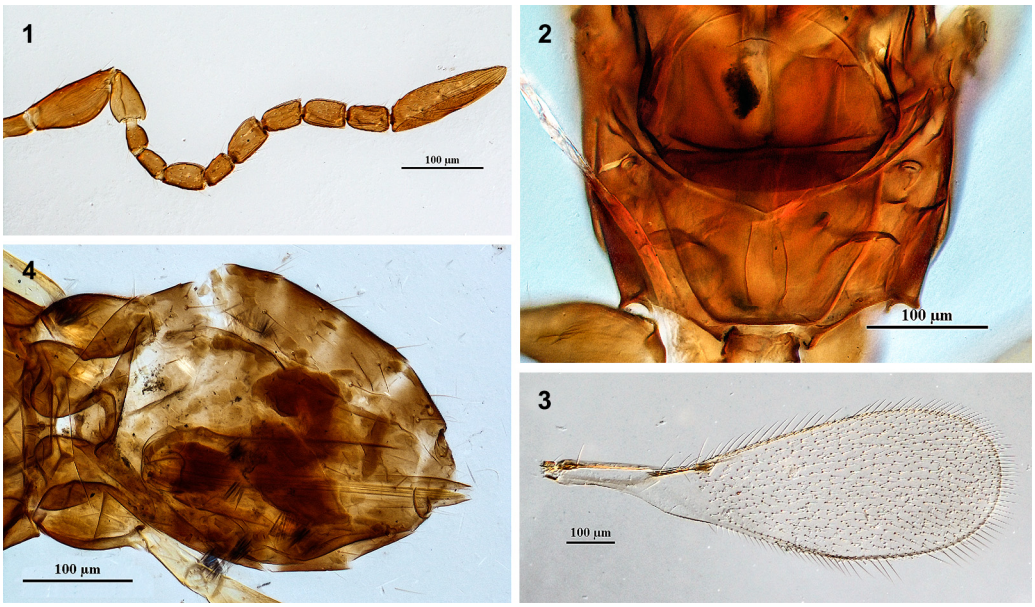
(Figs 1–4)

Gonatocerus ater Foerster 1841: 45. Type locality: Aachen, North Rhine-Westphalia, Germany.
Gonatocerus (*Cosmocomoidea*) *ater* Foerster *s.str.* and *s.l.*: Triapitsyn 2013a: 119–137 (taxonomic history, type information, lectotype designation, redescription, distribution, discussion); Triapitsyn 2013b: 214 (record from Canada).
Cosmocomoidea atra (Förster): Huber 2015: 17 (list).

Material examined. CHINA: FUJIAN: Fuzhou, 29.v.1999, M. Xu (Xu Mei) [3 ♀, FAFU]. Jiangle, 7.x.1991, N.-q. Lin (Lin Nai-quan) [4 ♀, FAFU]. GUANGXI, Xiangping, 25.v.1986, Y. Tang (Tang Yuqing) [2 ♀, FAFU]. HUBEI, Xuanen, 5.viii.1989, D. Huang (Huang Dawei) [1 ♀, FAFU]. SHAANXI, Taibaishan, 3.ix.1999, N.-q. Lin [1 ♀, FAFU]. XINJIANG: Shihezi, 12.vii.2001, H.-y. Hu (Hu Hong-ying) [4 ♀, ICXU]; 9.viii.2014, H.-y. Hu [1 ♀, ICXU]. Urumqi, 25.vii.2001, W. Cui (Cui Weidong) [1 ♀, ICXU]. Wusu, 17.vii.2001, H.-y. Hu [3 ♀, ICXU]. Xinyuan, 7.viii.1997, D. Ma (Ma Deying) [2 ♀, ICXU]. Yanqi, 7.viii.2001, H.-y. Hu [3 ♀, ICXU]. YUNNAN, Yongsheng, 8.vii.1984, C. Li (Li Changfang) [1 ♀, FAFU].

Redescription. FEMALE. Body length 960–1150 µm. Body and antenna mostly dark brown, legs light to dark brown.

Antenna (Fig. 1) with radicle 0.2–0.3× total length of scape, rest of scape 2.35–3.45× as long as wide; pedicel much longer than F1; F1 and F2 subequal in length and the shortest funicle segments, F3 slightly longer than F4, F4 shorter than the following funicle segments, F5–F8 more or less subequal in length; mps on F3 (1), F4 (1), F5 (2), F6 (0 [or 1 on one antenna]), F7 (2) and F8 (2). Clava with 8 mps, 2.3–3.5× as long as wide.



FIGURES 1–4. *Cosmocomoidea atra s.l.* ♀ (Fuzhou, Fujian): 1, antenna; 2, propodeum; 3, fore wing; 4, ovipositor.

Mesosoma slightly shorter than metasoma. Propodeum (Fig. 2) usually with complete submedian carinae narrowing anteriorly and usually joining together at anterior margin of propodeum but sometimes fading at dorsellum. Fore wing (Fig. 3) 2.5–2.7× as long as wide; longest marginal seta 0.1–0.2× maximum wing width; disc

with a slight brownish tinge and bare behind venation except for 3 or more setae behind stigmal vein, and densely setose elsewhere. Hind wing 13.6–17.5× as long as wide; disc unevenly setose, with a slight brownish tinge; longest marginal seta 1.6–1.8× maximum wing width.

Ovipositor (Fig. 4) occupying 0.9–1.0× length of gaster, not or at most barely exserted beyond the apex of gaster, 1.1–1.5× as long as mesotibia.

MALE. Unknown from China but known from other countries (Triapitsyn 2013a).

Distribution. For *C. atra s.l.*, Holarctic and Oriental (Zeya & Hayat 1995; Triapitsyn 2013a); China (new record, both Palearctic and Oriental parts).

Hosts. Unknown for *C. atra s.str.* but see host records and discussion in Triapitsyn (2013a) for *C. atra s.l.*

Comments. We identify specimens from China as *C. atra s. l.* because they do not exactly agree with the lectotype in the shape of the propodeal carinae but fit Matthews' (1986) and Zeya & Hayat's (1995) concepts of the species (Triapitsyn 2013a).

Cosmocomoidea kikimora (Triapitsyn, 2013)

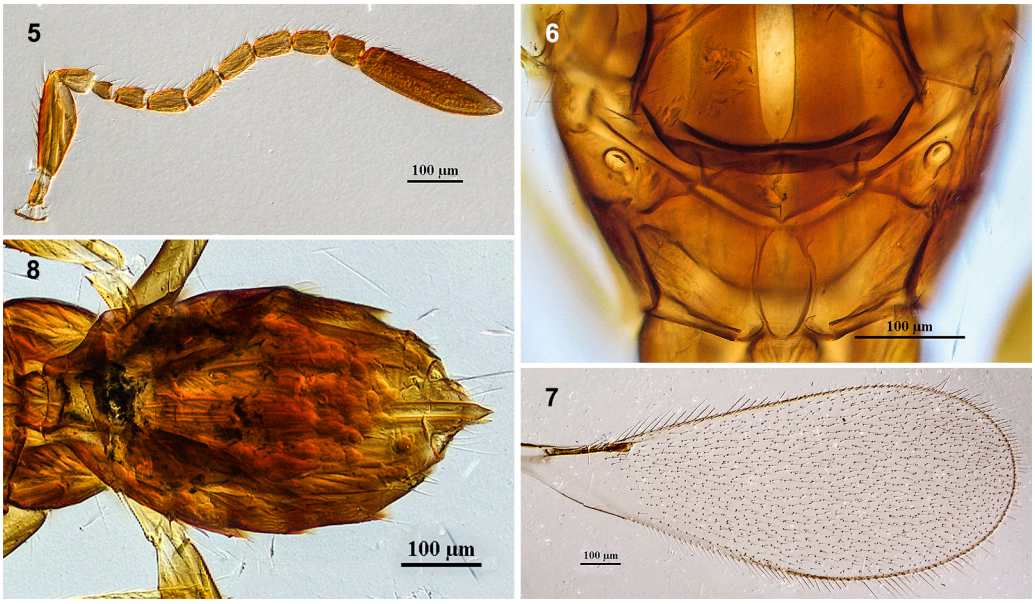
(Figs 5–8)

Gonatocerus (*Cosmocomoidea*) *kikimora* Triapitsyn 2013a: 118 (key), 141–143. Type locality: Gornotayozhnoye, Ussuriyskiy rayon, Primorskiy kray, Russia.

Cosmocomoidea kikimora (Triapitsyn): Huber 2015: 20 (list).

Material examined. CHINA: HUBEI, Yingshan: Tao Hua Chong National Forest Park, 24.vi.2014, Q. Li (Li Qin) [4 ♀, ICXU]. Wujiashan National Forest Park, 30.vi.2014, Q. Li [3 ♀, ICXU]. ZHEJIANG, Tianmu Mt., 6.vi.1964, T. Chen (Chen Tailu) [3 ♀, FAFU].

Redescription. FEMALE. Body length 950–1375 µm. General color brown to dark brown; head and mesosoma dark brown; scape, pedicel, and gaster brown; legs light to dark brown.



FIGURES 5–8. *Cosmocomoidea kikimora* ♀ (Yingshan, Hubei): 5, antenna; 6, propodeum; 7, fore wing; 8, ovipositor.

Antenna (Fig. 5) with radicle 0.1–0.2× total length of scape, rest of scape 2.6–3.8× as long as wide; pedicel much longer than F1; F2 shorter than the following funicle segments, F3–F7 more or less subequal in length and a little longer than F8; mps on F2 (1), F3 (usually 2, occasionally 1 on one antenna), F4–F8 (2 on each); clava with 8 mps, 3.6–4.7× as long as wide.

Mesosoma slightly longer than metasoma. Propodeum (Fig. 6) with submedian carinae complete or almost complete, slightly curving anteriorly. Fore wing (Fig. 7) 2.65–3.1× as long as wide, longest marginal seta 0.1–0.2× maximum wing width, disc with a brownish tinge throughout, bare behind venation except for at least 8 setae

behind stigmal vein. Hind wing about 16.5× as long as wide; disc almost hyaline, with a row of setae along each margin and additional setae at the base and apex; the longest marginal seta about 2.0× maximum wing width.

Ovipositor (Fig. 8) occupying 0.6–0.9× length of gaster, not or slightly exserted beyond its apex, 0.9–1.2× as long as mesotibia.

MALE. Unknown.

Distribution. Palearctic: China (new record) and Russia (Far East) (Triapitsyn 2013a).

Hosts. Unknown.

Cosmocomoidea kodaiana (Mani & Saraswat, 1973)

(Figs 9–12)

Ooctonus kodaianus Mani & Saraswat 1973: 78. Type locality: Berijam Lake, Kodaikanal Hills, Tamil Nadu, India.

Gonatocerus kodaianus (Mani & Saraswat): Zeya & Hayat 1995: 66–68 (redescription, type information, diagnosis), 130, 135 (illustrations).

Gonatocerus (*Cosmocomoidea*) ?*kodaianus* (Mani & Saraswat): Triapitsyn 2013a: 143–145 (taxonomic history, distribution, diagnosis based on specimens from the Palearctic region).

Cosmocomoidea kodaiana (Mani & Saraswat): Huber 2015: 20 (list).

Material examined. CHINA: FUJIAN, Jiangle, 7–10.vii.1991, N.-q. Lin [2 ♀, FAFU]. HUBEI, Lichuan, 24.viii.1989, D. Huang [1 ♀, FAFU]. ZHEJIANG, Tianmu Mt., 6.vi.1964, T. Chen [1 ♀, FAFU].

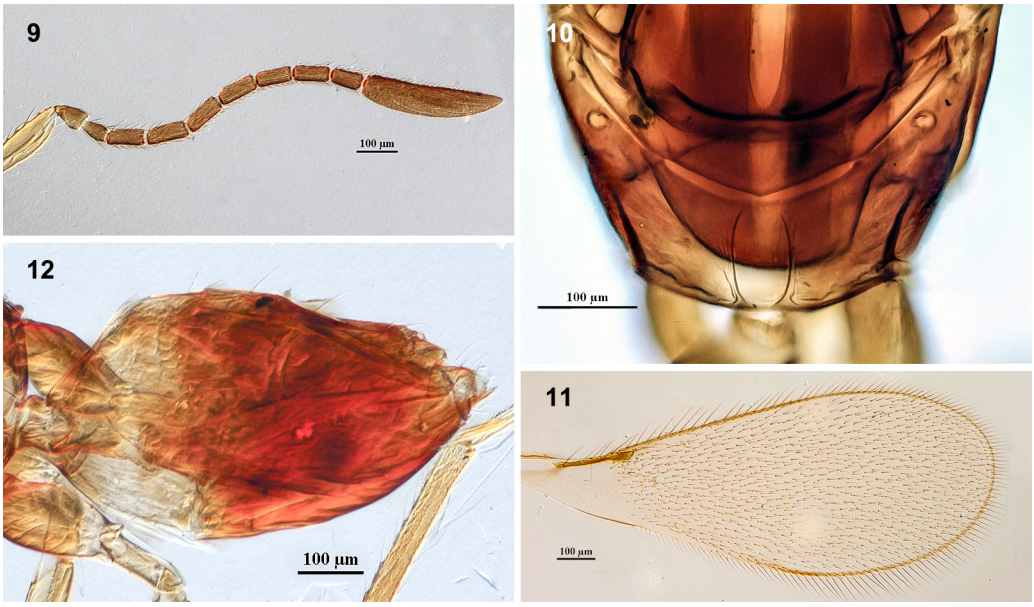
Redescription. FEMALE. Body length 1426–1465 µm. Body brown to dark brown; antennal flagellum dark brown, radicle and scape yellow, pedicel yellowish brown to brown; legs yellowish brown.

Antenna (Fig. 9) with radicle about 0.2× total length of scape, rest of scape 3.6–3.9× as long as wide; pedicel slightly longer than F1; F1 the shortest funicle segment, F2–F7 subequal in length; mps on F2 (1) and F3–F8 (2 on each); clava long, with 8 mps, 5.2–5.6× as long as wide.

Mesosoma shorter than metasoma. Propodeum (Fig. 10) with well-developed submedian carinae extending to anterior margin and not connecting to each other. Fore wing (Fig. 11) 3.0–3.2× as long as wide, longest marginal seta 0.1–0.2× maximum wing width, with disc slightly infumate throughout, mostly bare behind venation except for a few setae behind stigmal vein. Hind wing 14.0–18.0× as long as wide.

Ovipositor (Fig. 12) occupying 0.6–0.9× length of gaster, not exserted beyond its apex, about as long as mesotibia.

MALE. Unknown.



FIGURES 9–12. *Cosmocomoidea kodaiana* ♀ (Jiangle, Fujian): 9, antenna; 10, propodeum; 11, fore wing; 12, ovipositor.

Distribution. Oriental: China (new record from the Oriental part of the country) and India (Zeya & Hayat 1995). Palearctic: China, Japan and Russia (Far East) (Triapitsyn 2013a). Here we confirm that specimens from China belong to *C. kodaiana*.

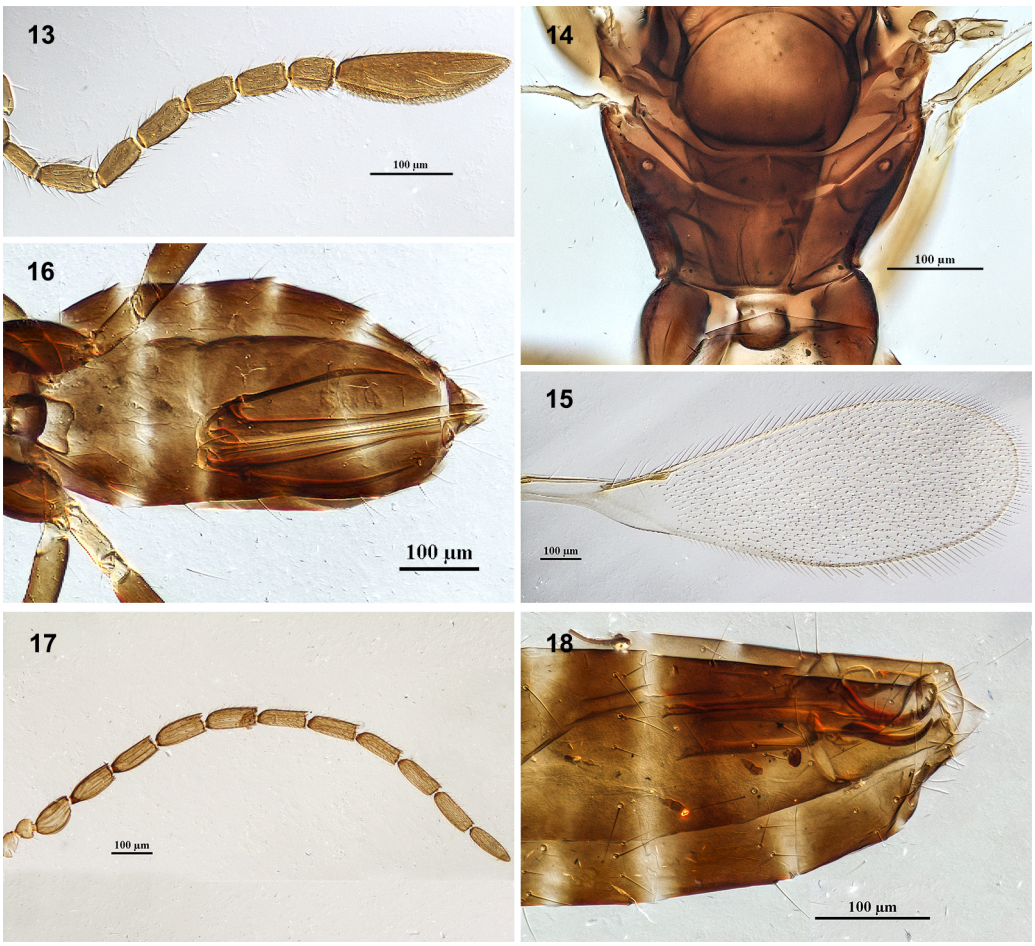
Hosts. Unknown.

Cosmocomoidea ?latipennis (Girault, 1911)

(Figs 13–18)

Gonatocerus latipennis Girault 1911: 268–269. Type locality: unknown (North America).
Gonatocerus (*Cosmocomoidea*) *?latipennis* Girault: Triapitsyn 2013a: 145–150 (taxonomic history, diagnosis, distribution, comments on the specimens from the eastern Palearctic region), 151–152 (illustrations).
Cosmocomoidea latipennis (Girault): Huber 2015: 20 (list).

Material examined. CHINA: GANSU, Longnan, 12.viii.2014, Q. Hao (Hao Qiannan) [2 ♀, ICXU]. HUBEI: Luotian, 3.vii.2014, Q. Li [6 ♀, 1 ♂, ICXU]. Yingshan, Wujiashan National Forest Park, 29.vi.2014, Q. Li [5 ♀, ICXU]. SHAANXI: Ankang, 6.viii.2014, Q. Hao [7 ♀, ICXU]. Baoji, 4.ix.1999, N.-q. Lin [3 ♀, 1 ♂, FAFU]. Fengxian, 4.ix.1999, N.-q. Lin [1 ♀, FAFU]. XIZANG (TIBET AUTONOMOUS REGION), Motuo, 23.vii 2014, L. Peng (Peng Lingfei) [10 ♀, ICXU].



FIGURES 13–18. *Cosmocomoidea ?latipennis* (Luotian, Hubei): 13, ♀ antenna; 14, ♀ propodeum; 15, ♀ fore wing; 16, ♀ ovipositor; 17, ♂ antenna; 18, ♂ genitalia.

Redescription. FEMALE. Body length 1059–1400 µm. General body color black; antenna dark brown; legs yellowish brown except coxae, metafemur and metatibia black, and mesofemur and two apical segments of tarsi brown.

Antenna (Fig. 13) with radicle 0.1–0.2× total length of scape, rest of scape 2.8–4.3× as long as wide; pedicel

much longer than F1; F1 the shortest funicle segment, F3 longer than F2 and F4, F3 and F5 subequal in length (the longest funicle segments), the following funicle segments usually progressively slightly shorter than preceding ones; mps on F3 (2), F4 (0 or 1), F5 (usually 2, occasionally 1 on one antenna), F6 (1 or 2), F7 (2) and F8 (2); clava with 8 mps, 3.8–5.0× as long as wide.

Mesosoma shorter than metasoma. Propodeum (Fig. 14) with submedian carinae complete, curving anteriorly and posteriorly. Fore wing (Fig. 15) 2.8–3.4× as long as wide, longest marginal seta 0.1–0.2× maximum wing width, disc with a brownish tinge throughout, mostly bare behind venation except for a few setae behind stigmal vein, and densely setose elsewhere. Hind wing 24–25× as long as wide.

Ovipositor (Fig. 16) occupying 0.7–0.9× length of gaster, not exserted beyond its apex, 0.9–1.4× as long as mesotibia.

MALE. Body length 1075 µm. Color and size similar to female. Antenna (Fig. 17) with F1 1.3× as long as wide. Fore wing 3.3× as long as wide. Genitalia (Fig. 18) about 0.6× length of gaster.

Distribution. Holarctic (Triapitsyn 2013a), who also recorded *Gonatocerus ?latipennis* from the Palearctic part of mainland China, Japan, Far East of Russia, and from the high altitude area in Taiwan which is an outpost of the Palearctic fauna, although most of the island is within the Oriental ecozone.

Hosts. Unknown.

Comments. We identify the specimens from China only tentatively as *G. ?latipennis* because the possibility exists that they may represent an undescribed species that is very difficult to distinguish morphologically from the real *G. latipennis* (Girault 1911). Two females from Baoji, Shaanxi, have F8 of the antenna relatively longer and in one specimen from Ningshan, Shaanxi, the funicle is deformed, with F5 partially fused to F6.

Cosmocomoidea oxypygus (Foerster, 1856)

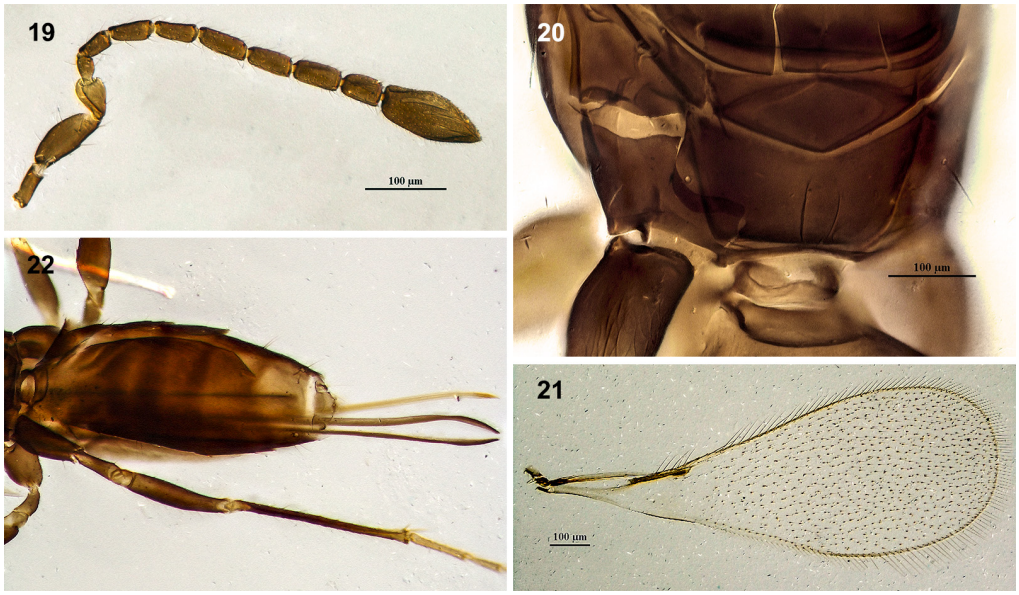
(Figs 19–22)

Gonatocerus oxypygus Foerster 1856: 118. Type locality: unknown (Europe, most likely Aachen or its environs, North Rhine-Westphalia, Germany).

Gonatocerus (*Cosmocomoidea*) *oxypygus* Foerster: Triapitsyn 2013a: 150–161 (taxonomic history, neotype designation, redescription, distribution, host associations).

Cosmocomoidea oxypygus (Foerster): Huber 2015: 21 (list).

Material examined. CHINA, XINJIANG, Jimsar Co., Dalongkou, 43°54'13"N 89°10'12"E, 1008 m, 14.vi.2015, on poplar (*Populus* sp.) infested with idiocerine leafhoppers: H.-y. Hu group [6 ♀, ICXU]; S.V. Triapitsyn [8 ♀, UCRC].



FIGURES 19–22. *Cosmocomoidea oxypygus* ♀ (Dalongkou, Jimsar Co., Xinjiang): 19, antenna; 20, propodeum; 21, fore wing; 22, ovipositor.

Redescription. FEMALE. Body length 1230–1370 µm. Body darkish brown to black.

Antenna (Fig. 19) with radicle about 0.3× total length of scape, rest of scape 2.0–2.4× as long as wide; pedicel longer than F1; F1 the shortest funicle segment, F3 a little longer than F2 or F4, F5 the longest funicle segment, following funicle segments usually progressively slightly shorter than preceding ones; mps on F5 and F6 (1 each), F7 and F8 (2 each); clava with 8 mps, 2.4–3.7× as long as wide.

Mesosoma shorter than metasoma. Propodeum (Fig. 20) with fine, subparallel submedian carinae close to each other and usually not extending to anterior margin. Fore wing (Fig. 21) about 2.8× as long as wide; longest marginal seta about 0.2× maximum wing width; disc almost hyaline, bare behind venation except for 2 setae just behind stigmal vein. Hind wing 12.5–15.3× as long as wide; disc almost hyaline; longest marginal seta 1.4–2.0× maximum wing width.

Ovipositor (Fig. 22) long, occupying entire length of gaster and markedly exserted beyond its apex, 2.9–3.3× as long as mesotibia.

MALE. Unknown from China.

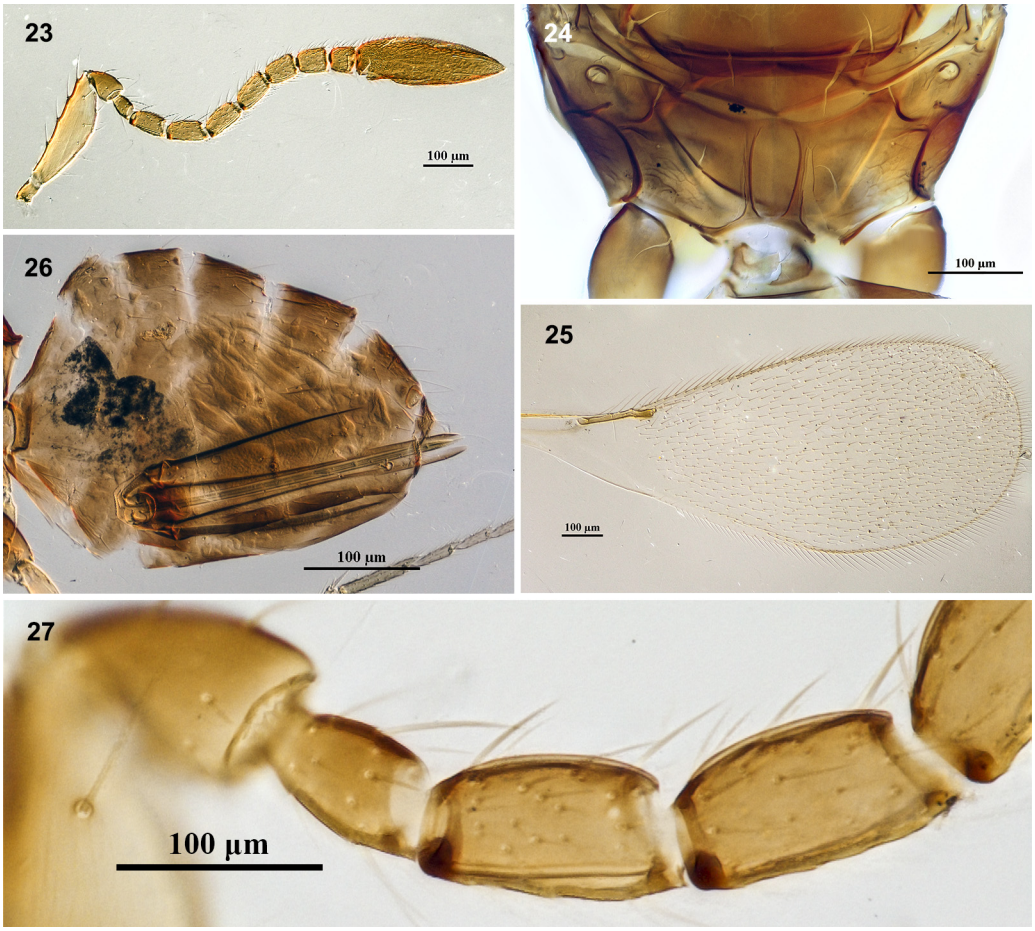
Distribution. Holarctic (Triapitsyn 2013a) including China (new record, known only from its Palearctic part).

Hosts. Idiocerine leafhoppers (Cicadellidae) listed by Triapitsyn (2013a); unknown in China.

Cosmocomoidea rugosa Aishan, Triapitsyn & Xu sp. n.

(Figs 23–27, 33)

Type material. Holotype ♀ [FAFU] (on slide, Fig. 33): **CHINA**, GUANGDONG, Guangzhou, 23.iv.1992, D. G Liu (Liu Deguang). Paratypes (on slides): **CHINA**: GUANGDONG, Guangzhou, D. G. Liu: 23.iv.1992 [2 ♀, FAFU]; 10.vi.1992, D. G. Liu [1 ♀, FAFU]. YUNNAN, Lijiang, 1.viii.1984, C. Li [1 ♀, FAFU].



FIGURES 23–27. *Cosmocomoidea rugosa* ♀ (holotype): 23, antenna; 24, propodeum; 25, fore wing; 26, ovipositor; 27, pedicel and F1–F3 of antenna.

Description. FEMALE (holotype and paratypes). Body length 1375–1750 µm. Body color brown to dark brown, antenna brown except clava dark brown, legs yellow except coxae dark brown.

Antenna (Figs. 23, 27) with radicle about 0.2× total length of scape, the rest of scape 3.1× (2.9–3.7×) as long as wide; F1 shorter than pedicel and the shortest funicle segment, F2–F5 equal in length, F6–F8 shorter than preceding funicle segments; mps on F2–F8 (2 on each); clava with 8 mps, 3.2× (3.2–3.9×) as long as wide.

Mesosoma a little shorter than metasoma. Propodeum (Fig. 24) rugose lateral to submedian carinae, the carinae slightly curving and narrowing, and extending to anterior margin. Fore wing (Fig. 25) 2.5× (2.5–2.8×) as long as wide, longest marginal seta 0.12× (0.11–0.17×) maximum wing width; disc mostly bare behind venation except for a few setae behind stigmal vein. Hind wing about 15.0× as long as wide.

Ovipositor (Fig. 26) occupying 0.8× (0.8–1.0×) length of gaster, not or barely exserted beyond its apex, 1.4× (1.3–1.4×) as long as mesotibia.

Measurements (µm) of holotype. Mesosoma 664; petiole: 45; gaster 703; ovipositor 594. Antenna: radicle 53; rest of scape 233; pedicel 83; F1 53; F2 75; F3 80; F4 75; F5 75; F6 65; F7 60; F8 50; clava 587. Fore wing 1425:575; longest marginal seta 69. Hind wing 1069:69; longest marginal seta 89.

MALE. Unknown.

Recognition. *Cosmocomoidea rugosa* is most similar to *C. kodaiana* to which it keys in Zeya & Hayat (1995). Females differ from those of the latter by F2 (Fig. 27) bearing 2 mps whereas in *C. kodaiana* F2 bears only 1 mps. The ovipositor of *C. rugosa* is also notably longer than mesotibia (at least about 1.3×) whereas in *C. kodaiana* the ovipositor is either about equal to (in the specimens from China) or a little shorter than the mesotibia (Zeya & Hayat 1995). Females of *C. rugosa* differ from those of *C. tenuis* by their rugose propodeum, and mps are present in *C. Tenuis* only on F3 (1), F4 (1 or 2), and F5–F8 (2 on each), whereas in *C. rugosa* mps are present on F2–F8 (2 on each).

Distribution. Oriental: China (Guangdong, Yunnan).

Etymology. The species name refers to the rugose propodeum.

Hosts. Unknown.

Cosmocomoidea tenuis Xu, Lin & Hu sp. n.

(Figs 28–32, 34)

Type material. Holotype ♀ [FAFU] (on slide, Fig. 34): **CHINA**, FUJIAN, Jiangle, 10.x.1991, N.-q. Lin. Paratypes (on slides): **CHINA**, FUJIAN: Chong'an, 6.viii.1985, N.-q. Lin [1♀, FAFU]. Jiangle, 10.x.1991, N.-q. Lin [1 ♀, FAFU]. Wuyishan, 6.viii.1985, N.-q. Lin [1 ♀, FAFU].

Description. FEMALE (holotype and paratypes). Body length 1267–1500 µm. Body light brown to dark brown except ocelli and eyes light yellowish, legs yellowish brown.

Antenna (Figs 28, 32) with radicle 0.17× (0.16–0.24×) total length of scape, rest of scape 4.0× (3.7–4.7×) as long as wide; all funicle segments longer than wide, F1 and pedicel subequal in length; F1 the shortest funicle segment, F2 slightly shorter than F3, F3–F7 subequal in length, F8 shorter than preceding funicle segment; mps on F3 (1), F4 (usually 1, occasionally 2 on one antenna only), F5–F8 (2 on each); clava with 8 mps, 5.2× (4.9–5.5×) as long as wide.

Mesosoma a little longer than metasoma. Propodeum (Fig. 29) with submedian carinae complete or almost complete, slightly curving anteriorly. Fore wing (Fig. 30) 2.8× (2.6–2.9) as long as wide, the longest marginal seta 0.14× (0.14–0.19×) maximum wing width; disc mostly bare behind venation except for a few setae behind stigmal vein. Hind wing about 16.0× as long as wide.

Ovipositor (Fig. 31) occupying 0.9× (0.8–1.0×) length of gaster, not or barely exserted beyond its apex, 1.0× (0.8–1.2×) as long as mesotibia.

Measurements (µm) of the holotype. Mesosoma 594; petiole: 59; gaster 545; ovipositor 505. Antenna: radicle 50; rest of scape 203; pedicel 75; F1 63; F2 98; F3 113; F4 108; F5 108; F6 100; F7 103; F8 75; clava 310. Fore wing 1733:634; longest marginal seta 99. Hind wing 1257:69; longest marginal seta 149.

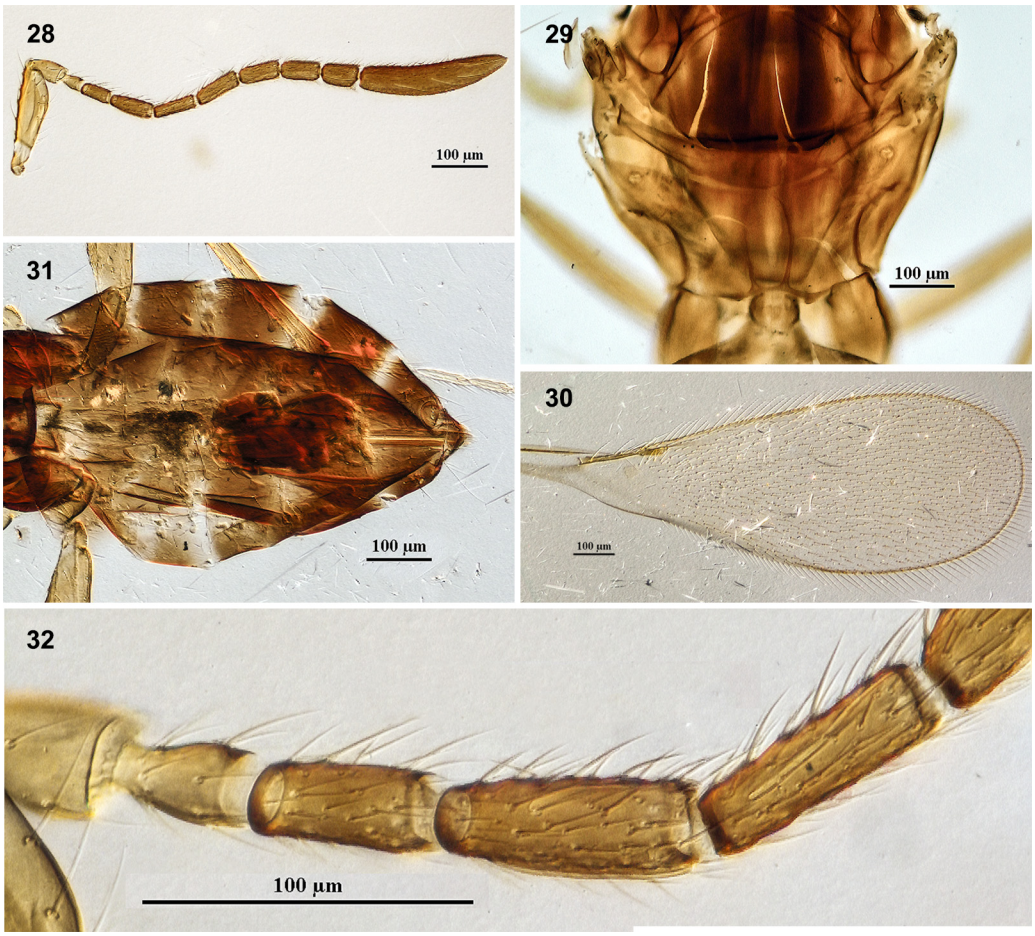
MALE. Unknown.

Recognition. *Cosmocomoidea tenuis* is most similar to *C. kodaiana* and *C. rugosa* (see the diagnosis of the latter). It can be distinguished from *C. kodaiana* by F2 of the female antenna lacking mps and by having only one mps on F3, whereas F2 bears one and F3 has two mps in *C. kodaiana*.

Distribution. Oriental: China (Fujian).

Etymology. The species name refers to the slender flagellum of the female antenna.

Hosts. Unknown.



FIGURES 28–32. *Cosmocomoidea tenuis* ♀ (holotype): 28, antenna; 29, propodeum; 30, fore wing; 31, ovipositor; 32, pedicel and F1–F4 of antenna.

FIGURES 33–34. 33, *Cosmocomoidea rugosa*: holotype slide; 34, *C. tenuis*: holotype slide.

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