

[研究文章 Research Article]

<http://zoobank.org/urn:lsid:zoobank.org:pub:E501BAD4-E37C-42CF-9C07-54F7F94FA178>

First Record of *Urocerus xanthus* (Cameron, 1876) (Hymenoptera: Siricidae) from Yunnan Province, China, with Identification Keys to *Urocerus* from Mainland China and Taiwan

JIRÍ HÁVA

Forestry and Game Management Research Institute, Strnady 136, CZ-252 02 Praha 5 - Zbraslav, Czech Republic. E-mail: hava@vulhm.cz

Abstract. *Urocerus xanthus* (Cameron, 1876) is newly recorded from Yunnan Province, China. Adults of both sexes are illustrated and redescribed. In addition, keys to the *Urocerus* species recorded from China and Taiwan are provided. The subspecies status of *U. gigas* is also discussed.

Keywords: Taxonomy, horntail, re-description, identification, variation

Introduction

The horntails or woodwasps belonging to the family Siricidae are xylophagous insects of the order Hymenoptera. Due to the wood-boring habit of the larvae and their symbiotic relationship with basidiomycete wood-rot fungi, some species are considered to be important forest pests (Cartwright, 1938; Parkin, 1941; Slippers et al., 2003; Thompson et al., 2014). To date, ten extant genera of Siricidae are recognized, and one of the most diverse genera is *Urocerus* Geoffroy, 1762, which includes 37 species worldwide, with 21 species and subspecies known from China and Taiwan (Wei et al., 2006; Taeger et al., 2010; Sundukov, 2017; Háva & Holuša, 2018). The species *Urocerus xanthus* (Cameron, 1876) was first recorded in China by Maa (1949), and was known from Tibet and Qinghai Province in China (Xiao et al., 1983; 1992). In the present article, *U. xanthus* is newly recorded from Yunnan Province, China, and both sexes are redescribed based on newly obtained material.

In addition, during the study, the author detected some inconsistencies between the identification keys and the descriptions in Xiao et al. (1983) and (1992) (See remarks of *U. xanthus* as an example). After examining the photos of type specimens of Chinese species described by Xiao et al. (1983) and literature, I provide updated keys to adult male and female of the genus *Urocerus* of China and Taiwan.

Materials & methods

The terminology of morphological structures follows Schiff et al. (2012), except those of the head and thorax, which follows Xiao et al. (1992).

All the photographs were made by 3D Microscope with Eakins Full HD Camera, and were adjusted in GIMP (GNU Image Manipulation Program) 2.10.12.

The studied specimens in this paper are deposited in the following collections:

CAF - Chinese Academy of Forestry, Beijing, China

JHAC - Jiří HÁVA, Private Entomological Laboratory & Collection, Únětice u Prahy, Prague-West, Czech Republic.

Results

Urocerus xanthus (Cameron, 1876)

(Figs. 1-17)

Material examined: China, Yunnan, Weixi, viii.2020, local collector, 2♂♂, 2♀♀, (JHAC).

Distribution. India; Pakistan; China: Tibet, Qinghai, new to Yunnan.

Re-description of female. Length, 28 mm from front of head to apex of cornus; 34 mm from front of head to apex of ovipositor.

Head: Black pubescence on the lower portion of the head; gena, frons, antenna and vertex with yellow pubescence. Head yellowish brown with a black, median band extending from ocellar triangle to posterior margin of vertex, surface with irregularly scattered pits except that gena almost without pit; antenna yellowish brown, with 21 flagellomeres; frons yellow, with a black spot in the middle; clypeus and supraclypeal area more densely reticulate, densely pubescent, with longest hairs on lower gena, malar area, and mouthparts; occiput with long black setae. Propleuron black, mesepisternum yellowish brown.

Thorax: Black pubescence on thorax. Pronotum yellowish brown, darkened medially and anterolaterally, matte; mesonotum black with a large, rectangular yellowish-brown patch in the middle, posterior margin yellowish brown and matte (Fig. 1B); mesoscutellum yellowish brown evenly sculptured with warts and pits; cenchrus yellowish brown. Wings uniformly yellowish infuscated, veins dark brown; hindwing with vein 1A present (Fig. 2A). Legs yellowish brown, hind basitarsus a little shorter than the combine of the rest tarsomeres, hind tarsomere 2 in lateral aspect about 4 times as long as maximum height, hind tarsomere 5 about the same length of tarsomere 2, tarsal claws brownish, tarsal claw forked in lateral aspect, distal tooth rather thin and acute at apex, basal tooth thicker and shorter. (Fig. 1D), foretibial spur curved, distal half flat and rounded at apex, with a preapical spine (Fig. 1E).

Abdomen: Abdominal tergum I pubescent, yellow, anterior half brownish black, terga II-VII yellowish brown with lateral margins brownish black, tergum IX yellow, anterior margin brownish black (Fig. 2D), median basin yellowish brown (Fig. 2C); tergum X yellowish brown with a brown lateral spot on each side of anterior margin (Fig. 2B) Cornus long and narrow, linear-lanceolate, not distinctly constricted at base, the lateral margins in dorsal aspect almost parallel in the middle, the length of hind margin of median basin to cornal tip about 5.7 times as long as the maximum breadth (Fig. 2C), the upper surface mostly smooth, the lateral and lower surfaces in apical half scattered with granules or spines (Fig. 2B); cerci missing; abdominal sternum yellowish brown; ovipositor dark brown.

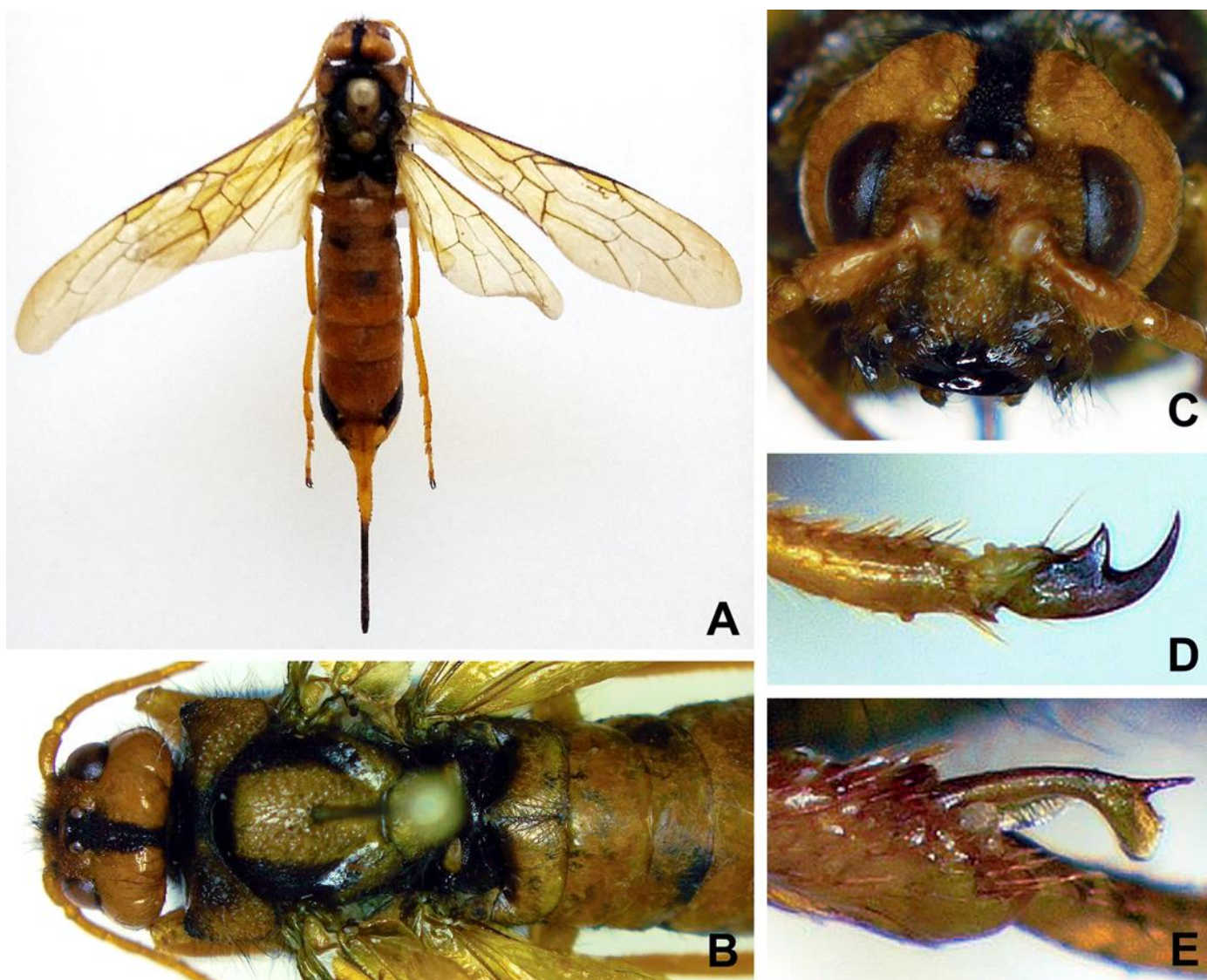


Figure 1. Female of *Urocerus xanthus*. A, habitus, dorsal. B, head and thorax, dorsal. C, head, front view. D, fore tarsal claw. E, foretibial spur.

Re-description of male. Length, 23 mm from front of head to apex of cornus. Head, pronotum, mesonotum and abdomen bicolored

Head: Black pubescence on lower portion of the head; gena, frons, antenna and vertex with yellow pubescence. Head yellowish brown with a black, median band extending from ocellar triangle to posterior margin of vertex, surface with irregular scattered pits except that gena almost without pit; antenna yellowish brown, with 18 flagellomeres; frons, area around antennal sockets and behind the dorsal margin of eyes black (Fig. 3C); clypeus and supraclypeal area more densely reticulate, densely pubescent, with longest hairs on lower gena, malar area, and mouthparts; occiput with long black setae. Propleuron black, mesepisternum yellowish brown.

Thorax: Black pubescence on thorax. Pronotum black and matte, with a pair of submedian yellowish brown spots on dorsal side; mesonotum yellowish brown and matt, black marginally (Fig. 3B); mesoscutellum brownish black, evenly sculptured with warts and pits; cenchrus yellowish brown more or less with darkened markings. Wings uniformly yellowish infuscated, veins dark brown; hindwing with vein 1A present. Fore and middle leg with femur and tibia black or brownish black and yellowish brown at both extremities, fore tarsus yellowish brown, middle basitarsus black and yellowish brown at base and apex (Fig. 4A), the rest segments of middle tarsus yellowish brown; hind femur black with both ends brownish yellow, hind tibia and basitarsus distinctly enlarged, with submarginal furrows on both dorsal and ventral surfaces, black and yellow at both extremities, hind tibia in ventral aspect about 4.7 times as long as the maximum breadth, hind basitarsus in ventral aspect about 3.3 times as long as the maximum breadth, the rest segments of hind tarsus yellowish brown, hind tarsomere 5 longer than tarsomere 2.; tarsal claws brownish; foretibial spur curved, basal half with membrane-like structure attacked, distal half flat and rounded at apex, with a preapical spine (Fig. 3D).



Figure 2. Female of *Urocerus xanthus* (Cameron, 1876). A, right wings. B, abdominal apex, lateral. C, abdominal apex, dorsal. D, abdomen, lateral.

Abdomen: Abdominal tergum I blackish brown and yellowish brown medially, terga II-VIII yellowish brown with lateral margins brownish black (Fig. 3A); cornus yellowish brown, granularly, bulging at the base, apical half triangular in dorsal aspect (Fig. 3E); abdominal sternum yellowish brown.

Remark: In the keys by Xiao et al. (1983) and (1992), the female of *U. xanthus* has the terga I-VIII yellowish brown with posterior margin blackish brown, but in their description of this species, the terga II-VII are yellowish and black laterally without the black band on posterior margin and anterior margin of tergum IX black, which is consistent with the original description by Cameron (1876), the description and illustration by Kirby (1882) as well as the female specimens examined here. The erroneous statement by Xiao et al. (1983) and (1992) has been corrected in the key below.

According to Maa (1949) and Xiao et al. (1992), the vein A1 on the hindwing of *U. xanthus* is absent. However, the vein A1 is not only present on hindwing of both sexes of our specimens, but also visible on the illustration by Kirby (1882). Schiff et al. (2012) indicated that the wing vein in Siricidae is variable and could even lead to asymmetrical venation on an individual. Therefore, the presence of vein A1 on the hindwing is considered to be variable for *U. xanthus*.

Key to the *Urocerus* species of China and Taiwan

(Adapted from Benson (1943), Maa (1949) and Xiao et al. (1992))

Male

1. Antenna black, with intermediate segments whitish yellow; body almost entirely black or brownish black, only genal and lateral spots on tergum I, VII and VIII pale *U. antennatus*
 Antenna usually colored entirely yellow, but occasionally darkened or basoapically contrasted, but never basoapically dark with lighter coloration medially. 2
2. Body entirely black or brownish black, only the antennal flagellum, gena and apex of femur yellow *U. yasushii*
 Body color not as above 3
3. Antenna basally black, apical half whitish yellow, sharply contrasted. *U. scienii*
 Antennae uniformly pale colored, at most gradually darkened toward the base, never sharply contrasted in basal and apical halves 4
4. Hind tibia and basitarsus apparently enlarged 5
 Hind tibia and basitarsus not apparently enlarged 9
5. Tergum brown to black; hind tibia entirely black 6
 At least terga II-VIII yellowish brown to reddish brown; hind tibia apically and basally yellowish brown 7
6. Antenna and pronotum brown; middle tibia yellow or yellowish brown *U. multifasciatus*
 Antenna and anterolateral corner of pronotum yellowish brown; middle tibia mostly black *U. fushengi*
7. Middle tibia entirely yellow; terga I and II brownish black, the others yellowish brown *U. similis*
 Middle tibia not entirely yellow 8
8. Tergum entirely yellowish orange *U. dongchuanensis*
 At least terga II-VIII yellowish orange and brownish black laterally *U. xanthus*
9. Hairs on head and thorax exceptionally long, for instance, those between the antennal sockets are longer than the scape
 *U. gigas tibetanus*
 Hairs on head and thorax of usual length, for instance, those between the antennal sockets are scarcely longer than two-thirds the scape *U. gigas gigas*

Female

1. Cornus relatively broader and shorter, the post-cercal length much less than three-times as long as the maximum breadth (If the cercus absent, the length of hind margin of median basin to cornal tip at most 3.3 times as long as the maximum breadth), robustly lanceolate, the lateral margin in dorsal aspect markedly dilated preapically 2
 Cornus relatively slender and longer, the post-cercal length at least three-times as long as the maximum breadth (If the cercus absent, the length of hind margin of median basin to cornal tip at least 3.7 times as long as the maximum breadth), acuminate or lanceolate, the lateral margin in dorsal aspect at most only slightly dilated preapically 4

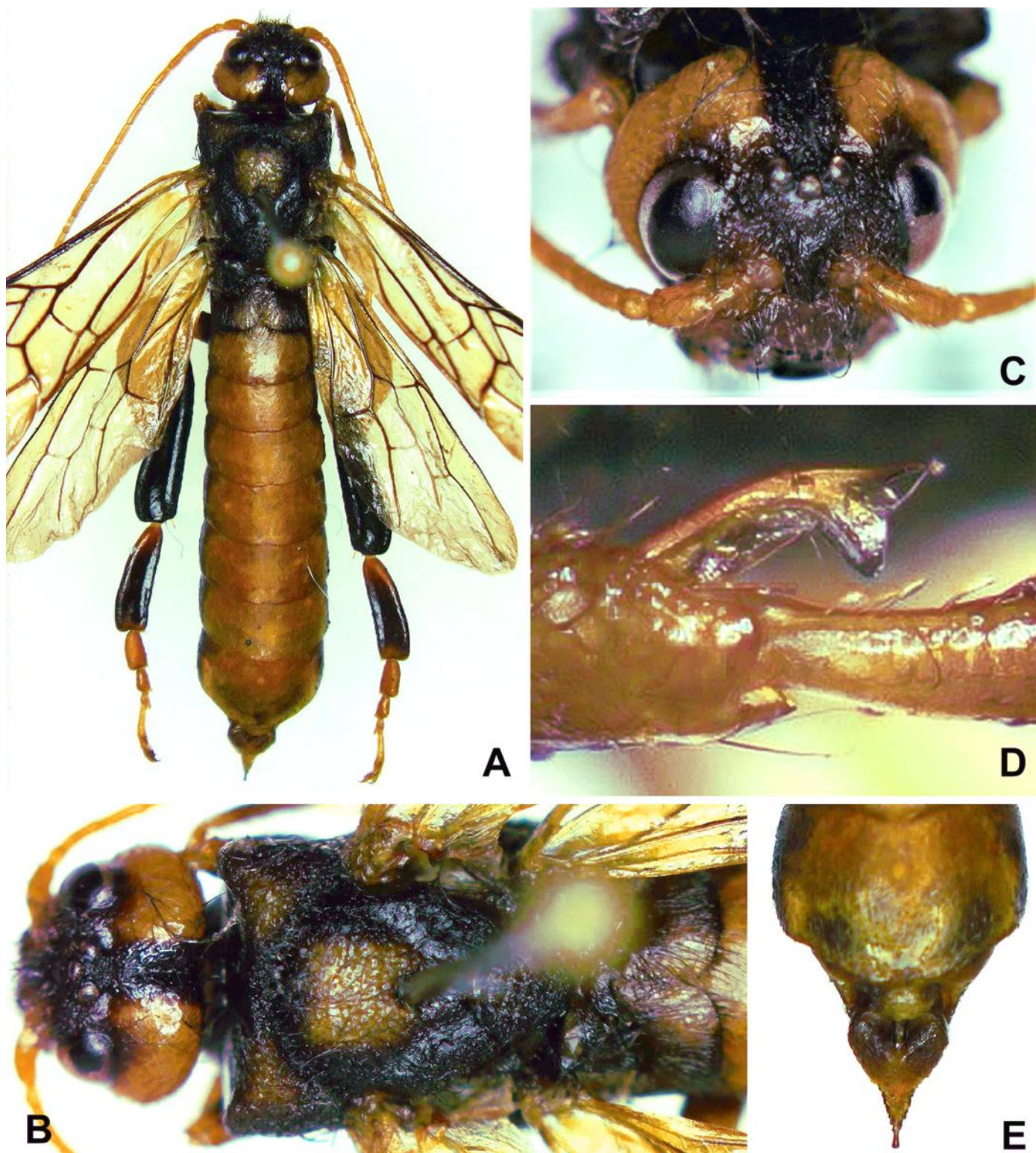


Figure 3. Male of *Urocerus xanthus* (Cameron, 1876). A, habitus, dorsal. B, head and thorax, dorsal. C, head, frontodorsal. D, foretibial spur. E, abdominal apex, dorsal.

2. Antenna black or brownish black at both extremities, with the intermediate segments whitish yellow; flagellomere I slightly longer than flagellomere II *U. helvolus*
 Antennal segments almost concolorous, black or yellowish orange; length of flagellomere I equal to or shorter than flagellomere II 3
3. Fore basitarsus longer than fore tibia; antenna black, brown at the tip, with intermediate segments slightly dilated, the apical ones strongly attenuated; tergum I yellow *U. siceni*
 Fore basitarsus shorter than the fore tibia; antennae yellowish orange, slightly darkened at the extremity, with intermediate segments cylindrical, the apical ones slightly attenuated; tergum I reddish brown *U. koshunus*



Figure 4. Male of *Urocerus xanthus* (Cameron, 1876). A, middle leg, lateral. B, hind leg, ventral.

4. Antenna black or brownish black at both extremities, with intermediate segments whitish yellow; body almost entirely black or brownish black 5
 Antenna almost entirely yellowish brown to reddish brown, at most scape and pedicel slightly darkened, never sharply contrasted in middle and both extremities; body color not as above 6
5. Eye excessively small, with its longitudinal axis only about a-half as long as the oculo-occipital line; median black band on vertex only as wide as an eye; abdomen entirely black *U. niger*
 Eye of usual size, with its longitudinal axis about two-thirds or three-quarters as long as the oculo-occipital line; median black band on vertex much broader than an eye; terga I, VII and VIII laterally pale-marked *U. antennatus*
6. Body entirely black or brownish black, only pale on gena, most of antenna, tibia and tarsus *U. yasysyii*
 Body color not as above 7
7. Preapical tooth of the tarsal claw lying obliquely to the main axis, excessively long; Abdomen yellowish brown, except ventral extensions of terga II-VII and anterior margin of tergum IX blackish brown *U. xanthus*
 Preapical tooth of the tarsal claw subperpendicular to the main axis, moderately long; abdomen more richly dark marked 8
8. Vertex black, or medially with a very broad, transversely rectangular or trapezoidal, black band, of which the median breadth at least twice as long as the postocellar line 9
 Vertex yellow, or medially with a narrow, linear or T-shaped black band, of which the median breadth at most as broad as postocellar line 11
9. Hairs on head and thorax exceptionally long, for instance, those between the antennal sockets are longer than the scape; tergum II mostly black posteriorly *U. gigas tibetanus*
 Hairs on head and thorax of usual length, for instance, those between the antennal sockets are scarcely longer than two-thirds the scape; tergum II entirely yellow to light reddish brown 10
10. Tergum VIII entirely yellow to light reddish brown dorsally, the tergum IX mostly yellow to light reddish brown dorsally or black dorsally and discally broadly yellow in lateral aspect *U. gigas gigas*
 Tergum VIII posteriorly narrowly black in the middle, the tergum IX almost entirely black, with lateral margin more or less yellow to reddish brown *U. gigas orientalis*
11. Hairs Vertex entirely yellow, or medially with a black or brown band, of which the median breadth at most as broad as an ocellar 12
 Vertex medially with a black or brown band, of which the median breadth as long as the postocellar line. 14

12. Mesonotum entirely black; the length of the ocello-occipital line at least thrice as long as oculo-occipital line. *U. multifasciatus*
 Mesonotum mostly yellowish brown or ferruginous; the length of the ocello-occipital line less than thrice as long as oculo-occipital line 13
13. Tergum mostly black, dull; the flagellomere I apparently shorter than flagellomere III *U. linitus*
 Tergum mostly yellowish brown, with brown markings on posterior margins of terga II-VIII (very pale on terga II), lustrous; flagellomere I apparently longer than flagellomere III *U. serricornis*
14. Hind femur reddish brown to brownish black, tibia and tarsus yellow; tergum I deeply punctuated 15
 Hind femur, tibia and tarsus entirely yellow or yellowish brown; tergum I shallowly punctuated 16
15. Foretibia slightly shorter than fore basitarsus, cornus relatively short, and in profile apically not curved ventrad, but sharply pointed; tergum VIII yellow anteriorly *U. brachyurus*
 Foretibia slightly longer than fore basitarsus, cornus relatively long, and in profile apically more or less curved ventrad, and not sharply pointed; tergum VIII entirely black *U. niitakanus*
16. The vertex in frontal aspect distinctly tumescent medially, forming a lateral sulcus on each side of median groove 17
 The vertex in frontal aspect not distinctly tumescent medially, distinct lateral sulcus absent *U. tsutsujiyamanus*
17. The tergum VIII medially black anteriorly *U. lijiangensis*
 The tergum VIII yellowish brown anteriorly. 18
18. The ovipositor shorter than forewing *U. similis*
 The ovipositor longer than forewing *U. tumidus*

The *Urocerus* species recorded from China and Taiwan

(For the references of occurrence of each species in China, please see Wei et al. (2006))

- Urocerus antennatus* (Marlatt, 1898)
Urocerus brachyurus Maa, 1949
Urocerus dongchuanensis Xiao & Wu, 1983
Urocerus fushengi Xiao & Wu, 1982
Urocerus gigas gigas (Linnaeus, 1758)
Urocerus gigas orientalis Maa, 1949
Urocerus gigas tibetanus Benson, 1943
Urocerus helvolus Xiao & Wu, 1983
Urocerus koshunus (Sonan, 1938)
Urocerus lijiangensis Xiao & Wu, 1983
Urocerus linitus Xiao & Wu, 1983
Urocerus multifasciatus Takeuchi, 1938
Urocerus niger Benson, 1943
Urocerus niitakanus (Sonan, 1938)
Urocerus serricornis Xiao & Wu, 1983
Urocerus sicieni Maa, 1949
Urocerus similis Xiao & Wu, 1983
Urocerus tsutsujiyamanus (Sonan, 1938)
Urocerus tumidus Maa, 1949
Urocerus xanthus (Cameron, 1876)
Urocerus yasushii (Yano, 1917)

Remarks on the subspecies status of *Urocerus gigas*: The subspecies *Urocerus gigas orientalis* Maa, 1949 was included in the checklist of sawflies of China (Wei et al., 2006). The subspecies was described based on two female specimens from Sachalin and Tschita, with the exterior surface of hind tibia with the apical fourth distinctly darkened, tergum VIII yellow and posterior margin black in the middle, and tergum IX laterally extensively yellow. Maa (1949) mentioned two additional females (not included in the type series) deposited in Musée Heude collection, one collected from Tschita, and the other from Tsingtao, Shangtung. He doubted the collecting data of the latter. According to Maa (1949), the specimen from Tschita is probably a newly emerged adult with median band on vertex exceptionally narrowed posteriorly and tergum IX broadly yellow laterally; the specimen from Tsingtao has tergum VIII entirely yellow and tergum IX extensively yellow laterally. Maa (1949) stated that the coloration of the latter should be referred to *U. g. taiganus*, instead of *U. g. orientalis*. *Urocerus gigas taiganus* was described by Benson (1943) based on specimens from Finland, northern and, southwestern Russia. Benson (1943) suggested that the female from Sachalin illustrated by Matsumura (1930) should be *U. g. taiganus*. Maa (1949) disagreed with Benson (1943), stating that such coloration described by Matsumura (1912,

1930) would run to *U. g. flavicornis*, instead of *U. g. taiganus*. He also pointed that the identification of a female specimen from Kamchatcha as *U. g. flavicornis* by Ashmead (1902) should be erroneous. Thus, Maa (1949) described the subspecies *U. g. orientalis* to accommodate *U. g. gigas* from East and Northeast Asia with coloration distinct from other subspecies. However, Xiao & Wu (1983) reported four female specimens of *U. g. taiganus* from a single locality in Xinjiang with three matching *U. g. taiganus* and the other matching *U. g. orientalis*, which suggests that the colorations of tergum VIII, IX and hind tibia might be variable. Smith (1978) stated that the separation of subspecies of *U. g. gigas* is principally only by the coloration consistent within certain geographical regions. The presence of multiple coloration forms in a single area might suggest invalidity of certain subspecies, or possibly inappropriate subspecies status. Lacking the material and ability to study the relationship among the subspecies of *U. g. gigas*, I follow Taeger et al. (2010, 2018) tentatively accepting *U. g. taiganus* as a junior synonym of *U. g. gigas* and *U. g. orientalis* as a valid subspecies. The validity of subspecies of *U. g. gigas* should be evaluated.

Urocerus flavicornis, long been considered as a subspecies of *U. g. gigas*, was re-elevated as full species by Schiff et al. (2012) based on molecular evidence. Schiff et al. (2012) stated that the species is distributed in Canada and United States, with interception records from Réunion Island and England. According to Wei et al. (2006), the occurrence of the species in China was reported from Inner Mongolia in “Kang, 1992”. However, the exact publication or article of “Kang, 1992”, nor additional record of *U. flavicornis* in China could not be traced and accessed by the author. Based on the locality, the specimens identified as *U. g. flavicornis* in “Kang, 1992” is possibly *U. g. orientalis*, and thus the record of *U. flavicornis* in China is removed until further confirmation is made.

Acknowledgements

I would like to thank Guo-Hong Li, Hong-Bin Wang and Xiao-Yi Wang (CAF) for their help in the examination of photos of the types, and Chih-Ting Hsu (Taiwan) for translating literature and providing suggestions. The study was supported by the Ministry of Agriculture of the Czech Republic, institutional support MZE-RO0118.

References

- Ashmead, W. H. 1902. Papers from the Harriman Alaska Expedition. XXVIII. Hymenoptera. *Proceedings of the Washington Academy of Sciences* 4: 117–274.
- Benson, R. B. 1943. Studies in Siricidae, especially of Europe and southern Asia (Hymenoptera; Symphyta). *Bulletin of Entomological Research* 34 (1): 27–51.
- Cameron, P. 1876. Descriptions of new genera and species of Tenthredinidae and Siricidae, chiefly from the East Indies, in the Collection of the British Museum. *Transactions of the Entomological Society of London for the Year 1876* (3): 459–471.
- Cartwright, K. S. G. 1938. A further note on fungus association in the Siricidae. *Annals of Applied Biology* 25 (2): 430–432.
- Háva, J. & Holuša, J. 2018 First record of the siricid *Urocerus albicornis*, an invasive alien pest, in the Czech Republic. *Journal of Applied Entomology* 143: 487–491.
- Kirby, W. F. 1882. List of Hymenoptera, with Descriptions and Figures of the Typical Specimens in the British Museum. Vol. 1. Tenthredinidae and Siricidae. Order of the Trustees, London, 450 pp.
- Maa, T.-C. 1949. A synopsis of Asiatic Siricoidea with notes on certain exotic and fossil forms (Hymenoptera, Symphyta). *Notes d'Entomologie Chinoise* 13 (2): 11–189.
- Matsumura, S. 1912. The illustrated thousand insects of Japan. Supplement 4. Keiseisha, Tokyo. 247 pp. + pl. XLII-LV.
- Matsumura, S. 1930. The illustrated thousand insects of Japan 2. Toko-Shoin, Tokyo. 198 pp. + pl. I-XVIII.
- Parkin, E. A. 1941. Symbiosis in larval Siricidae (Hymenoptera). *Nature* 147 (3724): 329–329.
- Schiff, N. M., Goulet, H., Smith, D. R., Boudreault, C., Wilson, A. D. & Scheffler, B. E. 2012. Siricidae (Hymenoptera: Symphyta: Siricoidea) of the Western Hemisphere. *Canadian Journal of Arthropod Identification* 21: 1–305.
- Slippers, B., Coutinho, T. A., Wingfield, B. D., & Wingfield, M. J. 2003. A review of the genus *Amylostereum* and its association with woodwasps. *South African Journal of Science* 99 (1): 70–74.
- Smith, D. R. 1978. Suborder Symphyta (Xyelidae, Pararchxyelidae, Parapamphiliidae, Xyelydidae, Karatavidae, Gigasiricidae, Sepulcidae, Pseudosiricidae, Anaxyelidae, Siricidae, Xiphytriidae, Paroryssidae, Xyelotomidae, Blasticotomidae, Pergidae). Hymenopterorum Catalogus (nova editio) Pars 14. W. Junk Publishers, the Hague. 193 pp.
- Sundukov, Y. N. 2017. Siricidae. pp 112–114. In: Belokobylskij, S. A. & Lelej, A. S. (eds). Annotated catalogue of the Hymenoptera of Russia. Volume I. Symphyta and Apocrita: Aculeata. *Proceedings of the Zoological Institute of the RAS* 321 (Supplement 6): 1–475.
- Taeger, A., Blank, S. M. & Liston, A. D. 2010. World Catalog of Symphyta (Hymenoptera). *Zootaxa* 2580: 1–1064.
- Taeger, A., Liston, A. D., Prous, M., Groll, E. K., Gehroldt, T. & Blank S. M. 2018. ECatSym – Electronic World Catalog of Symphyta (Insecta, Hymenoptera). Program version 5.0 (19 Dec 2018), data version 40 (23 Sep 2018). – Senckenberg Deutsches Entomologisches Institut (SDEI), Müncheberg. Available from: <https://sdei.de/ecatsym/> (accessed 18 November 2021).
- Thompson, B. M., Bodart, J., McEwen, C., & Gruner, D. S. 2014. Adaptations for symbiont-mediated external digestion in *Sirex noctilio* (Hymenoptera: Siricidae). *Annals of the Entomological Society of America* 107 (2): 453–460.
- Wei, M.-C., Nie, H.-Y. & Taeger, A. 2006. Sawflies (Hymenoptera: Symphyta) of China - Checklist and Review of Research. pp 505–574. In: Blanke, S. M., Schmidt, S. & Taeger, A. (eds). Recent Sawfly Research: Synthesis and Prospects. Goecke & Evers, Keltern.
- Xiao, G.-R. & Wu, J. 1983. The siricid wood wasps of China (Hymenoptera, Symphyta). *Scientia Silvae Sinicae. Memoir of Forest Entomology* 19: 1–29.

Xiao, G.-R., Huang, X.-Y., Zhou, S.-Z., Wu, J. & Zhang, P.-Y. 1992. Economic Sawfly Fauna of China. Tianze Eldonejo, Beijing. Viii+ 221 pp. (in Chinese)

藏黃大樹蜂於中國雲南省之新紀錄（膜翅目：樹蜂科），及中國與臺灣產大樹蜂屬檢 索表

吉日 哈瓦

林業和遊戲管理研究所 斯特納迪區 136 CZ-252 02 布拉格 5

摘要: 本研究提供藏黃大樹蜂 *Urocerus xanthus* (Cameron, 1876) 於中國雲南省之新紀錄，並重新描述其成蟲。本文亦提供中國及臺灣產大樹蜂屬 (*Urocerus* Geoffroy, 1762) 之檢索表。

關鍵詞: 分類學、樹蜂、大樹蜂屬、重新描述、鑑定、變異