

Three New Species of the Genus *Goniozus* Förster, 1856 (Hymenoptera: Bethylidae) from Zhejiang

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Abstract: Four species of *Goniozus* Förster are identified from Zhejiang Province in this paper. Among which, *Goniozus xiaoi*, *Goniozus baishanzuensis* and *Goniozus lamprosemae* are described and illustrated as new to species. All the types are deposited in Zhejiang University.

Key words: Hymenoptera; Bethylidae; Bethylinae; *Goniozus*; China

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Goniozus Förster, 1856 is the largest genus in the subfamily Bethylinae. All species of this genus are external parasites of Lepidoptera larvae (Gordh and Moczar, 1990). About 165 nominal species are recognized worldwide, but only four species, including *Goniozus japonicus* Ashmead, 1904, *Goniozus sinicus* Xiao et Wu, 1987, *Goniozus hoorai* Terayama, 1999 and *Goniozus yaeyamanus* Terayama, 1999, are known from China (Xiao and Wu, 1987; Terayama, 1999).

Recently we examined some specimens from Zhejiang Province and identified as four species. Among them, three species are described and illustrated as new to species.

1. *Goniozus xiaoi*, sp. nov. (Figs. 1~5)

Holotype; Female; fully winged; HL=0.71 mm; HW=0.63 mm; WF=0.37 mm; LM=1.02 mm; LPD=0.37 mm; WPD=0.49 mm; FWL=1.95 mm; TL=3.29 mm.

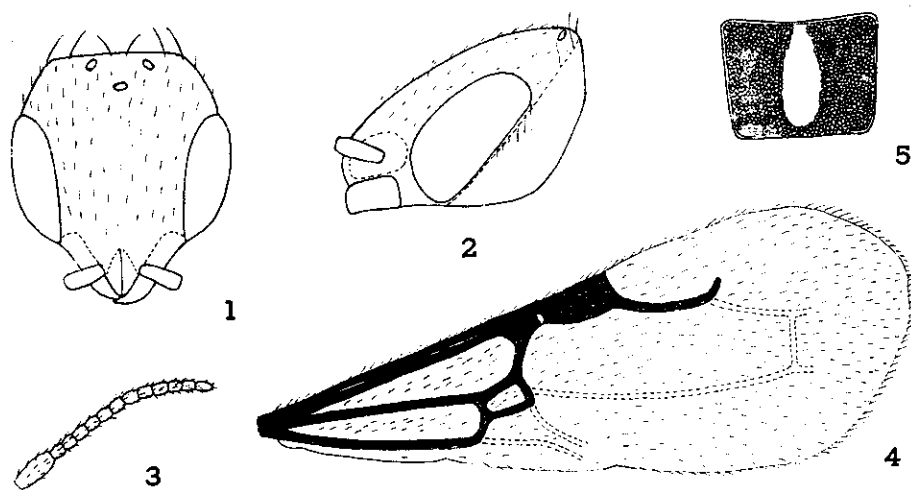
Body black-reddish; mandibles black-reddish with teeth brown-reddish; antennae testaceous; legs brown-reddish with tibiae and tarsi testaceous; tegulae brown-reddish; wings hyaline with costa, subcosta, pterostigma and radial vein brown, and median vein and basal vein light yellow.

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Head 1.12 times as long as wide, with almost straight posterior margin in frontal view; posterolateral corners not forming distinct angle; three pairs of long whitish hairs at the occipital margin; frons and vertex microreticulate, with shallow and sparse punctures; mandible with 4 teeth; median lobe of clypeus narrow, forming an acute angle; antennae short, 0.84 mm in length; antennal segments in following proportions: 6.5 : 2.0 : 2.0 : 2.5 : 2.5 : 2.5 : 2.5 : 2.5 : 2.5 : 2.0 : 2.0 : 2.0 : 3.0; 2nd to 5th segments each longer than wide; eyes with short erect hairs and 0.39 mm long; WF 0.95 times as long as LE; ocelli forming an obtuse triangle; DAO=0.05 mm; POL : AOL=5.5 : 3.0; OOL : WOT =7.5 : 8.5.

Pronotal disc 0.39 times as long as wide; pronotum and mesonotum microreticulate and scattered with shallow and sparse punctures; propodeal disc 0.75 times as long as wide, with weak and incomplete transverse carina; transverse carina present only near the posterolateral corners; median areas smooth and shining; remainder microreticulate; declivity microreticulate; fore wing with closed areola; median and submedian cells with short hairs.

Metasoma smooth and shining.



Figs. 1~5 *Goniozus xiaoi*, sp. nov. (Holotype)

1. head, frontal view; 2. head, lateral view; 3. antenna; 4. right fore wing; 5. propodeum, dorsal view

Remarks: This species resembles *G. hoorai* Terayama, 1999 in general aspects, but is distinguished from the latter by the 2nd to 5th antennal segments each longer than wide, and incomplete transverse carina of propodeum.

Holotype ♀, Baishanzu Mountain (27.45°N, 119.12°E), Qingyuan County, Zhejiang Province, 06-K-1993, coll. Wu Hong, No. 945291. Paratype: 1 ♀, Songyang County (28.27°N, 119.29°E), Zhejiang, 07-X-1994, coll. Chen Hanlin, No. 948481.

This species is named in honour of Professor Xiao Gang-rou, a well-known Chinese entomologist.

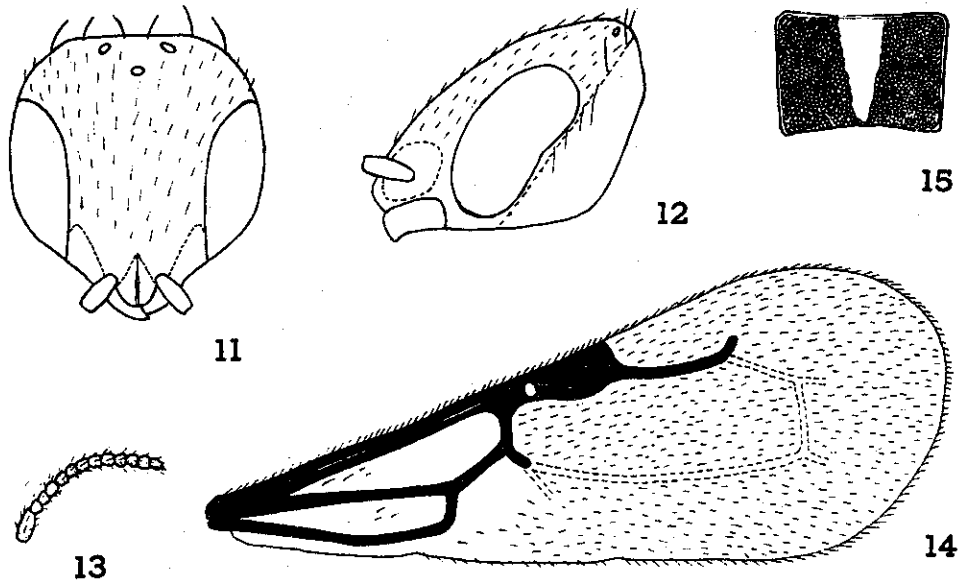
2. *Goniozus baishanzuensis*, sp. nov. (Figs. 6~10)

Holotype: Female; fully winged; HL=0.73 mm; HW=0.68 mm; WF=0.39 mm;

with tibiae and tarsi testaceous; mid and hind legs brown-reddish with coxae blackish brown; tegulae blackish brown.

Head nearly as long as wide, with almost straight posterior margin in frontal view; posterolateral corners not forming distinct angle; frons and vertex microreticulate, with shallow and sparse punctures; three pairs of long whitish hairs present at the occipital margin; mandible with 4 teeth; median lobe of clypeus rather broad, with an obtuse median angle; antennae short, 0.71 mm in length; antennal segments in following proportions: 4.5 : 2.0 : 2.0 : 2.0 : 2.0 : 2.0 : 2.0 : 2.0 : 2.0 : 2.0 : 2.0 : 2.5; 2nd to 5th segments each as long as wide; eyes without hairs and 0.39 mm long; WF 0.87 times as long as LE; ocelli forming an obtuse triangle; DAO=0.04 mm; POL : AOL=5.5 : 3.0; OOL : WOT=8.5 : 8.5.

Pronotal disc 0.45 times as long as wide; pronotum and scutum microreticulate, with shallow and sparse punctures; scutellum weakly microreticulate; propodeal disc 0.63 times as long as wide, without transverse carina; median area smooth and shining; remainder microreticulate; declivity microreticulate; fore wing without areola; median and submedian cells without hairs.



Figs. 11~15 *Goniozus lamprosemae*, sp. nov. (Holotype)

11. head, frontal view; 12. head, lateral view; 13. antenna; 14. right fore wing; 15. propodeum, dorsal view

Metasoma smooth and shining.

Host: *Lamprosema indicata* Fabricius.

Remarks: This species is similar to *Goniozus ryukyuensis* Terayama, 1999 from Japan, but can be separated from the latter by the median and submedian cells of fore wing without hairs, and propodeum without transverse carina.

Holotype ♀, Hangzhou (30.16°N, 120.10°E), Zhejiang Province, 1956, host: *Lamprosema indicata* Fabricius, coll. He Junhua, No. 5701.45.1. Paratypes, 2♀♀, same

LM=1.22 mm; LPD=0.33 mm; WPD=0.61 mm; FWL=2.20 mm; TL=4.22 mm.

Body blackish-brown; mandibles brown-reddish; antennae testaceous; tegulae blackish-brown; legs brown with fore coxae blackish-brown.

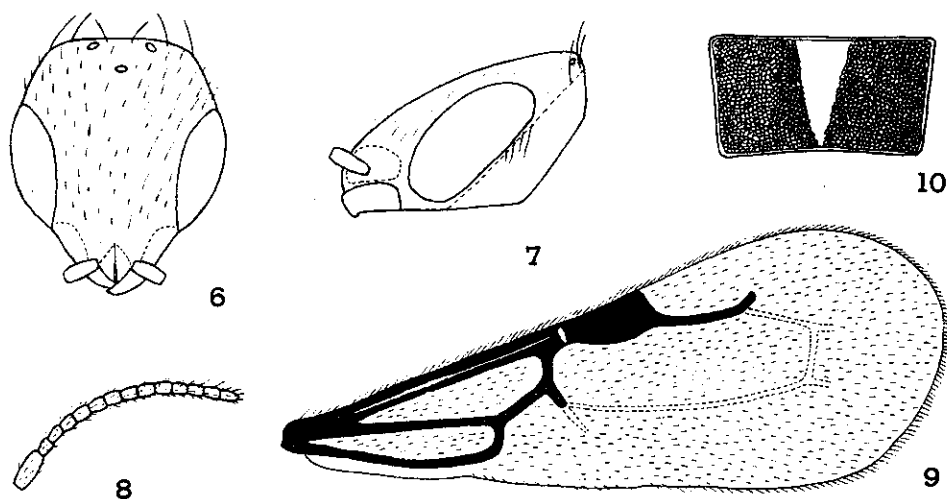
Head 1.07 times as long as wide, with straight posterior margin in frontal view; frons and vertex microreticulate, with shallow and sparse punctures; three pairs of long whitish hairs present at the occipital margin; median lobe of clypeus narrow, forming an acute angle; antennae short, 0.83 mm in length; antennal segments in following proportions: 6.0 : 2.5 : 2.5 : 2.5 : 2.5 : 2.5 : 2.5 : 2.5 : 2.0 : 2.0 : 2.0 : 2.5; 2nd to 5th segments each longer than wide; eyes with short erect hairs and 0.83 mm long; ocelli forming an obtuse triangle; DAO=0.06 mm; POL : AOL=5.0 : 2.5; OOL : WOT=8.5 : 9.0.

Pronotal disc 0.46 times as long as wide; pronotum and mesonotum microreticulate, with shallow and sparse punctures; propodeal disc 0.54 times as long as wide, with distinct and complete transverse carina; basal median triangular area smooth and shining; remainder microreticulate; declivity microreticulate; fore wing without areola; median and submedian cells with short hairs.

Metasoma almost smooth and shining, with very weak microreticulate.

Remarks: This species resembles *Goniozus japonicus* Ashmead, 1904 in the appearance of antennae, but is easily recognized by the shape and size of basal triangular area of propodeum.

Holotype ♀, Baishanzu Mountain (27.45°N, 119.12°E), Qingyuan County, Zhejiang Province, 06-IX-1993, coll. Wu Hong, No. 945299.



Figs. 6~10 *Goniozus baishanzuensis*, sp. nov. (Holotype)

6. head, frontal view; 7. head, lateral view; 8. antenna; 9. right fore wing; 10. propodeum, dorsal view

3. *Goniozus lamprosemae*, sp. nov. (Figs. 11~15)

Holotype: Female; fully winged; HL=0.59 mm; HW=0.56 mm; WF=0.34 mm; LM=0.95 mm; LPD=0.26 mm; WPD=0.41 mm; FWL=1.83 mm; TL=2.44 mm.

Body blackish-brown; mandibles brown; antennae testaceous; fore legs blackish brown

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浙江省棱角肿腿蜂属种类记述

(膜翅目: 肿腿蜂科: 肿腿蜂亚科)

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我国已知棱角肿腿蜂属 *Goniozus* Förster, 1856 四种, 即日本棱角肿腿蜂 *G. japonicus* Ashmead, 1904; 中华棱角肿腿蜂 *G. sinicus* Xiao et Wu, 1987; 蓬菜棱角肿腿蜂 *G. hoorai*

data as holotype; 1♀, Tianmushan Mountain (30.26°N, 119.34°E), **Zhejiang** Province, 27-VI-1988, coll. Qian Ying, No. 940272.

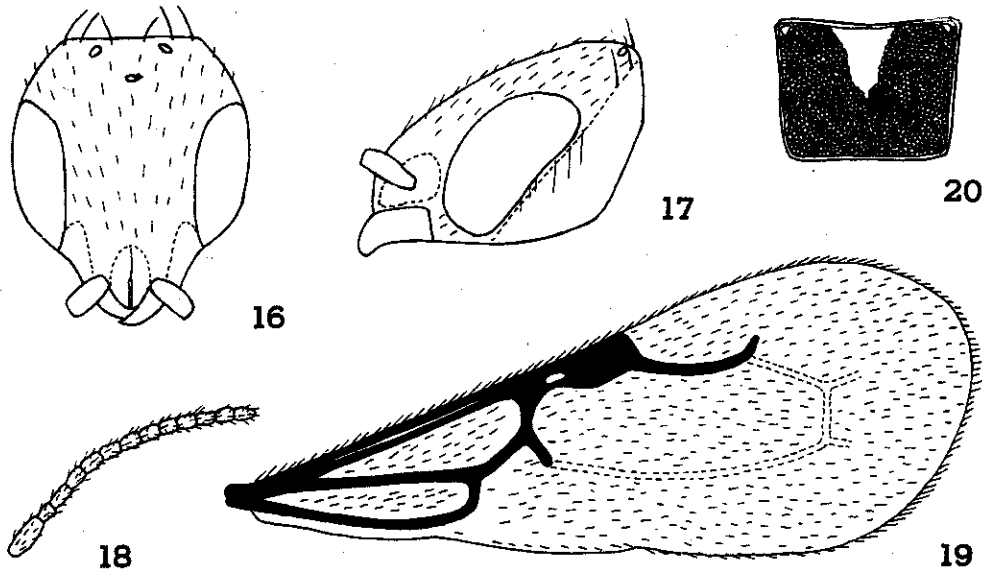
4. *Goniozus japonicus* Ashmead, 1904 (Figs. 16~20)

Goniozus japonicus Ashmead, 1904; *Jour. New York Ent. Soc.*, 12:67.

Host: *Locastra muscosalis* Walker, *Glyphodes pyloalis* (Walker), *Archips* sp., *Hystri-chosolus spathanum*, *Lobesia aeolopa* Meyrick.

Distribution: China (Zhejiang, Shanghai, Taiwan, Hubei), Korea, Japan, Russia.

Material examined: 1♀, Suichang County (26.19°N, 114.30°E), **Zhejiang**, 05-III-1981, host: *Locastra muscosalis* Walker, coll. Chen Hanlin, No. 821169; 1♀, Baishanzu Mountain (27.45°N, 119.12°E), Qingyuan County, **Zhejiang**, 19-VI-1994, coll. Wu Hong, No. 946917; 1♀, Baishanzu Mountain (27.45°N, 119.12°E), Qingyuan County, **Zhejiang**, 03-XI-1994, coll. Wu Hong, No. 946411; 1♀, Longwangshan Mountain (30.23°N, 119.24°E), Anji County, **Zhejiang**, 15-V-1996, coll. He Junhua, No. 984650.



Figs. 16~20 *Goniozus japonicus* Ashmead, 1904

16. head, frontal view; 17. head, lateral view; 18. antenna; 19. right fore wing; 20. propodeum, dorsal view

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