

A gynandromorphy of *Polistes nimphus* (Christ, 1791) (Hymenoptera: Vespidae: Polistinae) in China

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Abstract This note reports the occurrence of gynandromorphism in *Polistes nimphus* (Christ, 1791) in China. External features of the insect are presented. The insect was collected in Mt Donglingshan, Mentougou, Beijing. The specimen studied is deposited in the Institute of Zoology, Chinese Academy of Sciences.

Key words Hymenoptera, Vespidae, *Polistes nimphus*, morphological characters, gynandromorphism

Within the family Vespidae (Hymenoptera), gynandromorphism has been recorded in 3 subfamilies, 3 genera, 2 species of which are in the genus *Polistes* Latreille, 1802 (Table 1). The mechanism of this phenomenon is not completely known, but it is generally attributed to developmental anomalies. In addition, low temperature might induce gynandromorphism (Wilson, 1962; Cui and Cai, 2003; Zhang and Zhu, 2007).

Table 1 Gynandromorphism in Vespidae

Family/species	References
Vespinae	
<i>Vespa crabro</i> Linnaeus, 1758	Dessart, 1990
Polistinae	
<i>Polistes gallicus</i> (Linnaeus, 1767)	Gauss, 1966
<i>Polistes dominulus</i> (Christ, 1791)	Wolf, 1985
Eumeninae	
<i>Odynerus reniformis</i> (Gnellen, 1790)	Leininger, 1926

The genus *Polistes* was established by Latreille (1802). The type species of the genus is *Vespa gallicus* Linnaeus, 1767. *Polistes* Latreille has been divided into four subgenera, *Aphanilopterus*, *Gyrostoma*, *Polistella* and *Polistes* s. str., with 212 species in the world (fossil species and unrecognized ones). Twenty-three species of the genus *Polistes* have been reported in China, of which 5 species are in the subgenus *Polistes* s. str. (Carpenter, 1996). They are *P. associus* Kohl, 1898, *P. chinensis* (Fabricius,

1793), *P. dominulus* (Christ, 1791), *P. gallicus* (Linnaeus, 1767) and *P. nimphus* (Christ, 1791).

In China, 3 species are catalogued by Liu (1937) in the subgenus *Polistes* s. str. They are *P. chinensis* (Fabricius, 1793), *P. dominulus* (Christ, 1791) and *P. gallicus* (Linnaeus, 1767). Two more species were reported by Li (1982, 1985), which are *P. chinensis* (Fabricius, 1793), *P. gallicus* (Linnaeus, 1767). Li (2006) moved specimens under the name *P. gallicus* (Linnaeus, 1767) to *P. dominulus* (Christ, 1791), without providing any evidences.

On 28th Sept. 2008, one gynandromorphous adult specimen of the genus *Polistes* Latreille was collected by YUAN Feng and ZHAO Yan-Hui with yellow pan-trap in Mt Donglingshan (40°04' N, 115°49' E, elevation 1154 m), Mentougou, Beijing, China. Examined related contents, especially digital images from http://users.swing.be/entomologie/Vespidae_2.htm (Rennson, 2008), we identified this gynandromorphous adult as *P. nimphus* (Christ, 1791). Since little has been known about *P. nimphus* on its morphological anomalies, here we describe the external features related to the gynandromorphism in *P. nimphus* (Christ, 1791). In both dorsal and ventral view, the body of the gynandromorphous adult is divided symmetrically in length, with male external features on the right and female ones on the left (Table 2, Figs 4–5). Sexual dimorphism presents its antennae, head front and lateral parts of the body (shape, size and color) (Figs 1, 2, 3, 6). There are both male and female features of genitalia (Figs 7–8).

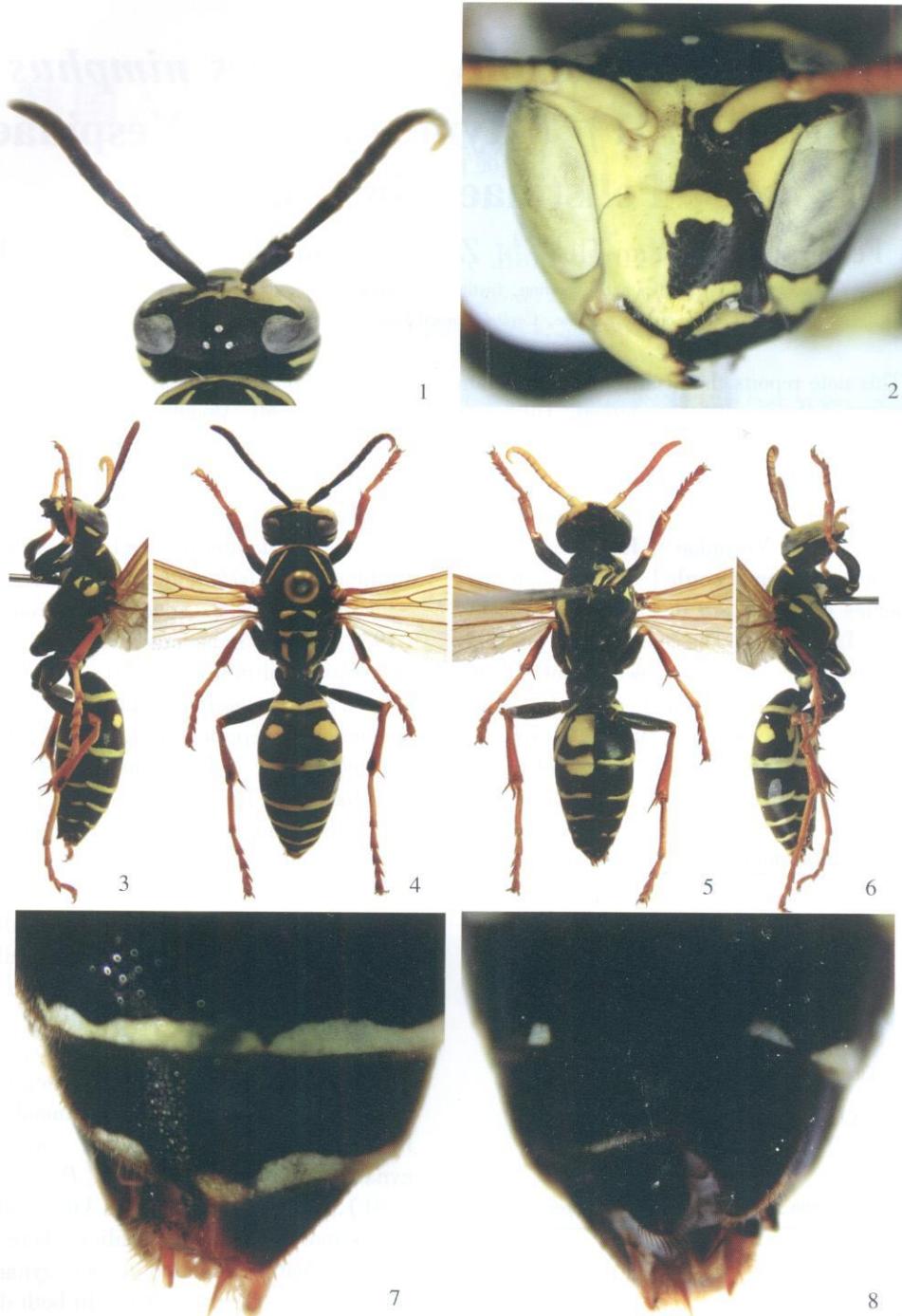
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Figs 1- 8 Gynandromorph of *Polistes nimphus* (Christ 1791)

1. Antennae and head dorsal view; 2 Head front view; 3 Body, lateral view; 4 Body dorsal view; 5. Body, ventral view; 6 Body, right lateral view; 7. Apex of abdomen, dorsal view; 8. Apex of abdomen ventral view.

Table 2 A comparison of main features of gynandromorphy

Body parts	Female (left)	Male (right)
Head	Face at top of antacava socket inner margin of eye end of gena base and end edge of clypeus base of clypeus with yellow spots antenna with 10 flagellomeres	Face at the lower half of frons clypeus gena and mandible yellow; antenna with 11 flagellomeres
Thorax	Mesopleural epipleurite with yellow spots	Mesopleural epipleurite and hypopleurite with yellow spots
Abdomen	Abdomen with six abdomeres gastral tergum II with yellow spots small gastral stemite II - III without yellow spots	Abdomen with seven abdomeres gastral tergum II with yellow spots large gastral stemite II - III with yellow spots

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普通马蜂的雌雄嵌体个例

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摘要: 本文报道普通马蜂 *Polistes nimphus* (Christ 1791) 的雌雄嵌体一例, 并提供其形态特征图。研究标本的采集地为北京门头沟区东灵山, 现保存在中国科学院动物研究所动物标本馆。

关键词: 膜翅目; 胡蜂科; 普通马蜂; 形态特征; 雌雄嵌体

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