

# One new species in the genus *Nephrocerus* Zetterstedt (Diptera: Pipunculidae), with a key to species from the Palaearctic Region

Shiheng ZHAO<sup>1</sup>, Shan HUO<sup>2</sup>, Ding YANG<sup>3</sup>①

1. Agricultural Product Quality Inspection Station of Tongzhou District, Beijing 101100, China

2. Forest Protection Station of Tongzhou District, Beijing 101100, China

3. Department of Entomology, China Agricultural University, Beijing 100193, China

**Abstract:** One new species, *Nephrocerus bullatus* sp. nov., is described from China. A key to species of this genus from the Palaearctic Region is presented.

**Key words:** syrphoidea; Nephrocerinae; taxonomy; pipunculid fly; key

## 肾头蝇属一新种及古北区肾头蝇属检索表（双翅目：头蝇科）

赵世恒<sup>1</sup>，霍姗<sup>2</sup>，杨定<sup>3</sup>①

1. 北京市通州区农产品质量检验检测站，北京 101100；2. 北京市通州区林业保护站，北京 101100；

3. 中国农业大学植物保护学院昆虫系，北京 100193

**摘要：**记述了中国辽宁省发现的肾头蝇属 1 新种，并编制了古北区肾头蝇属 10 个种的检索表。

**关键词：**食蚜蝇总科；头蝇亚科；分类；头蝇；检索表

## Introduction

The genus *Nephrocerus* Zetterstedt, 1838 belongs to subfamily Nephrocerinae. It contains 18 known species from all biogeographic regions. 12 species have been described from the Palaearctic Region (Churkin 1991; De Meyer 1996; De Meyer & Skevington 2000; Kuznetsov 1990; Kozánek & Kwon 1992; Morakote 1988; Xu & Yang 1997). It is characterized by the following features: head hemispherical; hind margin of eye deeply excised medially; proepisternum with a fan of setae; first and second tarsal segments very long, tarsi longer than femora and tibiae; pterostigma absent; M2 present, long but never reaching wing margin; syntergosternite 8 large, swollen; epandrium enlarged, horseshoe-shaped; surstylus asymmetrical; female ovipositor with very short base and short blade-like piercer (Morakote 1988; Skevington 2005). In this paper one species from Palaearctic China is described as new to science. A key to separate the 10 known species of the Palaearctic Region is presented.

## Material and methods

The specimens were studied and illustrated using a ZEISS Stemi 2000-c. Genitalic preparations were made by macerating the apical portion of the abdomen in heated 90% lactic acid for 2–3 h. After examination, the preparation was transferred to fresh glycerine and stored in a microvial pinned below the specimen. All specimens examined were deposited in the Entomological Museum of China Agricultural University (CAU), Beijing.

## Taxonomy

### Key to the species of *Nephrocerus* from the Palaearctic Region

1. Surstyli strongly asymmetrical..... 2
- Surstyli nearly symmetrical..... *N. zaitzevi*
2. Mesonotum yellow at margin..... 3
- Mesonotum black or brown at margin..... 4
3. Coxae black or brown; abdominal tergite 1 with black lateral spot, tergites 2–3 mostly yellow with very narrow black middle spot..... *N. fatalis*
- Coxae yellow; abdominal tergite 1 with yellow lateral spots, tergites 2–3 mostly brown or black with yellow lateral spots..... *N. bullatus* **sp. nov.**
4. Scutellum mostly yellow..... 5
- Scutellum black or brown..... 6
5. Hind tibia almost straight, apex without circlet of stiff seta; hind trochanter without any spine ventrally.....  
..... *N. japonicus*
- Hind tibia bent, apex with circlet of stiff setae, hind trochanter with spines ventrally..... *N. spineus*
6. Legs mostly brown..... *N. auritus*
- Legs mostly yellow..... 7
7. Hind trochanter without spine ventrally..... 8
- Hind trochanter with spines ventrally..... 9
8. Antennal pedicel yellow, flagellum black; postpronotal lobes yellow; distitarsi brown..... *N. paektusanensis*
- Antennal pedicel black, flagellum yellow; postpronotal lobes black; distitarsi yellow..... *N. nevskajae*
9. Hind trochanter with a group of 5–8 black spines ventrally; distiphallus not looped..... *N. grandis*
- Hind trochanter with 3 plate-like black spines ventrally; distiphallus looped..... *N. flexus*

Footnote: *N. lapponicus* Zetterstedt, *N. flavicornis* Zetterstedt and *N. scutellatus* (Macquart) are not included in this key.

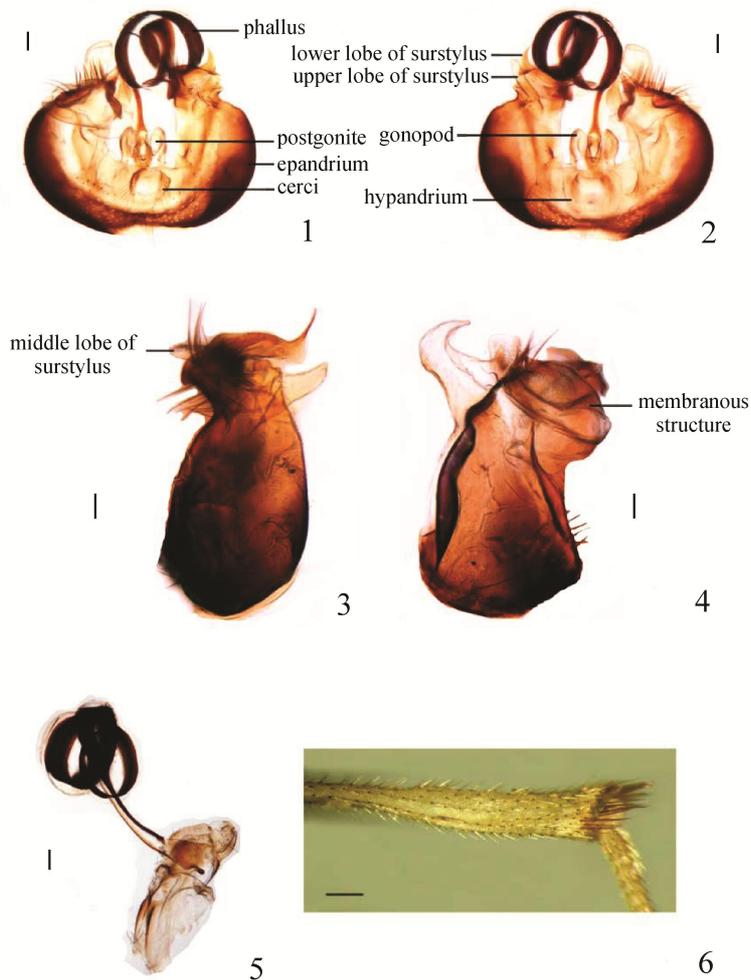
### *Nephrocerus bullatus* **sp. nov.** (Figs. 1–10)

Male. Body length 9.3 mm, wing length 8.5 mm.

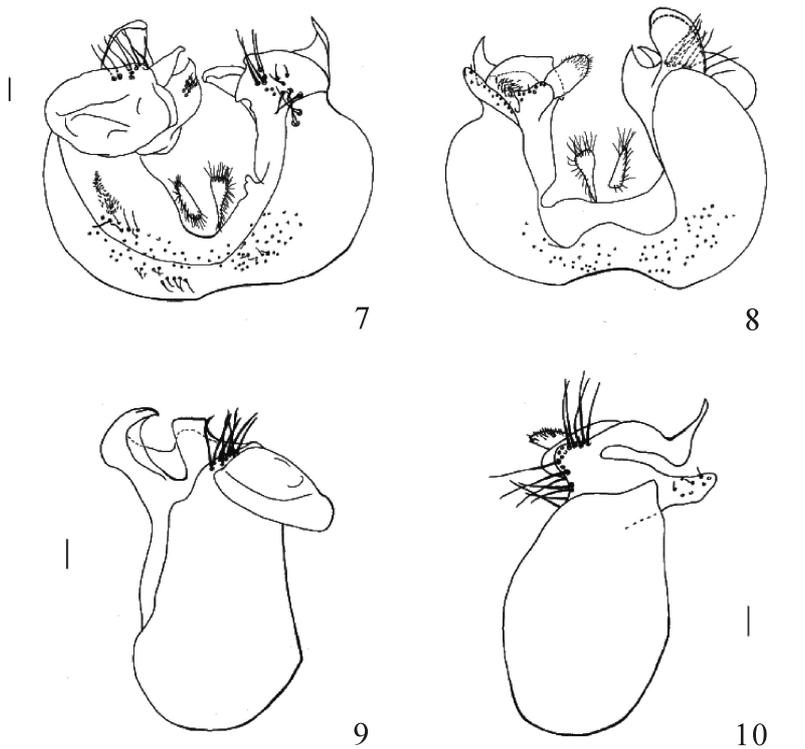
Head. Black except silvery pruinescence on frons and yellowish pruinescence on face. Setae on head black. Eyes convergent for 2 times length of ocellar triangle. Antenna flattened, yellow; scape with 15 setae along proximal margin; pedicel with 18 setae along distal margin; flagellum reniform with a long sturdily black arista. Arista yellow at base and strongly inflated. Proboscis yellow. Occiput blackish brown with silvery pruinescence and multiple rows of yellow setulae.

Thorax black with yellow pruinescence except margin of mesonotum, notopleuron, pleuron and postpronotal lobes yellow, katepimeron and meron brown, and katepisternum with upper part yellow and bottom part brown. Anepisternum and anepimeron with yellow

pruinescence entirely. Setae and setulae on thorax black. Scutum with 10 pairs of proepisternal setae, 2 pairs of notopleural setae, 2 pairs of supra-alar setae, 2 pairs of postalar setae and dorsocentral setae increasing in size posteriorly and terminating in 2 strong setae. Scutellum mostly yellow except basal part brown, posterior margin of scutellum with 3 pairs of setae and some discal setulae. Legs yellow, long and slender. Setae and setulae on legs black except those on tibiae and tarsi yellow with black sockets and on apex of hind tibia brown. Coxae with setae and setulae. Trochanters with setulae, hind trochanter with one tuft of 3 distinct small black spines ventrally. Hind tibia slightly bent and broader from middle and apex with long stiff setae restricted to outer edge, these setae over twice length of adjacent setae (Fig. 6). Pulvilli yellowish brown, half as long as distitarsus.



Figures 1–6. *Nephrocerus bullatus* sp. nov., ♂. 1. Terminalia, ventral view; 2. Terminalia, dorsal view; 3. Terminalia (phallus removed), left lateral view; 4. Terminalia (phallus removed), right lateral view; 5. Phallus gonopod and hypandrium, left lateral view; 6. Distal region of right hind tibia, posterior view. Scale bars = 0.1 mm.



Figures 7–10. *Nephrocerus bullatus* sp. nov., ♂. 7. Terminalia (phallus removed), ventral view; 8. Terminalia (phallus removed), dorsal view; 9. Terminalia (phallus removed), left lateral view; 10. Terminalia (phallus removed), right lateral view. Scale bars = 0.1 mm.

Wing iridescent and moderately brown infuscate throughout; veins brown; pterostigma absent; length of third costal section of wing : length of fourth costal section of wing = 1.0 : 2.4; crossvein r-m situated at basal 1/5 of cell M, sector 3 of the M vein (distal to R-M) : the M vein to sector 2 (proximal to R-M) = 1.7; tegula with 10 predominantly black setae, including 3 much longer setae. Halter yellow except stem pale yellow.

Abdomen brown with black setulae. Tergite 1 mostly brown with one band-like yellow lateral spot. Tergite 2 mostly brown with one big semicircular yellow spot posterolaterally to laterally, contacted at middle. Tergite 3 mostly brown with one big oval yellow spot posterolaterally, contacted at middle. Tergite 4 mostly brown with one small square yellow spot posterolaterally. Venter brown except sternite 1 and basal part of sternite 2 yellow. Sternite 2 with 2 pairs of setae, sternite 3 with 4 pairs of setae and some setulae, sternite 4 with 5 pairs of setae and some setulae.

Terminalia (Figs. 1–5, 7–10). Epandrium and terminalia mostly yellowish brown, only phallus black. Epandrium 1.5 times as wide as long. Surstyli asymmetrical; lower lobe of left surstylus with thin hook; upper lobe of right surstylus with strong hook; right surstylus with a large membranous structure below lower lobe; both surstyli with middle lobe. Distiphallus looped without spine.

Female. Unknown.

**Holotype.** ♂, **China**, Liaoning Province, Xinbin Prefecture, 23-VI-2005, collector unknown.

Distribution. China (Liaoning).

Etymology. The specific epithet refers to the shape of the membranous structure of the surstyli.

Remarks. The new species is similar to *N. fatalis* Churkin, 1991, but it can be separated from the latter by abdominal tergite 1 with yellow lateral spots and tergites 2–3 mostly brown with yellow lateral spots. In *N. fatalis*, abdominal tergite 1 has black lateral spots, tergites 2–3 are yellow with a very narrow black middle spot (Churkin 1991).

### Acknowledgements

We are grateful to Mr. Qifei LIU, Mr. Yan LI, Ms. Xiaoyan LIU, Ms. Weina CUI, Ms. Dan ZHOU and Ms. Tingting ZHANG (Beijing) for their kind help during this study.

### References

- Churkin SV. 1991. New fly species of the genus *Nephrocerus* (Diptera, Pipunculidae) from the Soviet Far East. *Zoologicheskii Zhurnal*, 70: 151–154.
- De Meyer M. 1996. World catalogue of Pipunculidae (Diptera). *Studiedocumenten van het koninklijk Belgisch Instituut voor Natuurwetenschappen*, 86: 1–127.
- De Meyer M & Skevington JH. 2000. First addition to the world catalogue of Pipunculidae. *Bulletin de l'Institut Royal des Sciences Naturelle de Belgique, Entomologie*, 70: 5–11.
- Kozánek M & Kwon YJ. 1992. Classification of the family Pipunculidae from Korea (Diptera) Part 3. A new species of the genus *Nephrocerus* Zetterstedt from North Korea. *Korean Journal of Applied Entomology*, 31: 7–9.
- Kuznetsov SY. 1990. New species of the family Pipunculidae from Mongolia. *Insects of Mongolia*, 11: 378–393.
- Morakote R. 1988. Four new species of *Nephrocerus* Zetterstedt (Diptera: Pipunculidae) from Japan. *Esakia*, 26: 79–90.
- Skevington JH. 2005. Revision of Nearctic *Nephrocerus* Zetterstedt (Diptera: Pipunculidae). *Zootaxa*, 977: 1–36.
- Xu Y & Yang CK. 1997. A new species of Pipunculidae (Diptera) from southern Gansu, China. *Entomotaxonomia*, 19(1): 32–34.