



First record of *Epeurysa distincta* Huang & Ding (Hemiptera, Delphacidae, Delphacinae) from South Korea, with an illustrated key to the Korean Tropidocephalini species

Sanghyo Park[‡], Wonhoon Lee[‡]

[‡] Department of Plant Medicine and Institute of Agriculture and Life Sciences, Gyeongsang National University, Jinju, Republic of Korea

Corresponding author: Wonhoon Lee (wonhoon80@gmail.com)

Academic editor: Ilija Gjonov

Received: 07 Aug 2024 | Accepted: 27 Oct 2024 | Published: 06 Nov 2024

Citation: Park S, Lee W (2024) First record of *Epeurysa distincta* Huang & Ding (Hemiptera, Delphacidae, Delphacinae) from South Korea, with an illustrated key to the Korean Tropidocephalini species. Biodiversity Data Journal 12: e134165. <https://doi.org/10.3897/BDJ.12.e134165>

Abstract

Background

The tribe Tropidocephalini is the second largest tribe of the subfamily Delphacinae, comprising 204 species of 37 genera worldwide. Most species in this tribe feed on bamboo (Bambusoideae) or grasses (Poaceae). In Korea, only three species have been reported.

New information

This tribe is represented by four species in South Korea, including a newly-recorded species, *Epeurysa distincta* Huang & Ding, 1979. Descriptions and illustrations of the four species and a revised key for the identification of the tribe Tropidocephalini are provided.

Keywords

Delphacidae, Tropidocephalini, new record, South Korea

Introduction

The tribe Tropidocephalini is the second largest tribe of the subfamily Delphacinae, comprising 207 species of 38 genera worldwide (Bourgoin 2023, Li et al. 2023a, Li et al. 2023b). Most species in this tribe feed on bamboo (Bambusoideae) or other grasses (Poaceae) (Chen and Tsai 2009). This tribe has a broad distribution and they are particularly common in China comprising about 118 species in 24 genera (Li et al. 2023a, Li et al. 2023b). Compared to other tribes of subfamily Delphacinae, the Tropidocephalini has different morphological characteristics: the hind tibial spur is solid, without teeth on the hind margin and the inner surface is slightly concave. Additionally, the symmetrical aedeagus is twisted with a slender process arising from the base.

In Korea, three species of two genera have been recorded in the tribe Tropidocephalini: *Epeuryssa nawaii* Matsumura, 1900, *Tropidocephala brunnipennis* (Distant, 1906) and *Tropidocephala nigra* (Matsumura, 1900). In this study, we report *Epeuryssa distincta* Huang & Ding, 1979 for the first time from South Korea. We provide morphological characteristics, photographs and taxonomic keys of the four species.

Materials and methods

Samples of planthoppers were collected from 2021 to 2023 by using two methods, sweeping and light trap, the latter using the Lepiled Maxi UV light trap (Brehm 2017). Samples were preserved on -20°C refrigerator or pinning.

Images and measurements were taken by LEICA M205C (© Leica Microsystems, Wetzlar, HESSE, Germany). Images were stacked using the software Delta Bio Combine. To examine male genitalia, the male abdomen was soaked in 10% potassium hydroxide (KOH) and boiled in a heating block (70°C) for 90 minutes. After that, separated genitalia were observed under a microscope (LEICA M205C and TUCSEN Dhyana 400DC) with glycerine. All specimens were deposited in Institute of Agriculture & Life Science, Gyeongsang National University.

Taxon treatments

Epeuryssa distincta Distant, 1912

Nomenclature

Epeuryssa distincta Huang & Ding, 1979: 178

Epeurysa infumata Yang & Yang, 1986: 47**Materials**

- a. scientificName: *Epeurysa distincta*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 791, Seohong-dong; georeferenceProtocol: label; eventDate: 07-05-2023; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 3221F525-BC8F-5988-B92E-23704F586070
- b. scientificName: *Epeurysa distincta*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 18-2, Topyeong-ro; georeferenceProtocol: label; eventDate: 07-05-2023; individualCount: 2; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: D4E3398D-0BA2-5D69-9514-2EEB0D4E5524

Description

Body length of male 3.8 mm (with tegmina). General colouration brown. Vertex very short, about two times wider than the length, lateral margins more or less divergent apically and also basally, carinae comparatively indistinct. Frons brown, width more than half the frons length, genae and clypeus brown. Pronotum and mesonotum tricarinate. Fore-wings transparent and light brown, the veins brown, distinctly tinged two dark brown spot in clavus and middle of apex portion; abdominal segments dark brown (Figs 1a, 2a).

Male genitalia. Pygofer much longer ventrally than dorsally, laterodorsal angles not produced ventrally, medioventral process two times longer than lateroventral processes, apically ovoid. Genital stylet strongly outwardly curved and divided into two branches in the middle. Anal segment with two small processes. Aedeagus with two branched, curved and both narrowing towards the apex (Figs 3a, 4a).

Measurements. Male macropterous form (n = 3). Body length without tegmina: 2.46 mm; body length with tegmina: 3.84 mm; body width: 0.94 mm; head length: 0.34 mm; head width (including eyes): 0.74 mm; 1st antennal segment length: 0.06 mm; 2nd antennal segment length: 0.16 mm; vertex length: 0.19 mm; vertex width: 0.34 mm; frons length: 0.44 mm; frons width: 0.35 mm; pronotum length: 0.24 mm; pronotum width: 0.76 mm; mesonotum length: 0.64 mm; mesonotum width: 0.70 mm.

Diagnosis

This species is very similar to *Epeurysa nawaii*. However, it is distinguished by the strongly outwardly curved genital stylet and the brown fore-wing veins with darker sockets for the setae (Fig. 5).

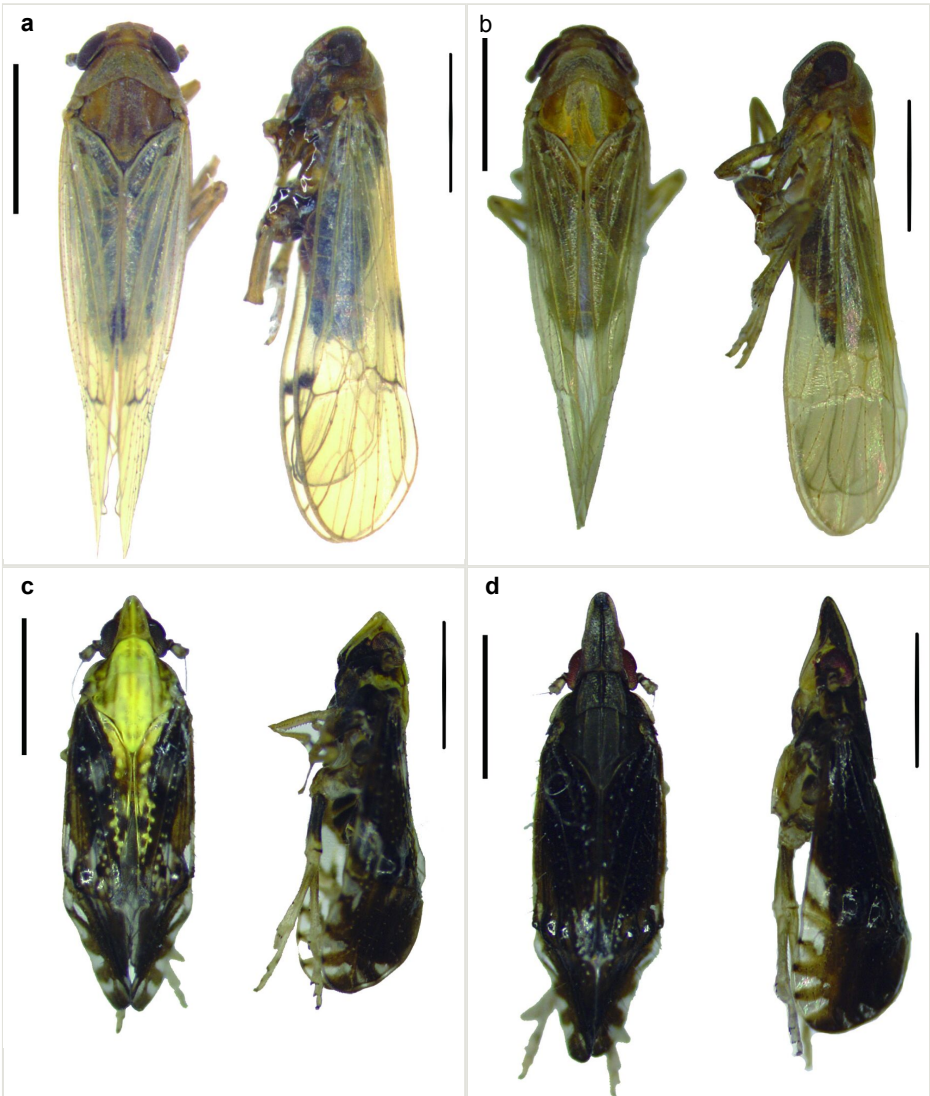


Figure 1.

Photographs of habitus of *Epeurysa* spp. and *Tropidocephala* spp. (scale bars: 1 mm):

a: *Epeurysa distincta*, dorsal and lateral view; [doi](#)

b: *Epeurysa nawaii*, dorsal and lateral view; [doi](#)

c: *Tropidocephala brunnipennis*, dorsal and lateral view; [doi](#)

d: *Tropidocephala nigra*, dorsal and lateral view. [doi](#)

Distribution

Korea (new record), Japan (Fujinuma 2016), China (Hunan, Taiwan, Guizhou, Yunnan) (Ding 2006).

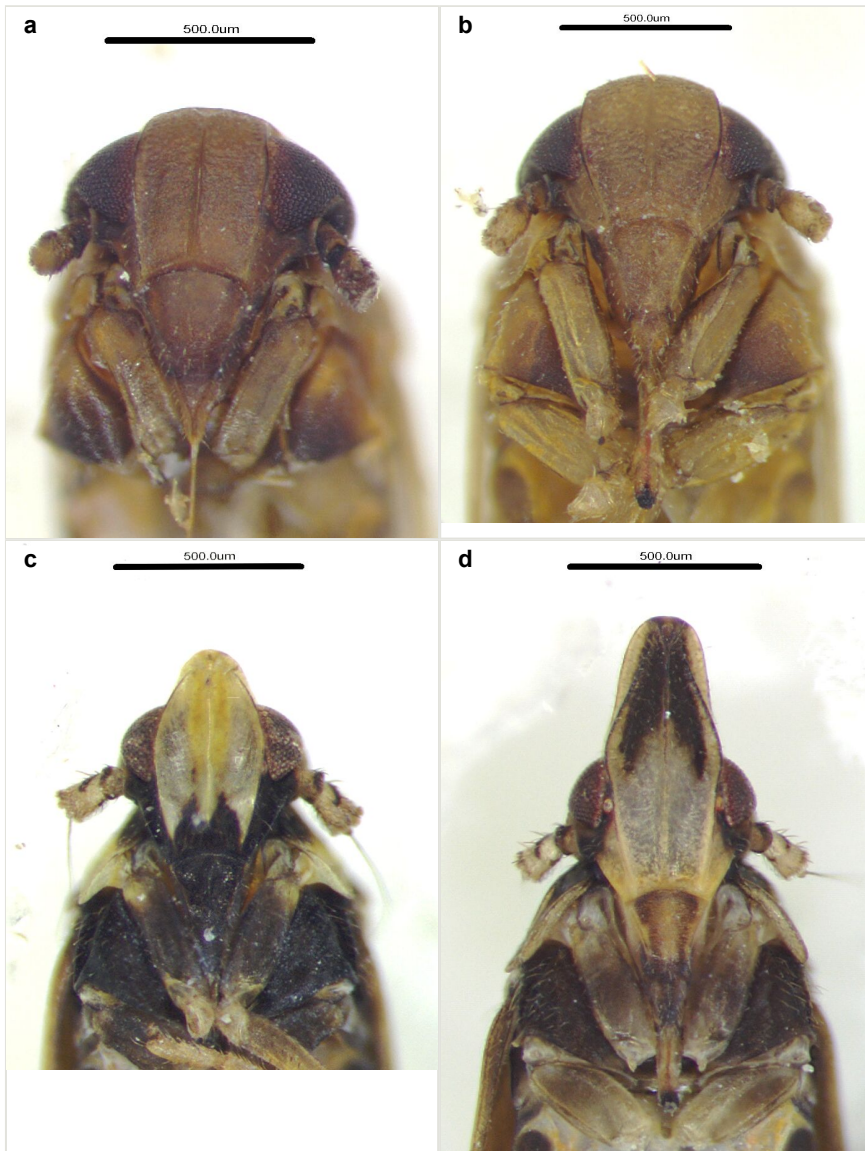


Figure 2.

Photographs of faces of *Epeurysa* spp. and *Tropidocephala* spp.:

a: *Epeurysa distincta*, face; [doi](#)

b: *Epeurysa nawaii*, face; [doi](#)

c: *Tropidocephala brunnipennis*, face; [doi](#)

d: *Tropidocephala nigra*, face. [doi](#)

Host plants

Phyllostachys nigra var. *henonis* Stapf ex Rendle. (Poaceae) (in this study).

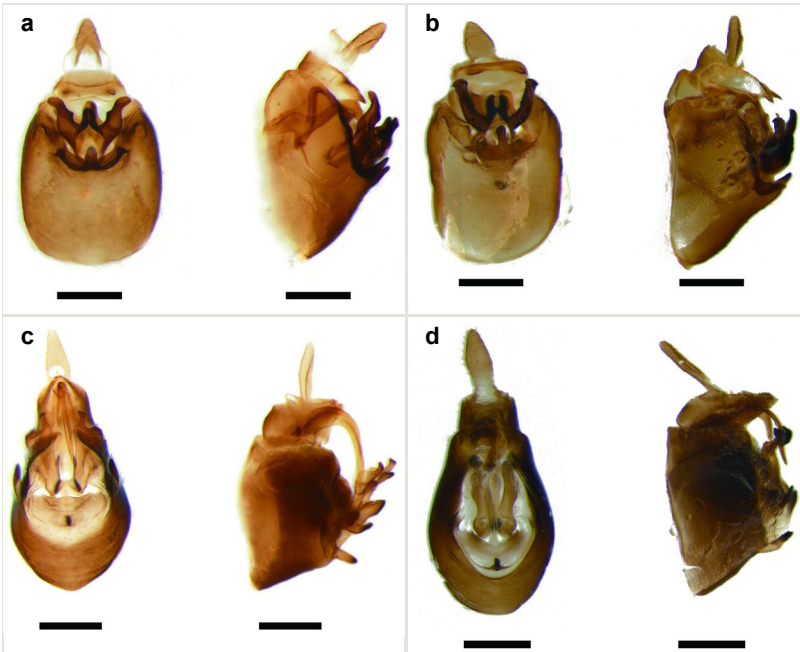


Figure 3.

Photographs of Pygofer of *Epeurysa* spp. and *Tropidocephala* spp. (scale bars: 0.2 mm):

- a: *Epeurysa distincta*, ventral view; [doi](#)
 b: *Epeurysa nawaii*, ventral view; [doi](#)
 c: *Tropidocephala brunnipennis*, ventral view; [doi](#)
 d: *Tropidocephala nigra*, ventral view. [doi](#)

Epeurysa nawaii Distant, 1912

Nomenclature

Epeurysa nawaii Matsumura, 1900: 261

Eurysa nawaii Choe 1981: 21

Materials

- a. scientificName: *Epeurysa nawaii*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 1300-4, Gajwa-dong; georeferenceProtocol: label; eventDate: 07-29-2021; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2021; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 6A832EF2-9802-5318-87B7-8A39EA4C84D3
- b. scientificName: *Epeurysa nawaii*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 20-13, Sanyu-ro

- 469beon-gil; georeferenceProtocol: label; eventDate: 06-25-2022; individualCount: 4; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 486C58D0-5244-57A4-93E8-A41266434050
- c. scientificName: *Epeurysa nawai*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 815, Gawja-dong; georeferenceProtocol: label; eventDate: 06-02-2022; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: FAD0D0EE-ACFA-5711-8081-DD8CFBCA4D72
- d. scientificName: *Epeurysa nawai*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 815, Gawja-dong; georeferenceProtocol: label; eventDate: 06-02-2022; individualCount: 7; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 25E80AE4-EB95-558B-AF6D-06ED98576AB2
- e. scientificName: *Epeurysa nawai*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 1282-40, Indam-ri Geumgok-myeon; georeferenceProtocol: label; eventDate: 07-25-2023; individualCount: 5; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 4605BC88-ODCD-5848-B782-D0F03D386EDF
- f. scientificName: *Epeurysa nawai*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 1282-40, Indam-ri Geumgok-myeon; georeferenceProtocol: label; eventDate: 07-25-2023; individualCount: 5; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: F601FF62-B7D4-5CDF-9DE7-7892E53AEE23
- g. scientificName: *Epeurysa nawai*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Gyeongsangbuk-do; municipality: Yeongdeok-gun; locality: 31, Gisa-ri Jipum-myeon; georeferenceProtocol: label; eventDate: 06-17-2023; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 3A672DAC-951B-5F0D-A7F7-C5F632548D15
- h. scientificName: *Epeurysa nawai*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeollabuk-do; municipality: Wanju-gun; locality: 591-3, Geumpeyeong-ri Iseo-myeon; georeferenceProtocol: label; eventDate: 06-11-2022; individualCount: 4; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: DD6583DD-6CBB-5139-9865-D9EF413A4AF6
- i. scientificName: *Epeurysa nawai*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeollabuk-do; municipality: Jeonju-si; locality: 462-45, Beonyeong-ro Deokjin-gu; georeferenceProtocol: label; eventDate: 06-12-2022; individualCount: 1; sex:

- male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: A3FF8A09-F98F-5011-9EA6-5BEDE8A7661B
- j. scientificName: *Epeurysa nawaii*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeollanam-do; municipality: Sinan-gun; locality: 40, Jangdo-gil, Heuksan-myeon; georeferenceProtocol: label; eventDate: 05-18-2022; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: B409658A-E0A0-5327-A490-9CAA4144F90
- k. scientificName: *Epeurysa nawaii*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeollanam-do; municipality: Suncheon-si; locality: 295-8, Jogok-dong; georeferenceProtocol: label; eventDate: 03-29-2023; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 960F8559-F386-56F7-A08C-C6606FF58C41
- l. scientificName: *Epeurysa nawaii*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeollanam-do; municipality: Suncheon-si; locality: 295-9, Jogok-dong; georeferenceProtocol: label; eventDate: 03-29-2023; individualCount: 2; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 21A80050-24DF-585D-9D6C-2E15A04CB3DD
- m. scientificName: *Epeurysa nawaii*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 2175, Donghong-dong; georeferenceProtocol: label; eventDate: 07-08-2023; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 873B4724-8EFF-5EC0-9AA5-1D3C1D6BCF3A
- n. scientificName: *Epeurysa nawaii*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Epeurysa*; country: South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 2176, Donghong-dong; georeferenceProtocol: label; eventDate: 07-08-2023; individualCount: 2; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: B8E08661-1D31-5CE6-AF24-DDC6D1E60819

Description

Body length of male 3.8 mm. General colouration brown, dark form with wings darker at apical half. Vertex relatively short, base is longer than median length by about three times. Frons relatively wide and brown, frons at mid-line longer than wide, of widest part about 1.3:1. Genae and clypeus also brown. Pronotum and mesonotum tricarinate and brown. Fore-wings generally brown, sometimes darker brown tinges on wings. Abdominal segments dark brown (Figs 1b, 2b).

Male genitalia. Pygofer much longer ventrally than dorsally, laterodorsal angles not produced ventrally, medioventral process three times longer than lateral processes,

apically ovoid. Genital stylet moderately long, with basal angles very strongly produced to mediocaudad, in caudal view about half as high as inner angle. Anal segment with spinal process, each developed as a convex triangular lobe. Aedeagus with two branched, one branch narrowing towards the apex, another one wider towards the apex (Figs 3b, 4b, Ding 2006).

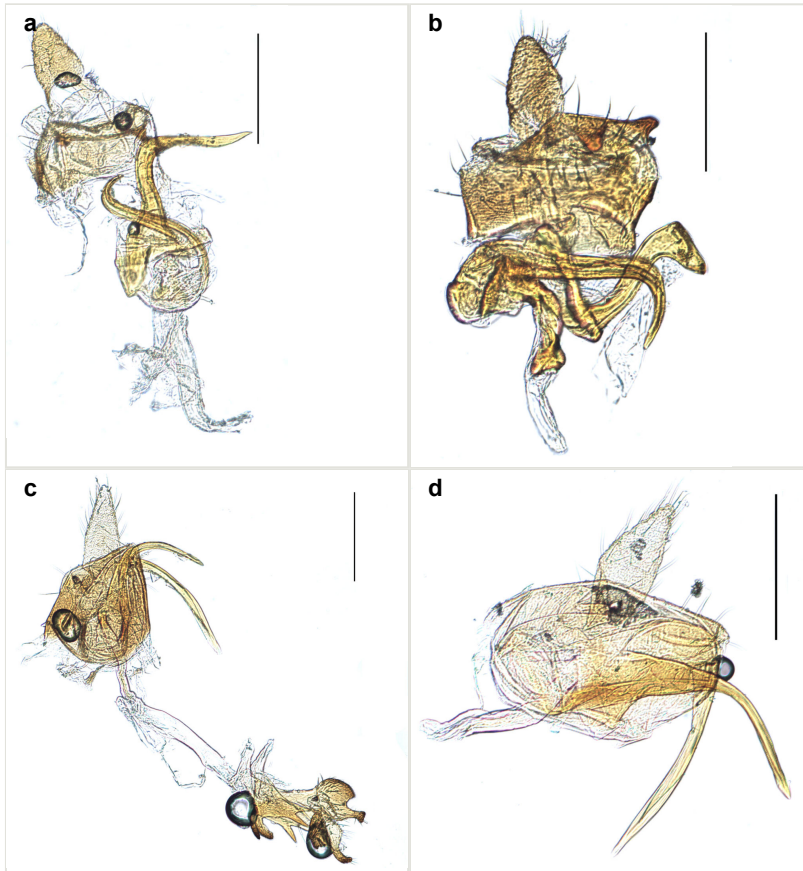


Figure 4.

Photographs of aedeagus of *Epeurysa* spp. and *Tropidocephala* spp. (scale bars: 0.2 mm):

- a: *Epeurysa distincta*, lateral view; [doi](#)
 b: *Epeurysa nawai*, lateral view; [doi](#)
 c: *Tropidocephala brunnipennis*, lateral view; [doi](#)
 d: *Tropidocephala nigra*, lateral view. [doi](#)

Measurements. Male macropterous form (n = 3). Body length without tegmina: 2.40 mm; body length with tegmina: 3.84 mm; body width: 0.95 mm; head length: 0.40 mm; head width (including eyes): 0.77 mm; 1st antennal segment length: 0.08 mm; 2nd antennal segment length: 0.16 mm; vertex length: 0.16 mm; vertex width: 0.44 mm; frons length: 0.47 mm; frons width: 0.39 mm; pronotum length: 0.23 mm; pronotum width: 0.81 mm; mesonotum length: 0.69 mm; mesonotum width: 0.73 mm.

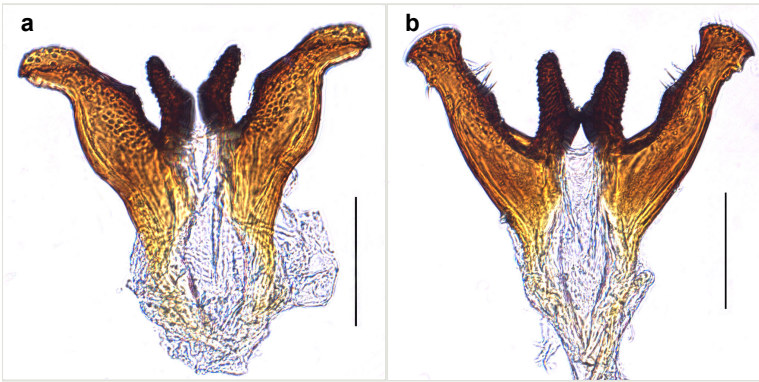


Figure 5.

Photographs of parameres of *Epeurysa distincta* and *Epeurysa nawai* (scale bars: 0.1 mm):

a: *Epeurysa distincta*, caudal view; [doi](#)

b: *Epeurysa nawai*, caudal view. [doi](#)

Distribution

Korea, China (Shaanxi, Gansu, Jiangsu, Anhui, Zhejiang, Jiangxi, Hunan, Hubei, Fujian, Taiwan, Guangdong, Guangxi, Hainan, Sichuan, Guizhou, Yunnan), Japan, Russia (Primorsky Region), Japan, Sri Lanka (Ding 2006).

Host plants

Imperata cylindrica (Linn.) Raeusch (Poaceae) (in this study), *Phyllostachys bambusoides* Sieb et Zucc (Poaceae) (Ding 2006).

Tropidocephala brunnipennis Signoret, 1860

Nomenclature

Tropidocephala brunnipennis Signoret, 1860: 185

Materials

- a. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Tongyeong-si; locality: 60, Inpyeong-dong; georeferenceProtocol: label; eventDate: 04-07-2022; individualCount: 11; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 7C6566B9-0277-51B1-BB0F-6AFC7ACF6CA4
- b. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Tongyeong-si; locality: 60, Inpyeong-dong; georeferenceProtocol: label; eventDate: 04-07-2022; individualCount: 9;

- sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 07E3F013-02BB-56E4-8738-64F156754F21
- c. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Geoje-si; locality: San50-2, Galgot-ri; georeferenceProtocol: label; eventDate: 07-30-2023; individualCount: 11; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 2E627D89-BF33-50A7-A368-70FA70AB52E0
- d. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Geoje-si; locality: San50-2, Galgot-ri; georeferenceProtocol: label; eventDate: 07-30-2023; individualCount: 15; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: BFD13F57-C93B-504B-89B7-5412E5EB1F37
- e. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Namhae-gun; locality: 97 Sports-ro 287beon-gil, Namhae-eup; georeferenceProtocol: label; eventDate: 04-13-2023; individualCount: 2; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: B181BD52-5D4A-5534-A01C-65082983BA5A
- f. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Namhae-gun; locality: 97 Sports-ro 287beon-gil, Namhae-eup; georeferenceProtocol: label; eventDate: 04-13-2023; individualCount: 1; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: FE240F88-49BF-5F8C-97B1-E208F796E3F8
- g. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Sinan-gun; locality: 543, Ye-ri, Heuksan-myeon; georeferenceProtocol: label; eventDate: 06-18-2022; individualCount: 3; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 53588582-B5FD-59A8-91CB-24B4752D5B0A
- h. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Suncheon-si; locality: 13-36, Yulchonsandan 5-ro, Haeryong-myeon; georeferenceProtocol: label; eventDate: 07-27-2022; individualCount: 3; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: EC731580-F6CD-5385-AB01-9EE707E31CC8
- i. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country:

- South Korea; stateProvince: Jeollanam-do; municipality: Suncheon-si; locality: 13-36, Yulchonsandan 5-ro, Haeryong-myeon; georeferenceProtocol: label; eventDate: 07-27-2022; individualCount: 4; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: CBF65CAB-A3DD-54CE-8EF1-8E93309651B7
- j. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Gwangyang-si; locality: 18-42, Hangman 8-ro; georeferenceProtocol: label; eventDate: 07-27-2022; individualCount: 4; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: A8428C97-0225-5E6C-A709-366A4B4EB025
- k. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Gwangyang-si; locality: 18-42, Hangman 8-ro; georeferenceProtocol: label; eventDate: 07-27-2022; individualCount: 13; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 25E52B4C-FC59-59D4-9BDB-9C6AABC72B8
- l. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeju-do; municipality: Jeju-si; locality: 72, Sumogwon-gil; georeferenceProtocol: label; eventDate: 07-03-2023; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 3289636C-5382-5F3A-ADCD-53AE4105F0D1
- m. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeju-do; municipality: Jeju-si; locality: 72, Sumogwon-gil; georeferenceProtocol: label; eventDate: 07-03-2023; individualCount: 2; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 4E2F1933-AA4F-5F95-95FF-B3E0197A1349
- n. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeju-do; municipality: Jeju-si; locality: 72, Sumogwon-gil; georeferenceProtocol: label; eventDate: 07-03-2023; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 0B8462F8-2E80-5BCD-9B3B-77131229F0F4
- o. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeju-do; municipality: Jeju-si; locality: 72, Sumogwon-gil; georeferenceProtocol: label; eventDate: 07-03-2023; individualCount: 2; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 5E60BBB0-FC96-559E-8FE9-6447F84FDBAD
- p. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country:

South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 18-2, Topyeong-ro; georeferenceProtocol: label; eventDate: 07-05-2023; individualCount: 4; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: A83607CB-5888-513B-BE03-00750A032DB6

- q. scientificName: *Tropidocephala brunnipennis*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 18-2, Topyeong-ro; georeferenceProtocol: label; eventDate: 07-05-2023; individualCount: 7; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 32484386-1FD7-596E-BB78-B24832BFFFEF

Description

Description. Body length of male 3.1 mm. Body colour greenish-brown to dark brown, vertex and mesonotum greenish-yellow. Vertex length about as long as basal width, outer areas from mediolateral carinae pale brown; frons greenish to blackish towards clypeus and genae below eyes black. Clypeus tricarinate and black. Pronotum and mesonotum with pale brown carinae. Fore-wings mostly blackish with white spot on apical part and green spot on clavus part abdominal segments dark brown, pale yellow posteriorly (Figs 1c, 2c).

Male genitalia. Pygofer ovoid and posterior view with opening longer than broad. Genital stylet flattened, apical third about twice as broad at base, inner margin short processes towards inside, forked at apex. Anal style surpassing anterior margins of the long anal segment. Aedeagus two branched slender needle-shaped (Figs 3c, 4c).

Measurements. Male macropterous form (n = 3). Body length without tegmina: 2.06 mm; body length with tegmina: 3.09 mm; body width: 0.88 mm; head length: 0.47 mm; head width (including eyes): 0.52 mm; 1st antennal segment length: 0.07 mm; 2nd antennal segment length: 0.11 mm; vertex length: 0.30 mm; vertex width: 0.26 mm; frons length: 0.53 mm; frons width: 0.30 mm; pronotum length: 0.27 mm; pronotum width: 0.58 mm; mesonotum length: 0.61 mm; mesonotum width: 0.59 mm.

Distribution

Korea, China (Gansu, Jiangsu, Anhui, Zhejiang, Jiangxi, Hunan, Fujinan, Taiwan, Guangdong, Guangxi, Hainan, Sichuan, Guizhou, Yunnan), Japan, India, Phillipines, Sri Lanka, Indonesia, Malaysia, New Guinea, Australia, Madagascar, North Africa, southern Europe (Ding 2006).

Host plants

Miscanthus sinensis Anderss (Poaceae) (in this study), *Imperata cylindrica* (Linn.) (Poaceae) (Ding 2006).

Tropidocephala nigra (Matsumura, 1900)

Nomenclature

Conicoda nigra Matsumura, 1900: 261

Tropidocephala nigra Matsumura, 1907: 65

Materials

- a. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Geoje-si; locality: San 48-38, Galgot-ri, Nambu-myeon; georeferenceProtocol: label; eventDate: 07-30-2022; individualCount: 3; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: A6C438A1-A850-5864-B969-922071EAC9AB
- b. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Geoje-si; locality: San 48-38, Galgot-ri, Nambu-myeon; georeferenceProtocol: label; eventDate: 07-30-2022; individualCount: 4; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 3165CD56-D62D-5D98-9BC6-BB7135302BBA
- c. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Geoje-si; locality: 195-1, Gucheon-ri, Dongbu-myeon; georeferenceProtocol: label; eventDate: 07-30-2022; individualCount: 3; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: FDF1CF25-9D8F-54A9-B911-96DCA1076415
- d. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Namhae-gun; locality: 97, Sports-ro 287beon-gil, Namhae-eup; georeferenceProtocol: label; eventDate: 04-13-2023; individualCount: 2; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 28EA0DD6-1A5F-52F8-9F98-5395EE70F1F1
- e. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 883, Oksan-ri, Munsan-eup; georeferenceProtocol: label; eventDate: 07-25-2023; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: E117DE82-F80B-5011-81E4-6DFB7C0EE280

- f. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Gyeongsangnam-do; municipality: Jinju-si; locality: 883, Oksan-ri, Munsan-eup; georeferenceProtocol: label; eventDate: 07-25-2023; individualCount: 1; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 3F49C7BF-0677-58B9-B841-068FDE43D0EE
- g. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Suncheon-si; locality: 13-36, Yulchonsandan 5-ro, Haeryong-myeon; georeferenceProtocol: label; eventDate: 07-27-2022; individualCount: 4; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 311CAF51-31AD-5B6A-AA3D-17B20D959B61
- h. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Suncheon-si; locality: 13-36, Yulchonsandan 5-ro, Haeryong-myeon; georeferenceProtocol: label; eventDate: 07-27-2022; individualCount: 4; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 30A4984C-FB92-55EB-BOCB-44EE2D96EAA1
- i. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Gwangyang-si; locality: 18-42, Hangman 8-ro; georeferenceProtocol: label; eventDate: 07-27-2022; individualCount: 3; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 277C7E88-3E9C-5A00-B009-E95B84B6B1B4
- j. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeollanam-do; municipality: Goheung-gun; locality: 1892-67, Goheung-ro, Goheung-eup; georeferenceProtocol: label; eventDate: 03-30-2022; individualCount: 2; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2022; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: 224DC3E9-76C8-5B22-A6F8-206D66F0FC48
- k. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 47, Wimihaeon-ro, Namwon-eup; georeferenceProtocol: label; eventDate: 07-05-2023; individualCount: 2; sex: female; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park; dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord: PreservedSpecimen; occurrenceID: EBD79C59-1BC6-51A5-B3F0-071C642169D5
- l. scientificName: *Tropidocephala nigra*; kingdom: Animal; phylum: Arthropoda; class: Insecta; order: Hemiptera; family: Delphacidae; genus: *Tropidocephala*; country: South Korea; stateProvince: Jeju-do; municipality: Seogwipo-si; locality: 47, Wimihaeon-ro, Namwon-eup; georeferenceProtocol: label; eventDate: 07-05-2023; individualCount: 2; sex: male; lifeStage: adult; recordedBy: Sanghyo Park; identifiedBy: Sanghyo Park;

dateIdentified: 2023; language: en; collectionCode: Insects; basisOfRecord:
PreservedSpecimen; occurrenceID: D024C974-338A-5AD3-B83A-449A04A7702A

Description

Body length of male 3.8 mm. In male, body mostly brownish-black or black, except lateral carinae and frons which are yellow. Vertex of length twice the basal width, lateral convergent anteriorly, lateral carinae yellow. Mediolateral carinae mostly black, except base and apex which are yellow. Frons yellow at the lower part, blackish at the upper part, genae below eyes brownish-black to yellow towards frons. Clypeus brown with brownish-black carinae. Pronotum and mesonotum tricarinate with yellow carinae. Fore-wings mostly black, distinctly tinged transparent spot at apex. Abdominal segments dark brown (Figs 1d, 2d).

Male genitalia. Pygofer ovoid and posterior view with opening longer than broad. Genital styles slender and waved, subglobose on the apex. Aedeagus two branched slender needle-shaped (Figs 3d, 4d).

Measurements. Male macropterous form (n = 3). Body length without tegmina: 2.24 mm; body length with tegmina: 3.81 mm; body width: 0.86 mm; head length: 0.71 mm; head width (including eyes): 0.51 mm; 1st antennal segment length: 0.07 mm; 2nd antennal segment length: 0.11 mm; vertex length: 0.57 mm; vertex width: 0.30 mm; frons length: 0.71 mm; frons width: 0.32 mm; pronotum length: 0.24 mm; pronotum width: 0.67 mm; mesonotum length: 0.56 mm; mesonotum width: 0.59 mm.

Distribution

Korea, Japan, China (Anhui, Zhejiang) (Ding 2006).

Host plants

Miscanthus sinensis Anderss (Poaceae) (in this study), *Imperata cylindrica* (Linn.) (Poaceae) (Ding 2006).

Identification keys

Identification keys to the species of the tribe Tropidocephalini from Korea		
1	Vertex very short, width at base two times longer than length of vertex	2
–	Vertex longer than width at base	3
2	Genital styles strongly outwardly curved	<i>Epeurysa distincta</i>

–	Genital styles relatively straight, globose at apex	<i>Epeurysa nawaii</i>
3	Vertex, pronotum and scutellum mostly yellowish-green	<i>Tropidocephala brunnipennis</i>
–	Vertex, pronotum, scutellum and fore-wings dark brown to black	<i>Tropidocephala nigra</i>

Acknowledgements

This study was supported by a grant from the Agenda Program (RS-2024-00399480), funded by the Rural Development Administration of Korea.

References

- Bourgoin T (2023) FLOW (Fulgoromorpha Lists on The Web): a world knowledge base dedicated to Fulgoromorpha. Version 8 updated. <https://hemiptera-databases.org/flow/>. Accessed on: 2024-8-01.
- Brehm G (2017) A new LED lamp for the collection of nocturnal Lepidoptera and a spectral comparison of light-trapping lamps. *Nota Lepidopterologica* 40 (1): 87-108. <https://doi.org/10.3897/nl.40.11887>
- Chen XS, Tsai JH (2009) Two new genera of Tropidocephalini (Hemiptera: Fulgoroidea: Delphacidae) from Hainan Province, China. *Florida Entomologist* 92 (2): 261-268. <https://doi.org/10.1653/024.092.0210>
- Ding JH (2006) *Fauna Sinica. Insecta. Homoptera Delphacidae*. Editorial Committee of Fauna Sinica, Academia Sinica. Science Press
- Fujinuma S (2016) New records of seventeen Delphacids (Hemiptera: Fulgoromorpha) from Japan. *Jpn. J. Syst. Entomol* 22 (2): 273-281.
- Li HX, Chen XS, Yang L (2023a) Two new species of the bamboo-feeding planthopper genus *Neobelocera* Ding & Yang from China (Hemiptera, Fulgoromorpha, Delphacidae). *Zookeys* 1183: 233-244. <https://doi.org/10.3897/zookeys.1183.101123>
- Li HX, Chen XS, Yang L (2023b) A new bamboo-feeding planthopper genus *Aodingus* Chen & Li (Hemiptera: Fulgoroidea: Delphacidae: Tropidocephalini) with descriptions of three new species from China and Vietnam. *Eur. J. Taxon* 151: 151-166.