



Korean stoneflies (Plecoptera) with five new species and three new Korean records

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Introduction

The stonefly diversity has been investigated more intensively from remote areas for last several decades and the recoded number is increasing with approximately 4,000 species in the world in the world (DeWalt et al., 2022). A total of 96 species, 38 genera, and 11 families of Plecoptera were catalogued by Kim et al. (1998), Ham (2009), and Hwang and Murányi (2015, 2020) including the following three species recorded only from North Korea; *Pictetiella asiatica* Zwick & Levanidova, *Claassenia radiata* (Klapálek), and *Xanthoneuria unimaculata* (Zhiltzova).

In this study, five new species are described from South Korea with additional three species new to the Korean peninsula: *Kogotus* n. sp., *Skwala* n. sp., *Stavsolus* n. sp., *Pomoleuctra* n. sp., *Xanthoneuria* n. sp., *Paracapnia khorensis* Zhiltzova, 1972, *Haploperla maritima* Zhiltzova & Levanidova, 1978, and *Alloperla tiunovae* Teslenko, 2009. Photographs of the diagnostic characters, materials, and distribution data are provided.

Material & Methods

- The South Korean specimens were collected by Malaise traps, or a few by beating sheet or collected by hand (Fig. 1).
- All specimens are stored in 80% ethanol.
- Materials are deposited in the Korea University Entomological Museum (KUEM), Seoul and in the National Institute of Biological Resources (NIBR), Incheon, Korea.
- Terminalia of these specimens were cleared in KOH.

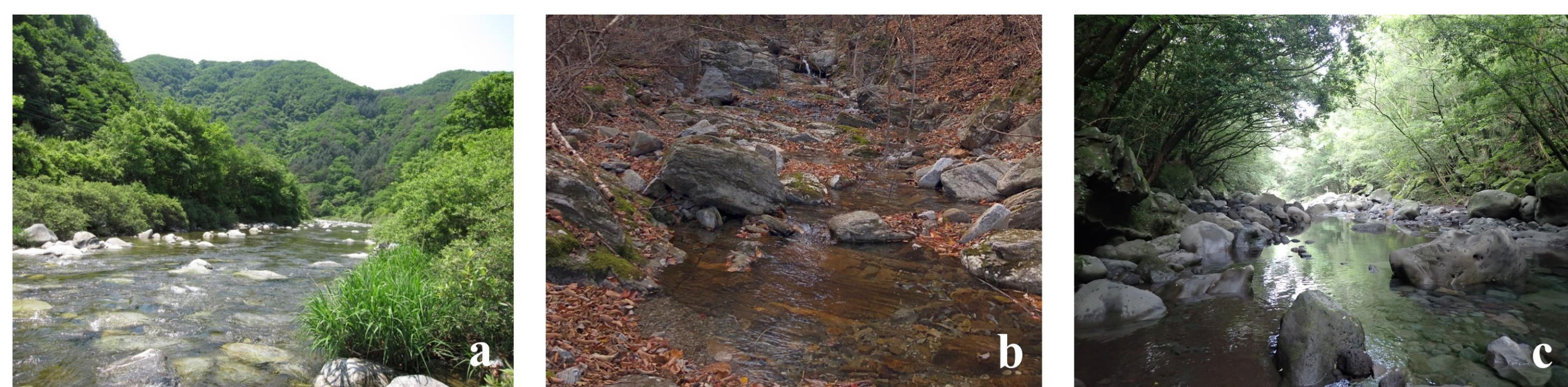


Fig 1. Korean Plecoptera habitats. a: Gapyeong stream; b: Odae Mts.; c: Donnaeko valley in Jeju island.

Results

Order Plecoptera Burmeister, 1839

Family Capniidae Banks, 1900

Genus *Paracapnia* Hanson, 1946

1. *Paracapnia khorensis* Zhiltzova, 1972 (Fig. 2)

Material examined: 4♂♂, 4♀♀, Gangwon-do, Samcheok-si, Dogye-eup, Mugeon-ri, Ikki valley, N 37°15'30.54" E 129°06'35.64", IV.15~V.27. 2022.

Distribution: Korea (New record), Russian Far East.

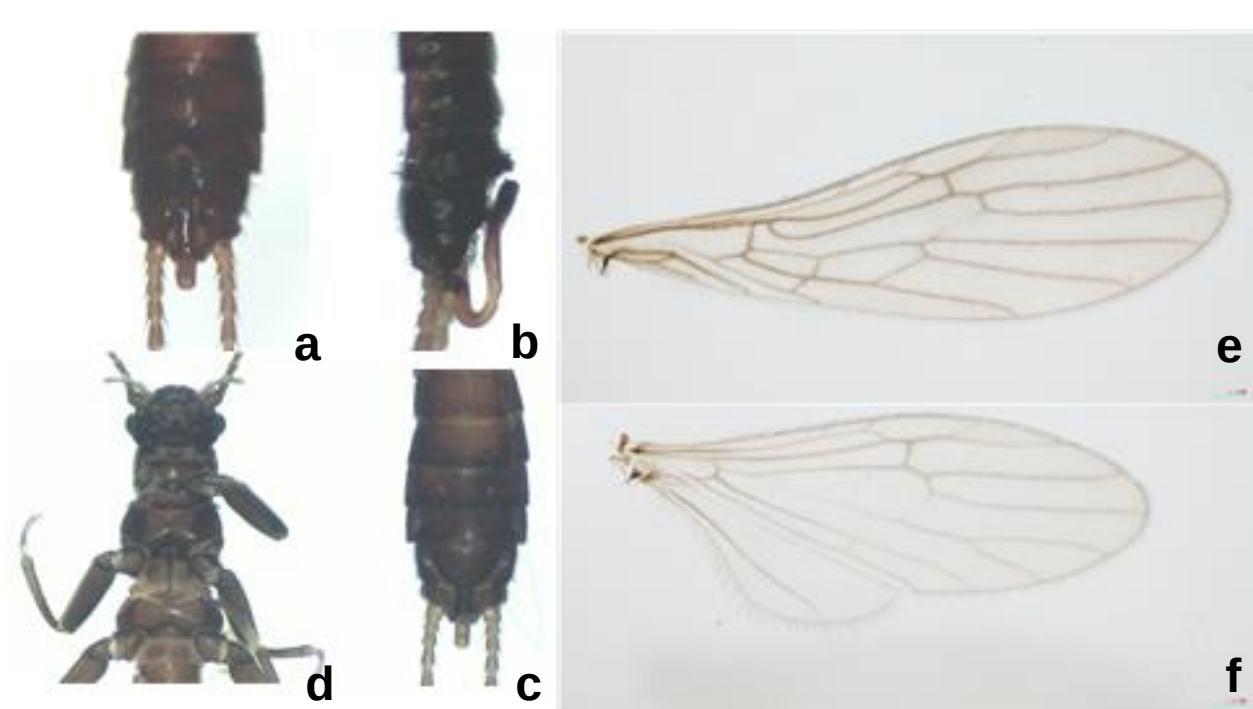


Fig. 2. *Paracapnia khorensis* Zhiltzova, 1972. a: male terminalia, dorsal view; b: male terminalia, lateral view; c: male terminalia, ventral view; d: male thorax, ventral view; e: forewing; f: hindwing.

Family Leuctridae Klapálek

Genus *Pomoleuctra* Stark & Kyzar, 2001

2. *Pomoleuctra* n. sp. (Fig. 3)

Material examined: 2♂♂, 2♀♀, Odaesan National Park, Odaesan-ro, Jinbu-myeon, Pyeongchang-gun, Gangwon-do, Malaise trap, 37°47'35.8"N 128°33'43.2"E, V. 11 - 26. 2019.

Family Perlodidae Klapálek

Genus *Kogotus* Ricker, 1952

3. *Kogotus* n. sp. (Fig. 4)

Material examined: 2♂♂, 1♀, Hwawoncheon Stream, Gowol-gil, Yeongyang-eup, Yeongyang-gun, Gyeongsangbuk-do, 36°38'21.32"N 129°9'9.70"E, Malaise trap, III. 7- 13. 2019.

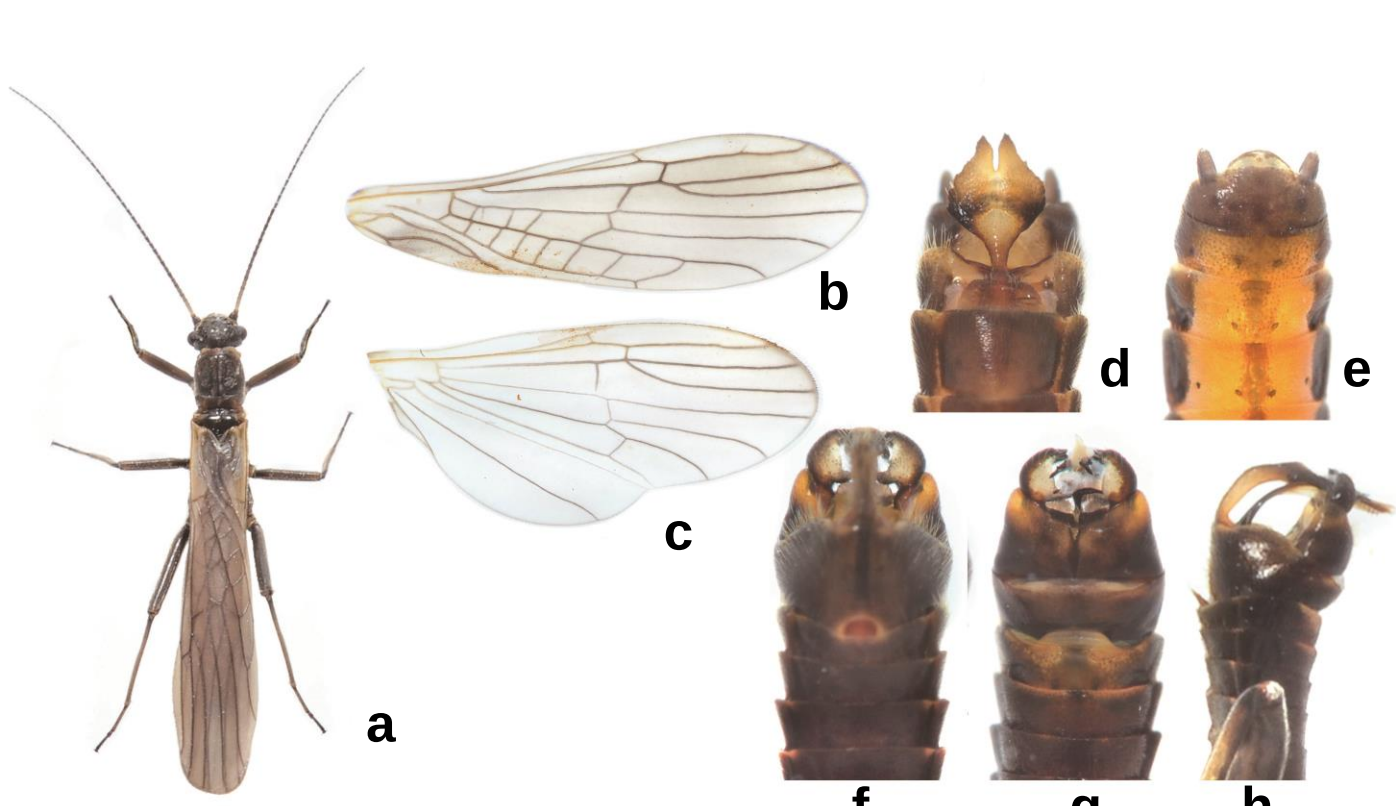


Fig. 3. *Pomoleuctra* sp. n. a: habitus; b: forewing; c: hindwing; d-e: female terminalia, d: ventral, e: dorsal; f-h: male terminalia, f: ventral, g: dorsal, h: lateral.

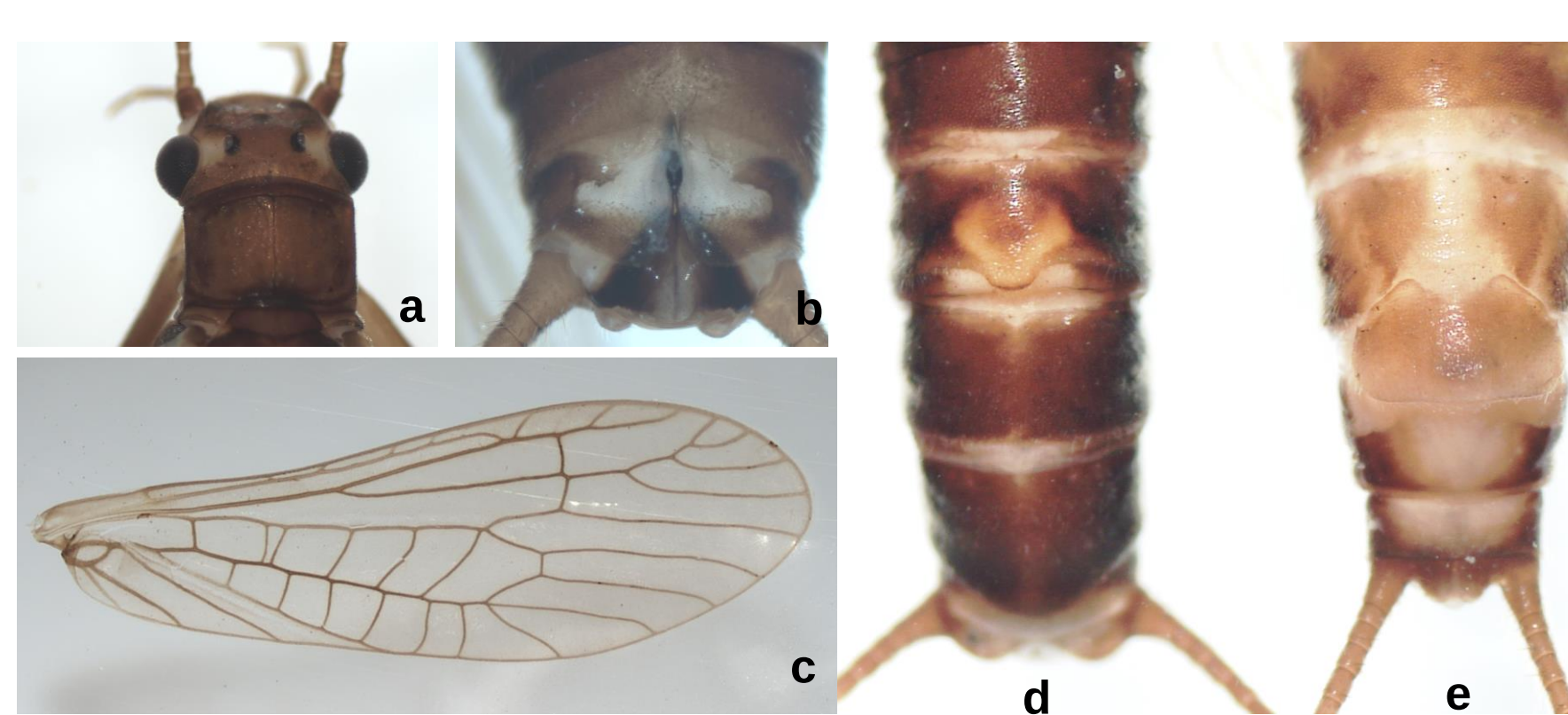


Fig. 4. *Kogotus* n. sp. a: male head and pronotum, dorsal view; b: male terminalia, dorsal view; c: forewing; d: male terminalia, ventral view; e: female terminalia, ventral view.

Genus *Skwala* Ricker, 1943

4. *Skwala* sp. n. (Fig. 5)

Material examined: 1♂, Dongsan-ri, Jinbu-myeon, Pyeongchang-gun, Gangwon-do, III. 28 - IV. 26. 2012.

Genus *Stavsolus* Ricker, 1952

5. *Stavsolus* sp. n. (Fig. 6)

Material examined: 1♂, Odaesan National Park, Odaesan-ro, Jinbu-myeon, Pyeongchang-gun, Gangwon-do, alt. 1296m, Malaise trap, 37°48'12.82"N 128°34'3.02"E, V. 01~V. 29. 2020.

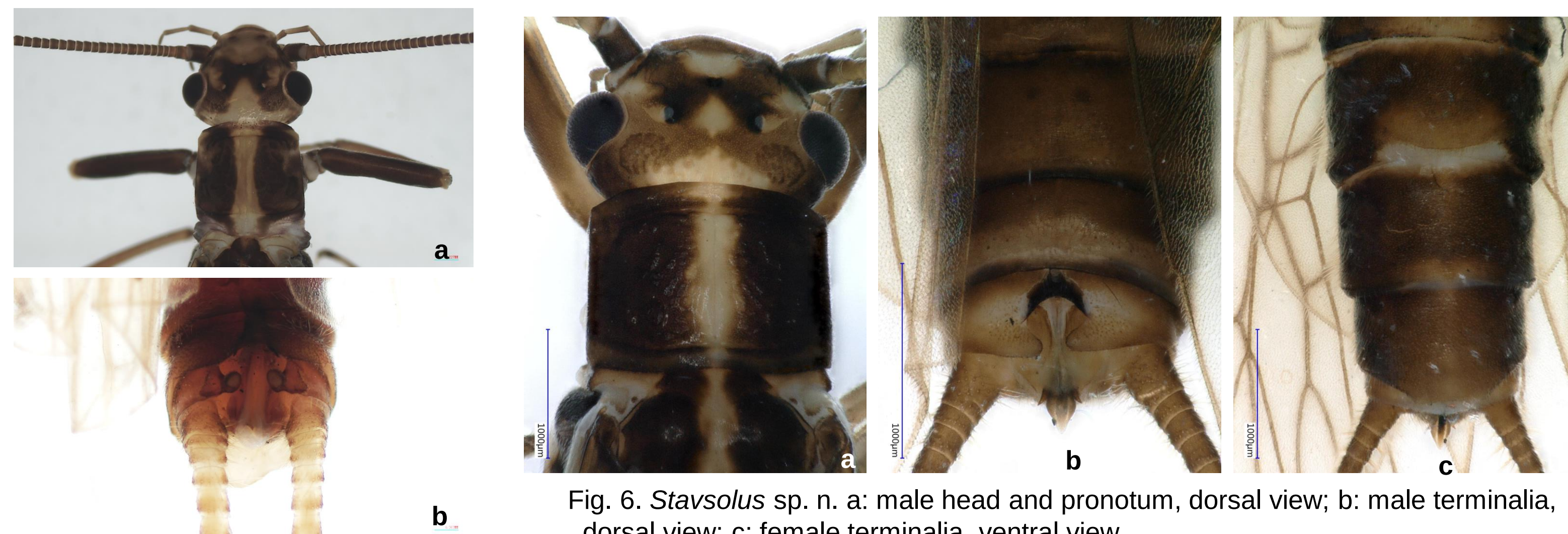


Fig. 5. *Skwala* sp. n. a: male head and pronotum, dorsal view; b: male terminalia, dorsal view; c: female terminalia, ventral view.

Fig. 6. *Stavsolus* sp. n. a: male head and pronotum, dorsal view; b: male terminalia, dorsal view; c: female terminalia, ventral view.

Family Perlidae Latreille

Genus *Xanthoneuria* Uchida

6. *Xanthoneuria* n. sp. (Fig. 7)

Material examined: 3♂♂, Odaesan National Park, Odaesan-ro, Jinbu-myeon, Pyeongchang-gun, Gangwon-do, Malaise trap, alt. 929m, 37°47'35.8"N 128°33'43.2"E, VII. 14 - 30. 2019; 1♂, 2♀♀, Odaesan National Park, Odaesan-ro, Jinbu-myeon, Pyeongchang-gun, Gangwon-do, Malaise trap, alt. 1296m, 37°47'35.8"N 128°33'43.2"E, VII. 26 - IX. 15. 2020.

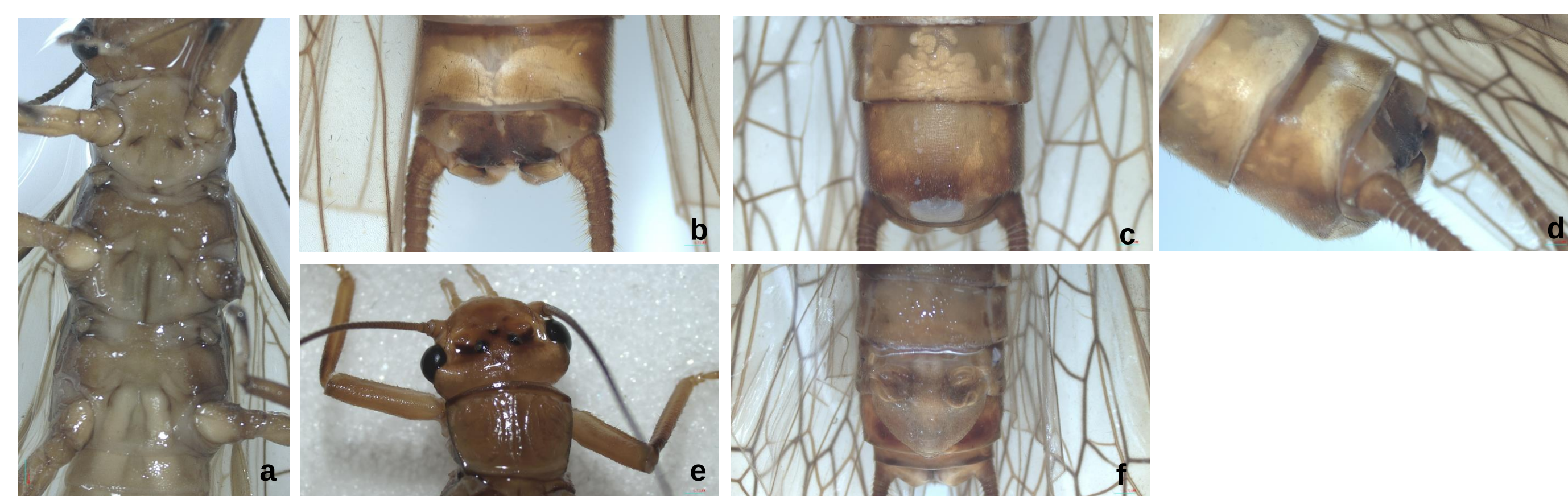


Fig. 7. *Xanthoneuria* n. sp.. a: male thorax, ventral view; b: male terminalia, dorsal view; c: male terminalia, ventral view; d: male terminalia, lateral view; e: male head and pronotum, dorsal view; f: female terminalia, ventral view.

Family Chloroperlidae Okamoto, 1912

Genus *Alloperla* Banks, 1906

7. *Alloperla tiunovae* Teslenko, 2009 (Fig. 8)

Material examined: 2♂♂, 3♀♀, Donnaeko Valley, Sanghyo-dong, Seogwipo-si, Jeju-do, sweeping, 33°17'59.10"N 126°34'54.38"E, IV. 16. 2021.

Distribution: Korea (New record), Russian Far East.

Genus *Haploperla* Navás, 1934 (Fig. 9)

8. *Haploperla maritima* Zhiltzova & Levanidova, 1978

Material examined: 5♂♂, 2♀♀, Gapyeong stream, Jeokmok-ri, Gapyeong-gun, Gyeonggi-do, 37°58'36.4"N 127°26'35.5"E, V. 19. 2017.

Distribution: Korea (New record), Russian Far East.

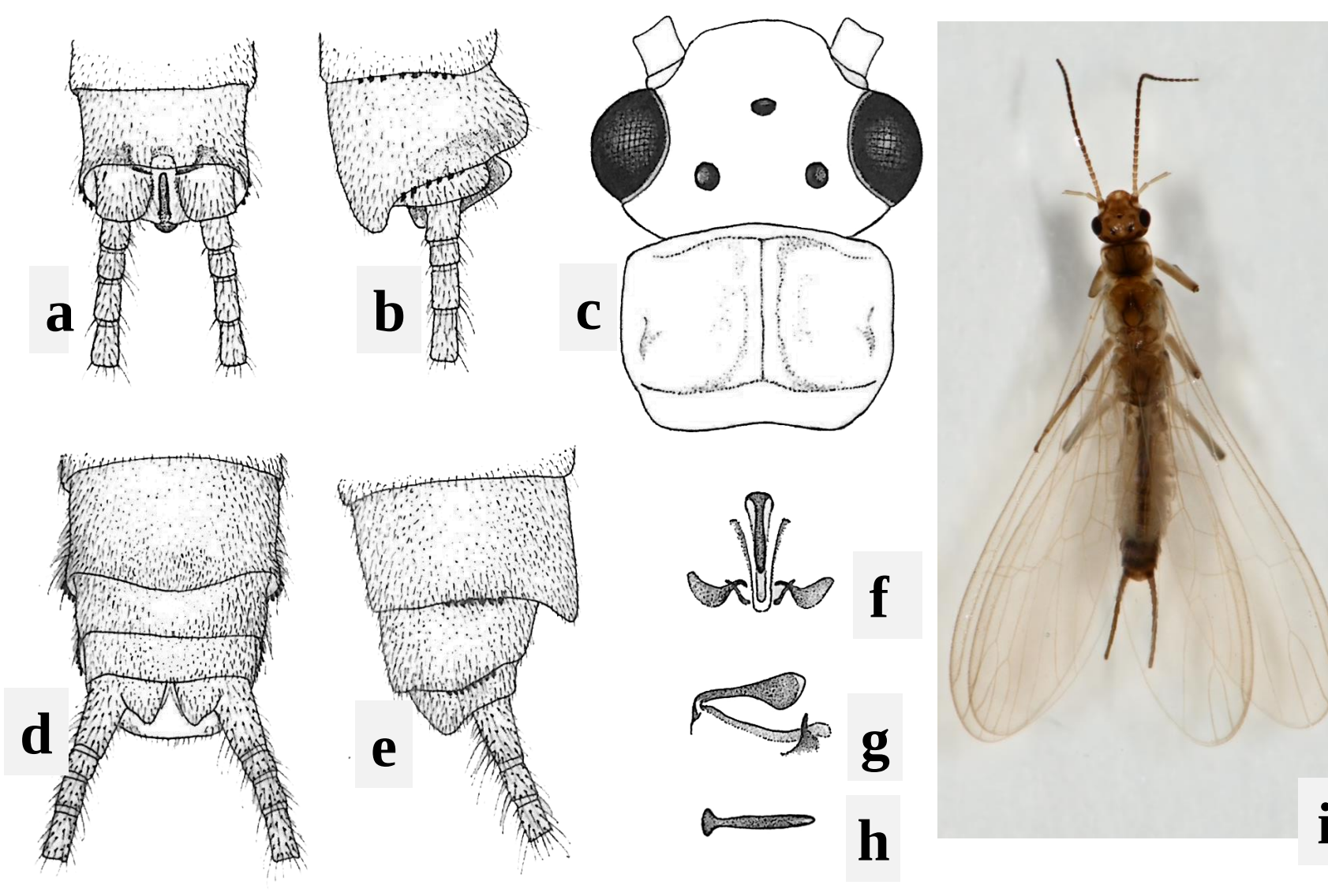


Fig. 8. *Alloperla tiunovae* Teslenko, 2009. a: male terminalia, dorsal view; b: male terminalia, lateral view; c: female head and pronotum, dorsal view; d: female terminalia, ventral view; e: female terminalia, lateral view; f: male epiproct and adjacent sclerites, dorsal view; g: male epiproct, lateral view; h: male epiproct, dorsocaudal view; i: habitus of male adult, dorsal view.

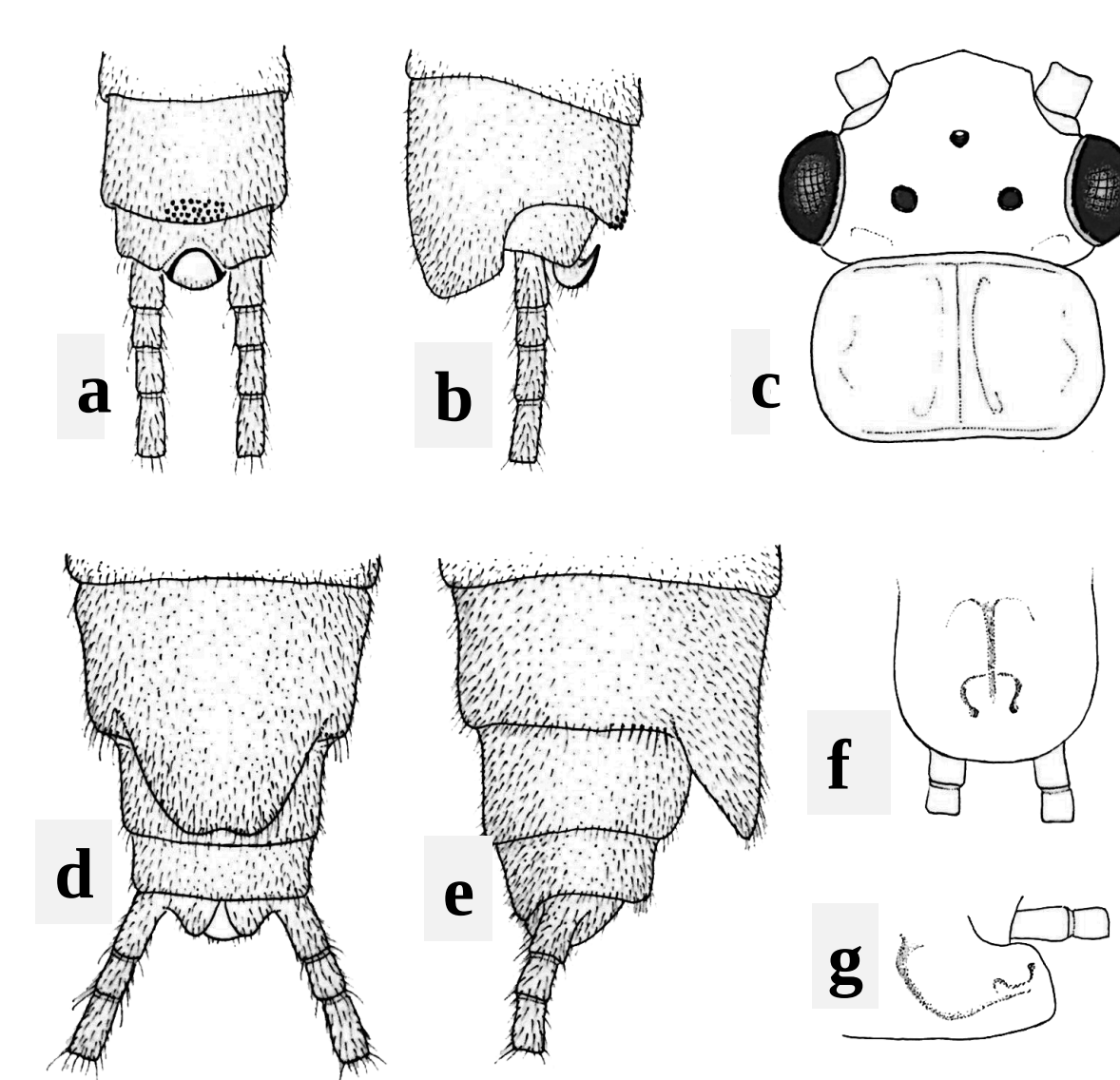


Fig. 9. *Haploperla maritima* Zhiltzova & Levanidova, 1978. a: male terminalia, dorsal view; b: male terminalia, lateral view; c: female head and pronotum, dorsal view; d: female terminalia, ventral view; e: female terminalia, lateral view; f: male terminalia relaxed with KOH, ventral view; g: male terminalia relaxed with KOH, lateral view.

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