

A New Record of Epipleminae (Lepidoptera, Uraniidae) from Korea

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ABSTRACT

We report one newly recorded species *Warreniplema fumicosta* (Warren) for the first time in Korea. In July, a single female specimen of *Warreniplema fumicosta* was collected at a high altitude on Mount Jirisan. This species can be distinguished by the light blackish forewing with the largely undulating ante- and postmedial lines, and the bicolorous hindwing with yellowish upper half dark brown lower half, and dark brown ante- and postmedial lines. So far, there have been 13 species belonging to seven genera of the Epipleminae subfamily that have been documented, and this includes *W. fumicosta*.

Keywords: Epipleminae, *Warreniplema fumicosta*, new record, Korea

INTRODUCTION

The subfamily Epipleminae is one of the species-rich groups of Uraniidae, comprising more than 600 species in 70 genera worldwide with high species diversity in the pantropical region, and the members of the group can be easily distinguished by the sexually dimorphic tympanal organ, the resting posture, and the short tails on the hindwing (Holloway, 1998). Unlike the pantropical region, the diversity of Epipleminae is quite poor in the Holarctic region (Chen, 1997; Holloway, 1998). For example, in Korea, 12 species in six genera have been recorded up to now (Sohn and Yen, 2005; Sohn et al., 2019; Sohn, 2022). The purpose of the present study is to report one newly recorded species of Epipleminae, *Warreniplema fumicosta*, for the first time in Korea.

Adult moth was collected at night using a 22-watt UV light bucket trap (BioQuip, USA). The collected adult was mounted for examination and was identified based on the external morphology including the genitalia. For slide preparation of female genitalia, the specimen was prepared by boiling the abdomen in 10% KOH for approximately 20 min. The scales and tissues were removed, stained with Chlorazol Black, and mounted on slides in an Euparal solution.

Genomic DNA was extracted from one leg of the dried specimen using the DNeasy Blood and Tissue Extraction Kit (Qiagen, UK), according to the manufacturer's instructions. The mitochondrial DNA marker, cytochrome oxidase subunit I gene (COI) was sequenced using primers for COI, LCO1490, and HCO2198. DNA amplification was conducted in a 20 µL volume containing 10 µL of GainBlue Hot Start Pro Premix (2 ×) (GainBlue, Korea), 3 µL of genomic DNA, 0.5 µL (10 µM) of each primer, and 6 µL of ddH₂O. The PCR product was cleaned enzymatically and sent to Bioneer (Korea) for Sanger sequencing. Editing and alignment of the sequence were performed with MEGA version 10.1.7 (Kumar et al., 2018) and sequence divergences for the barcode region were calculated using the Kimura-2-Parameter model. Genetic distances between species and intraspecific variation available from GenBank (<https://www.ncbi.nlm.nih.gov/genbank>) and BOLD (<https://v3.boldsystems.org>) are reported as the average pairwise distances.

The material has been deposited in the National Institute of Biological Resources, Incheon, South Korea. Abbreviation for province is as follows: JN, Jeollanam-do; TS, type species; TL, type locality.

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Fig. 1. Female specimen of *Warreniplema fumicosta* from Korea. Wingspan = 16 mm.

SYSTEMATIC ACCOUNTS

Order Lepidoptera Linnaeus, 1758
Family Uraniidae Blanchard, 1845
Subfamily Epipleminae Hampson, 1892
Genus *Warreniplema* Holloway, 1998
TS: *Gathynia fumicosta* Warren. TL: India: Khasis.

¹**Warreniplema fumicosta* (Warren, 1896) (Figs. 1, 2)
Gathynia fumicosta Warren, 1896: 215. TL: India: Khasis.
Warreniplema fumicosta: Holloway, 1998: 130.

Material examined. Korea: 1 female, Sandong-myon, JN: Gurye, 3 Jul 2022, 35°18'2.5"N, 127°33'2.5"E, 1,378 m, Choi SW.

Diagnosis. Wingspan 16 mm. Adult: Female antennae filiform; frons broad; labial palpi barely projected beyond frons, upturned. Body covered with yellowish-white hairs. Forewing: Ground color light blackish; costa blackish with a long ochreous horizontal band parallel to costa; apex tinged with ochreous; ante- and postmedial lines medially largely undulating; termen lined with black. Hindwing: Ground color yellowish white, lower half dark brownish; costa light brownish; ante- and postmedial lines outwardly projected; termen with two short tails, each tail with a small black dot. Female genitalia. Papilla anales weakly projected, rounded; anterior apophyses as long as posterior apophyses; antrum broad, long bowl-shaped with medially expanded and anteriorly narrowed; ductus bursae long, weakly tapering; corpus bursae pouch-shaped without a signum.

Distribution. Korea, Japan, N.E. Himalaya, China (Taiwan), Indonesia and Borneo.



Fig. 2. Female genitalia of *Warreniplema fumicosta* from Korea. Genitalia length = 3.7 mm.

DNA barcoding. The DNA barcode obtained in this study (OR483952) showed a 7.9% difference from its relative species in the subfamily, *Epiplema leucosema* Turner, 1911. The intraspecific genetic variation of *Warreniplema fumicosta* was 4.1% (n = 5).

Remarks. *Warreniplema fumicosta* can be easily distinguished by the color of the hindwing which shows the yellowish-white costal part and the dark brownish dorsal part. Larvae feed on *Mussaenda* (Rubiaceae) in Taiwan (Chen, 1997).

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CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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