

Two New Records of Erebidae (Lepidoptera) from Korea

Sei-Woong Choi^{1,2,*}, Sung-Soo Kim³, Hae-Yong Oh⁴

¹Department of Environmental Education, Mokpo National University, Muan 58554, Korea

²Institute of Littoral Environment, Mokpo National University, Muan 58554, Korea

³Research Institute for East Asian Environment and Biology, Seoul 05236, Korea

⁴Korea Insect Research Institute, Chuncheon 24224, Korea

ABSTRACT

We document the first records of two erebid moth species, *Ophisma gravata* and *Anticarsia irrorata*, in Korea. *Ophisma gravata* is distinguished by its yellowish-brown forewing with straight, wavy medial lines, and a yellowish hindwing with a thick blackish band. *Anticarsia irrorata* is noted for its reddish-brown forewing with a strongly bent postmedial line that continues to the hindwing. Both species are likely to migrate in autumn in Korea. We provide diagnoses and descriptions of these species, along with photographs of their genitalia.

Keywords: first record, Erebidae, migrants, *Ophisma gravata*, *Anticarsia irrorata*

INTRODUCTION

The genus *Ophisma* Guenée, 1852 is designated with the type species *O. gravata* Guenée, and has a wide distribution spanning from Africa to Indo-Australia and Neotropic regions. This genus comprises more than 20 species worldwide. Due to its worldwide occurrence, the monophyly of the genus is uncertain and requires a taxonomic revision (Holloway, 2005). The genus is classified within the tribe Poaphilini Guenée, which is closely related to Ophiusiini, as supported by genitalia (Holloway and Miller, 2003; Holloway, 2005) and molecular data (Zahiri et al., 2012).

The genus *Anticarsia* Hübner, 1818, with its type species *A. gemmatilis* Hübner, comprises more than 12 species. This genus is classified within the subfamily Eulepidontinae, characterized by the long midtibial hair pencils in males (Zahiri et al., 2012). This genus is also widely distributed from Africa to Neotropical region and requires revision (Holloway, 2005).

The purpose of the paper is to report the presence of two Erebid species, *Ophisma gravata* and *Anticarsia irrorata*, in Korea. Much like birds, numerous insect species migrate along the eastern edge of the Asian continent, a phenomenon referred to as the East Asian Insect Flyway. This flyway extends in a southwest-to-northeast direction, aligning with the move-

ment of the East Asian monsoon (Hu et al., 2025). Due to temperature variations and resource availability in higher latitudes, many insects, including pest species, undertake migrations, with Lepidopteran insects being particularly dominant (Feng et al., 2006). In this study, two species were collected from the southernmost and southwesternmost islands, both of which are broadly distributed from Africa to the Indo-Australian region. Additionally, an aged, worn female specimen of *Ophisma gravata* was found on a street in Guri City, Gyeonggi, approximately 360 km northeast of the other specimen, indicating a substantial dispersal range.

Moths were collected during the night using a UV light and mounted for examination. For slide preparation of male and female genitalia, each specimen was prepared by boiling the abdomen in 10% KOH for approximately 20 min. Scales and tissues were removed, stained with Chlorazol black, and mounted on slides in Euparal solution.

Terminology of adults, including the genitalia, refers to Holloway (2005). All material was deposited in the National Institute of Biological Resources, Incheon, South Korea (NIBR) and the Collection of Insects of the Department of Environmental Education, Mokpo National University. Abbreviations are as follows: GG, Gyeonggi-do; JN, Jeollanam-do; JJ, Jeju-do; TL, type locality.

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***To whom correspondence should be addressed**

Tel: 82-61-450-2783, Fax: 82-61-450-2789
E-mail: choisw@mokpo.ac.kr



Fig. 1. Adults of *Ophisma gravata* and *Anticarsia irrorata* from Korea. A, *Ophisma gravata*, male, B, *Ophisma gravata*, female, C, *Anticarsia irrorata*, male. Scale bars: A–C = 10 mm.

SYSTEMATIC ACCOUNTS

Order Lepidoptera Linnaeus, 1758

Family Erebiidae Leach, 1815

Subfamily Erebiinae Leach, 1815

Tribe Poaphilini Guenée, 1852

Genus *Ophisma* Guenée, 1852

Ophisma Guenée, 1852: 236. Type species: *Ophisma gravata* Guenée.

¹**Ophisma gravata* Guenée, 1852 (Figs. 1A, B, 2A, B, E)

Ophisma gravata Guenée, 1852: 237. TL: Indes Orientales.

Grammodes pallens Lucas, 1892: 260. TL: Brisbane.

Ophisma gravata pallens: Holloway, 1979: 464, pl. 83, f. 12.

Ophisma gravata: Kobes, 1992: 88; Yoshimoto, 1995: 72, pl. 115, f. 1.

Material examined. Korea: 1 male, JN: Shinan-gun, Heuksan-myeon, 20 Sep 2023, Oh YH leg.; 1 female, GG: Guri, Gyomun-dong, 37°35'43"N, 127°7'56"E, 21 Dec 2023, Kim SS leg. (NIBR RORXIN0000005654).

Diagnosis. This species is characterized by its yellowish-brown forewing with straight, wavy medial lines and a yellowish hindwing featuring a thick blackish band. The shape of hindwing is similar to species of *Ophius* Ochseneimer, but *Ophisma gravata* can be easily distinguished by the unique wing pattern elements on its forewing.

Description. Adult: Wingspan 54–55 mm. Antennae in both sexes filiform; vertex and frons yellowish brownish; labial palpi upturned, not strongly projected beyond frons, yellowish brown, the distal tip of the third segment almost naked. Thorax covered with yellowish brown scales; legs yellowish brown. Forewing ground color yellowish brown scattered with

dark purple minute dots; costa long, pale purplish with curved and sharply protruding apex; antemedial line dark ochreous or purple, straight; postmedial line purple, thicker than antemedial line, strongly dentate; subterminal line brownish, thick, wavy; termen dark ochreous with regularly spaced minute black dots. Hindwing ground color yellowish white; posterior half distinct with broad blackish band from costa to dorsum.

Male genitalia: Hairy. Uncus thick and rectangular with one side sharply protruding; gnathos a pair of long spinular processes, dorsal process weakly curved, ventral process strongly waved; tegumen triangular; juxta sclerotized; vinculum rounded with short saccus. Valva costa asymmetric, strongly sclerotized, rectangular shape with pointed protrusions on both dorsal sides; sacculus membranous, long elongated; harpe sclerotized, long process, asymmetric. Aedeagus long curved, caecum strongly protruding; vesica tubular with a long linear patch of spicules and two scattered specular patches. **Female genitalia:** Papillae anales slightly pointed; anterior apophyses slightly shorter than posterior apophyses. Lamella postvaginalis a pair of large plate-shaped sclerotized processes; ostium bursae strongly sclerotized, wrinkled; ductus bursae medially curved, sclerotized with multiple vertical sclerotized stripes; corpus bursae large, ovate with a long, strongly sclerotized stripe-shaped signum patch and a weakly sclerotized long band-shaped plate.

Biology. The larva feeds on the plants of *Polygonum* (Polygonaceae) and undergoes pupation within a leaf that is secured and lined with silk (Holloway, 2005).

Distribution. Korea, Japan, Taiwan, Sri Lanka, India, New Guinea, Australia, New Caledonia.

Remarks. This species migrates in the autumn in Korea and is often found in the northern regions of the country.

Subfamily Eulepidotinae Grote, 1895

Korean name: ¹*흑산큰노랑태극나방 (신칭)

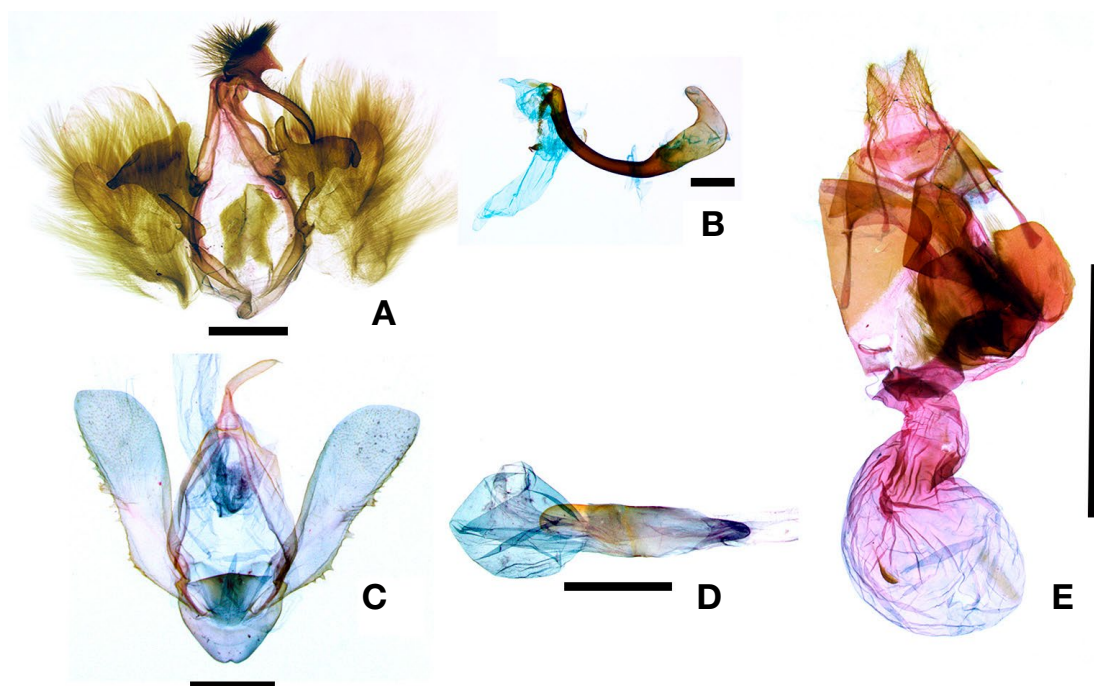


Fig. 2. Male and female genitalia of *Ophisma gravata* and *Anticarsia irrorata* from Korea. A, B, *Ophisma gravata*, male genitalia; C, D, *Anticarsia irrorata*, male genitalia; E, *Ophisma gravata*, female genitalia. Scale bars: A–D = 10 mm, E = 50 mm.

Genus *Anticarsia* Hübner, 1818

Anticarsia Hübner, 1818: 26. Type species: *Anticarsia gemmatilis* Hübner = *Azasia* Walker, 1858: 1578. Type species: *Ophiura rubricans* Boisduval.

¹**Anticarsia irrorata* (Fabricius, 1781) (Figs. 1C, 2C, D)

Noctua irrorata Fabricius, 1781: 506. TL: India.

Noctua sordida Fabricius, 1794: 50. TL: Tranquebariae.

Apistis jocosa Hübner, [1823]: 271 (repl. *Noctua sordida* Fabricius, 1794).

Thermesia transducta Walker, 1865: 1058. TL: South Hindostan.

Thermesia consueta Walker, 1869: 93. TL: Benares.

Anticarsia irrorata; Holloway, 1979: 486.

Material examined. Korea: 1 male, JJ: Seoquipo-si, Andeok-myeon, 33°15'18"N, 126°21'13"E, 115 m, 19 Sep 2023, Kim SS leg. (NIBR RORXIN0000005656).

Diagnosis. This species is distinct for its reddish-brown forewing, featuring a strongly bent postmedial line that extends to the hindwing. The continuous line from the forewing to the hindwing of *Anticarsia irrorata* resembles that of *Hypopyra vespertilio* (Fabricius, 1775). However, *Anticarsia irrorata* can be easily distinguished by the sharply bent postmedial

line and the large circular mark on its forewing.

Description. Adult: Wingspan 40 mm. Antennae bipectinate with short pectens; vertex covered with brown and dark ochreous scales; frons dorsally with long yellowish-brown hairs, ventrally with dark ochreous scales; labial palpi upturned, strongly projected beyond frons, more than twice to eye diameter, covered with reddish brown scales, second segment more than four times the length of the third segment, distal tip of third segment almost naked. Thorax covered with yellowish brown scales; legs covered with reddish and brown hairs. Forewing ground color reddish brown, apex curved and weakly protruding; antemedial line dark brownish, strongly undulating; centrally relatively thick, dark brownish band, a large rounded circle and a blackish dot; postmedial line red, costally strongly outwardly bent, medially slanted; subtermen towards the dorsum darker with black dots arranged in a curved pattern; fringe bright lined with reddish scales. Hindwing ground color reddish brown; basally light brownish; medial line reddish, straight, continues from the forewing; termen dark reddish brown, black dots arranged in a curved pattern; fringe bright lined with reddish scales. **Male genitalia:** Abdomen with a pair of coremata. Uncus long, slender; subscaphium well developed; juxta sclerotized, plate shaped; saccus projected with a sunken middle. Valva long, tongue-

Korean name: ¹*제주태극나방 (신칭)

shaped, membranous; costa thin; sacculus with multiple minute spines. Aedeagus long, rod-shaped; vesica large sac-shaped without a cornutus. **Female genitalia** (based on Holloway, 2005). Papillae anales slightly pointed; anterior apophyses almost same as posterior apophyses. Ostium bursae simple; ductus bursae long, tapering towards the posterior, centrally with a long, sclerotized stripe; corpus bursae elongated ovate with two small, separated patches of scobination.

Biology. The larva of the species is light green with dark green dorsal line and wider, spotted lines on either side. The larva is polyphagous feeding on diverse legumes (Leguminosae), cucurbits (Cucurbitaceae), and grass species (Gramineae) (Robinson et al., 2001; Holloway, 2005).

Distribution. Korea, Japan, Taiwan, Borneo, India, Australia (Queensland), and Polynesia (Marquesas and Rapa Island).

Remarks. Considering its distribution and the timing of its capture, this species could potentially migrate to Korea.

ORCID

Sei-Woong Choi: <https://orcid.org/0000-0001-6326-399X>

Sung-Soo Kim: <https://orcid.org/0000-0001-5693-4142>

Hae-Yong Oh: <https://orcid.org/0009-0007-6315-5105>

CONFLICTS OF INTEREST

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

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