

## A New Record of Notodontidae Moth, *Neodrymonia marginalis* in Korea

Sei-Woong Choi<sup>1,\*</sup>, Sung-Soo Kim<sup>2</sup>, Ju-A Jeon<sup>3</sup>

<sup>1</sup>Department of Environmental Education, Mokpo National University, Muan 58554, Korea

<sup>2</sup>Research Institute for East Asian Environment and Biology, Seoul 05264, Korea

<sup>3</sup>Butterfly Village Agricultural Cooperation, Sacheon 52512, Korea

### ABSTRACT

Herein, we report a new record of Notodontidae moth, *Neodrymonia marginalis* (Matsumura) in Korea. This species is characterized by grayish forewing that shows thick dark grayish band between basal and antemedial line, smooth postmedial line costally with blackish crescent line, dark grayish subtermen with dark brownish thick band costally, and whitish and black dot shaped discal dot. The female genitalia can be distinguished by the broad, plate-shaped postvaginalis, strongly sclerotized ductus bursae with three long spike shaped and several small spike shaped processes, and large, ovate corpus bursae with a large fan-shaped plate signum. *Neodrymonia marginalis* can be distinguished from *N. deliana* by the shape and color of the costal part of postmedial line and subtermen of forewing. The female genitalia of *N. marginalis* can be distinguished from those of *N. deliana* by the rectangular postvaginalis and more spike like processes of the anterior of ductus bursae. Up to now, four species of *Neodrymonia* are recorded in Korea: *N. delia* (Leech, 1889), *N. coreana* Matsumura, 1922, *N. deliana* Gaede, 1933, and *Neodrymonia marginalis*.

**Keywords:** Notodontidae, Korea, Lepidoptera, new record

### INTRODUCTION

Notodontidae moths are cosmopolitan family with more than 2,800 described species and adults are recognized by sclerotized apices of tibial spur with serrate margins, tear-drop-shaped metastical bulla, forewing vein  $R_2$  stalked with  $R_{3+5}$  without accessory cell, partially membranous pleuron of female 8th abdominal segment, ventral invaginated glandular region between papillae anales and ostium, and males with a terminal tuft of long, hair-like scales (Miller and Brower, 2010). Recently Kim et al. (2016) published a checklist of the Noctuoidea from Korea, including 105 species in 59 genera and nine subfamilies of Notodontidae moths.

The genus *Neodrymonia* Matsumura, 1920, is a large genus comprising of 36 species, distributed mainly in East Asia. In Korea, three species of *Neodrymonia* are known: *N. delia* (Leech, 1889), *N. coreana* Matsumura, 1922, and *N. deliana* Gaede, 1933 (National Institute of Biological Resources, 2019). The venation of the genus is characterized by the following features:  $M_2$  arises from the midpoint of the cross vein,  $M_1$  branches from  $R_{4+5}$  near the discoidal cell,

and connate  $R_{3+4}$  is longer than  $R_4$  (Kobayashi et al., 2004; Kobayashi, 2005). The male genitalia of the genus is characterized by a subbasal invagination of the valva (Bender, 1985). Herein, we report one species of Notodontidae for the first time in Korea, *Neodrymonia marginalis* (Matsumura). Up to now, four species of *Neodrymonia* are known in Korea.

Adult moths were collected at night using a UV-light bucket trap (BioQuip, USA). For slide preparation of male and female genitalia, each specimen was prepared by boiling the abdomen in 10% KOH for approximately 20 min. Subsequently, scales and tissues were removed, the remaining sclerotized structure was stained with chlorazol black, and mounted on slides in Euparal solution.

Terminology of adult characteristics, including female genitalia, follows Miller and Brower (2010). Abbreviations used are as follows: TL, type locality; and JJ, Jeju-do.

### SYSTEMATIC ACCOUNTS

Order Lepidoptera Linnaeus, 1758

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

**\*To whom correspondence should be addressed**

Tel: 82-61-450-2783, Fax: 82-61-450-2789

E-mail: choisw@mokpo.ac.kr



**Fig. 1.** Adult of *Neodrymonia marginalis* (Matsumura). Scale bar = 10 mm.

Family Notodontidae Stephens, 1829  
Subfamily Notodontinae Stephens, 1829

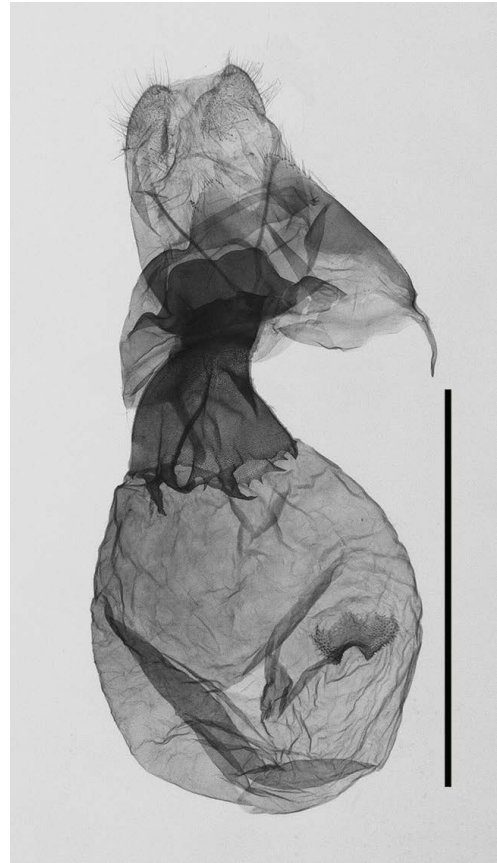
Genus *Neodrymonia* Matsumura, 1920

<sup>1</sup>\**Neodrymonia marginalis* (Matsumura, 1925)  
(Figs. 1, 2)

*Formotensha marginalis* Matsumura, 1925. TL: Formosa.  
*Neofentonia acuminata* Matsumura, 1929: 40. TL: Formosa,  
Horisha.

**Material examined.** 1 femlae, Korea: JJ: Jeju, Hankyung-myeon, Yongsooji, 18 Jul 2017; 1 femlae, Jeju, Hankyung-myeon, Jeoji-ri, 19 Jul 2017, Jeon JA.

**Diagnosis.** Wingspan 40 mm. Antennae filiform; frons broad, whitish; labial palpi short, not projected beyond frons. Forewing ground color grayish; basally pale grayish; basal line dark brownish, costally dentate, slanted; thick dark grayish band between basal and antemedial line; antemedial line grayish, costally weakly waved, slanted; postmedial line costally smooth with blackish crescent line, medially whitish, dorsally with blackish small semi-rounded line; subtermen dark grayish, costally tinged with dark brownish thick band; termen costally dotted with blackish square dots, medially with triangular line; discal dot whitish and black dot. Hindwing ground color dark brownish; basally pale brownish. Female genitalia (Fig. 2): Papillae anales broad with rounded outer margin; posterior apophyses about three times anterior apophyses; postvaginalis large, broad plate-shaped, outer margin weakly waved; antrum broad, strongly sclerotized;



**Fig. 2.** Female genitalia of *Neodrymonia marginalis* in Korea. Scale bar = 5 mm.

ductus dursae strongly sclerotized, tapered, anteriorly with about three long spike shaped and several small spike shaped processes; and corpus bursae large, ovate; signum large fan-shaped plate.

**Distribution.** Korea (new record), Taiwan, China (southeast).

**Remarks.** This newly recorded species, *Neodrymonia marginalis* is externally similar to *N. deliana*, but can be distinguished by the costal part of postmedial line and subtermen of forewing. The female genitalia of *N. marginalis* can be distinguished from those of *N. deliana* by the rectangular postvaginalis and more spike like processes of the anterior of ductus bursae.

## ORCID

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

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

Ju-A Jeon: <https://orcid.org/0000-0002-0120-5601>

Korean name: <sup>1</sup>\*남방반달무늬재주나방 (신칭)

## CONFLICTS OF INTEREST

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

## ACKNOWLEDGMENTS

We thank Dr. Alexander Schintlmeister for confirming the species. This study was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR201902205).

## REFERENCES

- Bender R, 1985. Notodontidae von Sumatra. Heterocera Sumatra, 5:9-125.
- Kim SS, Choi SW, Kononenko V, Schintlmeister A, Sohn JC, 2016. Revised list of the Korean Noctuoidea based on latest classification. Entomological Research Bulletin, 32:138-160.
- Kobayashi H, 2005. A new species of the genus *Neodrymonia* (Notodontidae) from Taiwan. Transactions of the Lepidopterists' Society of Japan, 56:330-332. [https://doi.org/10.18984/lepid.56.4\\_330](https://doi.org/10.18984/lepid.56.4_330)
- Kobayashi H, Kishida Y, Wang M, 2004. Two new species of the genus *Pantherinus* (Notodontidae) from Gwangdong. Tinea, 18:174-183.
- Matsumura S, 1925. On the Formosan Notodontidae. Zoological Magazine Tokyo, 37:391-409.
- Matsumura S, 1929. New species and genera of Notodontidae. Insecta Matsumurana, 4:36-48.
- Miller JS, Brower AVZ, 2010. Notodontidae Stephens 1829. Version 21 June 2010 [Internet]. Accessed 11 Feb 2020, <<http://tolweb.org/Notodontidae/12163/2010.06.21>>.
- National Institute of Biological Resources, 2019. National Species list of Korea. III. Insects (Hexapoda). Designzip, Seoul, pp. 1-988.

Received March 9, 2020  
Revised April 3, 2020  
Accepted April 3, 2020