



## Original Article

Genus *Achlya* Billberg (Lepidoptera: Drepanidae: Thyatirinae) new to Korea, with an annotated world checklist<sup>☆</sup>Soo-Jeong Park<sup>a</sup>, Dong-Ha Park<sup>b</sup>, Bong-Kyu Byun<sup>c,\*</sup><sup>a</sup> Natural History Division, National Science Museum of Korea, Daejeon 34143, Republic of Korea<sup>b</sup> Department of Plastic and Reconstructive Surgery, Ajou University Hospital, Ajou University School of Medicine, Suwon 16499, Republic of Korea<sup>c</sup> Department of Biological Science and Biotechnology, Hannam University, Daejeon 34054, Republic of Korea

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## ABSTRACT

In this study, a genus, *Achlya longipennis* Inoue, 1972, is reported for the first time from Korea with a newly recorded species. The adult and genitalic structures of the newly recorded species are redescribed with illustrations of adult and male genitalia. In addition, an annotated checklist of the genus is provided.

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## Introduction

The subfamily Thyatirinae consists of medium-sized moths, comprising more than 300 species of 50 genera worldwide (Laszlo et al. 2007). It has been treated as a familial level of Thyatiridae, which had a synonym of Cymatophoridae Herrich-Schäffer, 1847 previously for a long time. However, recently, it has been treated as a subfamilial rank under the family Drepanidae by Kristensen (1999) and Kristensen et al. (2007). The subfamily is principally distributed in Eurasia, especially in the East Asian and Himalayan region (Laszlo et al. 2007; Joshi et al. 2020). Among them, *Achlya* Billberg, 1820, is one small genus and is distributed generally in the northern Eurasia, with 5 described species worldwide; *Achlya longipennis* Inoue, 1972, *A. flavicornis* (Linnaeus, 1758), *A. jezoensis* (Matsumura, 1927), *A. hoerbuergeri* (Schawerda, 1924), and *A. tateyamai* Inoue, 1982 (Pan et al. 2010). *Achlya kuramana* Matsumura was reported

from Korea by Choi (2007). Currently, *Achlya kuramana* Matsumura was treated as synonyms of *Sugitaniella kuramana* Matsumura (Bae et al. 2021). Therefore, this species has not been added to the checklist in this study. During the course of the faunistic investigation of the subfamily Thyatirinae, we found a genus *Achlya* Billberg, 1820 for the first time from Korea.

In the present study, *Achlya longipennis* Inoue, 1972 is reported for the first time from Korea, and provided is the checklist of the known species from the world.

## Material and methods

Materials examined have been deposited in the Systematic Entomology Laboratory, Hannam University, Daejeon, Korea (HNUSEL). In this study, the genitalia of male were dissected and were mounted with Euparal mountant, following Holloway et al. (1987). The images of adult were taken using a digital camera (Canon EOS 600D; Canon Inc., Ota, Tokyo, Japan), and images of male genitalia were taken using a digital camera attached on the microscope (LEICA M205C © Leica Microsystems, Wetzlar, Hesse, Germany).

Abbreviations in this study for the depositories of specimens: GW (Gangwon-do), TL (Type locality), HNUSEL (Systematic Entomology Laboratory, Hannam University, Daejeon, Korea).

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Figure 1-2. *Achlya longipennis* Inoue, 1972: 1, Adults; 2, male genitalia.

## Results

### New records of the Genus *Achlya* from Korea

Order Lepidoptera Linnaeus, 1758  
 Family Drepanidae Meyrick, 1895  
 Subfamily Thyatirinae Smith, 1893  
 Tribe Demopsestini Werny, 1966

### Genus *Achlya* Billberg, 1820

*Achlya* Billberg, 1820: 87. Type species: *Phalaena (Noctua) flavicornis* Linnaeus, 1758.

### *Achlya longipennis* Inoue, 1972 흰별뿔족날개나방 (신칭) (Figure 1–2)

*Achlya longipennis* Inoue, 1972: 29, TL: Japan, Honshu, Gumma pref., Akagiyaama.

*Achlya longipennis tateyamai* Inoue, 1982: 424.

*Achlya longipennis inokoi* Inoue, 1982: 424.

**Adult** (Figure 1). Wingspan 39 mm. Head covered with pale gray scales; antenna orange and filiform; frons covered with smooth and pale gray scales; labial palpus facing the front. Thorax pale gray covered with long hairs; abdomen with blackish, mixed pale scales. Forewing ground color dark gray; three white trapezoid spots discally; antemedial and postmedial line black and zigzag-shaped. Hindwing ground color pale gray, outer margins areas with gray.

**Male genitalia** (Figure 2). Uncus very short, thick, and strongly sclerotized. Socius thick and X-shaped. Valva wide and long, coastal margin straight and well-sclerotized. Sacculus oval and slightly sclerotized, with the apical process sharply developed. Juxta U-shaped. Saccus narrow, thick, and sclerotized. Aedeagus slender, long, straight, the carina falciform.

**Material examined.** [GW] 1♂, Gohan-ri, Gohan-eup, Jeongseong-gun, 29 iv 2020 (DH Park), genitalia slide no. HNUSEL-6611-coll. HNUSEL.

**Distribution.** Korea (new record), Japan, Russia.

### A checklist of the genus *Achlya* in the world

Subfamily Thyatirinae Smith, 1893  
 Tribe Demopsestini Werny, 1966

### Genus *Achlya* Billberg, 1820

*Achlya* Billberg, 1820: 87. Type species: *Phalaena (Noctua) flavicornis* Linnaeus, 1758.

### *Achlya flavicornis* (Linnaeus, 1758)

*Phalaena (Noctua) flavicornis* Linnaeus, 1758: 518, TL: Sweden.

*Phalaena cinerea* Hufnagel, 1766: 416.

*Phalaena (Noctua) sulphureomaculata* Retzius, 1783: 47.

*Noctua luteicornis* Haworth, 1810: 271.

*Asphalia finmarchica* Schöyen, 1881: 121.

*Polyploca flavicornis lapponica* Rangnow, 1935: 223.

*Polyploca flavicornis meridionalis* Wolfsberger, 1968: 36.

**Distribution.** Japan, China, Russia, Kazakhstan, Europe.

### *Achlya jezoensis* (Matsumura, 1927)

*Daruma jezoensis* Matsumura, 1927: 15, TL: Japan.

**Distribution.** Japan, China, Russia.

### *Achlya hoerburgeri* (Schawerda, 1924)

*Polyploca hoerburgeri* Schawerda, 1924: 90, TL: Russia, Vladivostok.

*Achlya hoerburgeri* Yoshimoto, 1989: 160.

**Distribution.** Russia.

### *Achlya tateyamai* Inoue, 1982

*Achlya longipennis tateyamai* Inoue, 1982: 424, TL: Hokkaido, Oshima, Nanae.

*Achlya longipennis inokoi* Inoue, 1982: 424

**Distribution.** Japan.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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