

## Five Species of Olethreutinae (Lepidoptera, Tortricidae) New to Korea

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### ABSTRACT

Five species of Olethreutinae: four in Olethreutini, *Olethreutes manoi* (Kawabe, 1987), *Olethreutes exilis* Falkovitsh, 1966, *Olethreutes komaii* (Bae, 2005), and *Proschistis marmaropa* (Meyrick, 1907), and one in Grapholitini, *Dichrorampha canimaculata* Komai, 1979, are reported from Korea for the first time. *Olethreutes komaii* is recorded out of Japan for the first time. The genus *Proschistis* is new to the Korean fauna. *Proschistis* can be characterized by the shapes of tegumen and juxta in the male genitalia. Brief descriptions and imaginal and genital photos are provided for the species. Distribution, host plants, and taxonomic notes when necessary are given for each species.

**Keywords:** *Dichrorampha*, Korea, *Olethreutes*, Olethreutinae, *Proschistis*, Tortricidae

### INTRODUCTION

Olethreutinae are the most diverse subfamily within Tortricidae and this group currently comprises 355 genera and 4,417 species (Regier et al., 2012). All members of the subfamily share two apomorphies (Horak, 1998): the presence of single row of scales on each flagellomere and the presence of caulis on the juxta of male genitalia. Other diagnostic characters for Olethreutinae include the presence of a cubital pecten and the overall-generalized wing venation (Horak, 2006). The monophyly of Olethreutinae has been substantiated by subsequent molecular studies (e.g., Regier et al., 2012).

A total of 272 olethreutine species have been recorded from Korea (Kim et al., 2015; Sohn et al., 2015, 2016; Shin et al., 2018; Byun, 2019; Komai et al., 2019). This number is more than doubled since the Park's catalogue (1983). However, new records of several olethreutines are still predicted, given the species diversity of the group in the neighboring countries. In the present study, five species of Olethreutinae are recorded for the first time from Korea.

### MATERIALS AND METHODS

Specimens examined are deposited in two institutions as

follows: GJUE, Dept. Science Education, Gongju National University of Education, Gongju; NIBR, National Institute of Biological Resources, Incheon.

Dissection of genitalia followed Clarke (1941) except that chlorazol black and Euparal resin were used for staining and permanent slide mounting, respectively. Terms for genitalia followed Klots (1970). In the specimen data, "GSN" in brackets indicates the serial number of a genitalia slide.

### SYSTEMATIC ACCOUNTS

Order Lepidoptera Linnaeus, 1758  
Family Tortricidae Latreille, 1802  
Subfamily Olethreutinae Walsingham, 1895  
Tribe Olethreutini Walsingham, 1895

#### *Olethreutes* Hübner, 1822

Type species: *Phalaena arcuella* Clerck, 1759.

See Brown (2005) for the synonyms of *Olethreutes*.

#### <sup>1</sup>\* *Olethreutes manoi* (Kawabe, 1987) (Figs. 1A, 2A)

*Hedya manoi* Kawabe, 1987: 140. Type locality: Japan, Mie Pref., Hokushei-machi, Otsujishinden.

*Celypha manoi*; Razowski, 1995: 313.

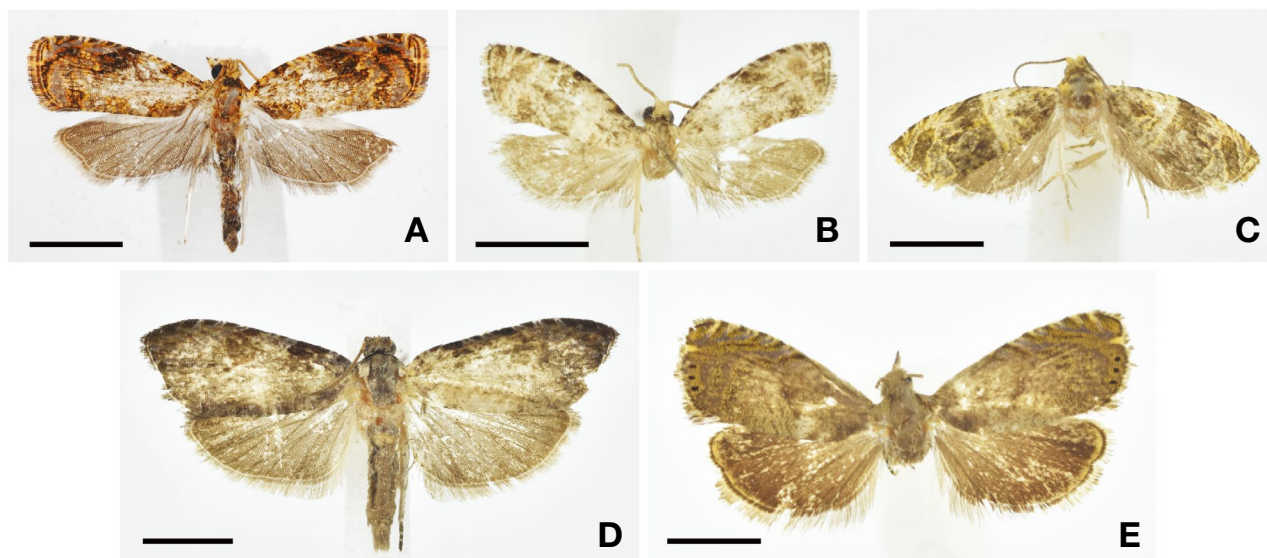
Korean name: <sup>1</sup>\* 녹슬은애기말이나방

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**Fig. 1.** Adults of Olethreutinae: A, *Olethreutes manoi* (Kawabe), male; B, *Olethreutes exilis* Falkovitsh, male; C, *Olethreutes komaii* (Bae), female; D, *Proschistis marmaropa* (Meyrick), male; E, *Dichrorampha canimaculata* Komai, male. Scale bars: A-E=3 mm.

*Olethreutes manoi*; Brown, 2005: 442.

**Material examined.** Korea: 4♂♂, Jeonnam Prov.: Wando-gun, Gunoe-myeon, near Wando Arboretum, 18 Jun 2015, Kim SS, [GSN] SJC-1032, GNUE & NIBR.

**Description.** Head: Vertex dark yellowish brown, intermixed with dark-brown scales; frons dark purplish brown, tinged with pale grayish yellow medially. Labial palpus yellowish orange, mottled with dark purplish brown. Antenna half the length of forewing; scape purplish brown, tinged with yellowish brown distally; flagellomere pale orange, intermixed with dark-brown scales. Thorax: Patagium dark brown; tegula dark brown, intermixed with yellowish-brown scales basally and distally; mesonotum dark grayish brown. Forewing length 6–6.7 mm, dark brown, striolate with yellowish brown basally; costal strigulae pale orange; antemedian, postmedian and subterminal fasciae gray, juxtaposed with orange lines; cilia purplish brown, intermixed with dark-brown or purplish-orange scales. Hindwing dark grayish brown. Male genitalia (Fig. 2A): Uncus subtriangular, papilliform apically, with long setae posterolaterally. Tegumen narrow, oblique laterally. Valva elongate, gradually tapered to apex, densely setose on distal half; costa curved at middle, with spinose hump at basal 1/3; saccus broadly emarginated at basal 1/4, with rows of spiniform setae on medial and distal area along ventral margin. Transtilla converged to middle of tegumen, broadened basally. Phallus short, stout; cornutus in form of dentate rod.

**Distribution.** Korea, Japan, Thailand.

**Host plants.** Fagaceae - *Castanopsis cuspidata* (Thunb.) Schottky (Funakoshi, 2013); *Castanopsis sieboldii* Hatusima (see Tominaga, 2016); *Quercus glauca* Thunb. (Funakoshi, 2008).

<sup>1</sup>\**Olethreutes exilis* Falkovitsh, 1966 (Figs. 1B, 2B)

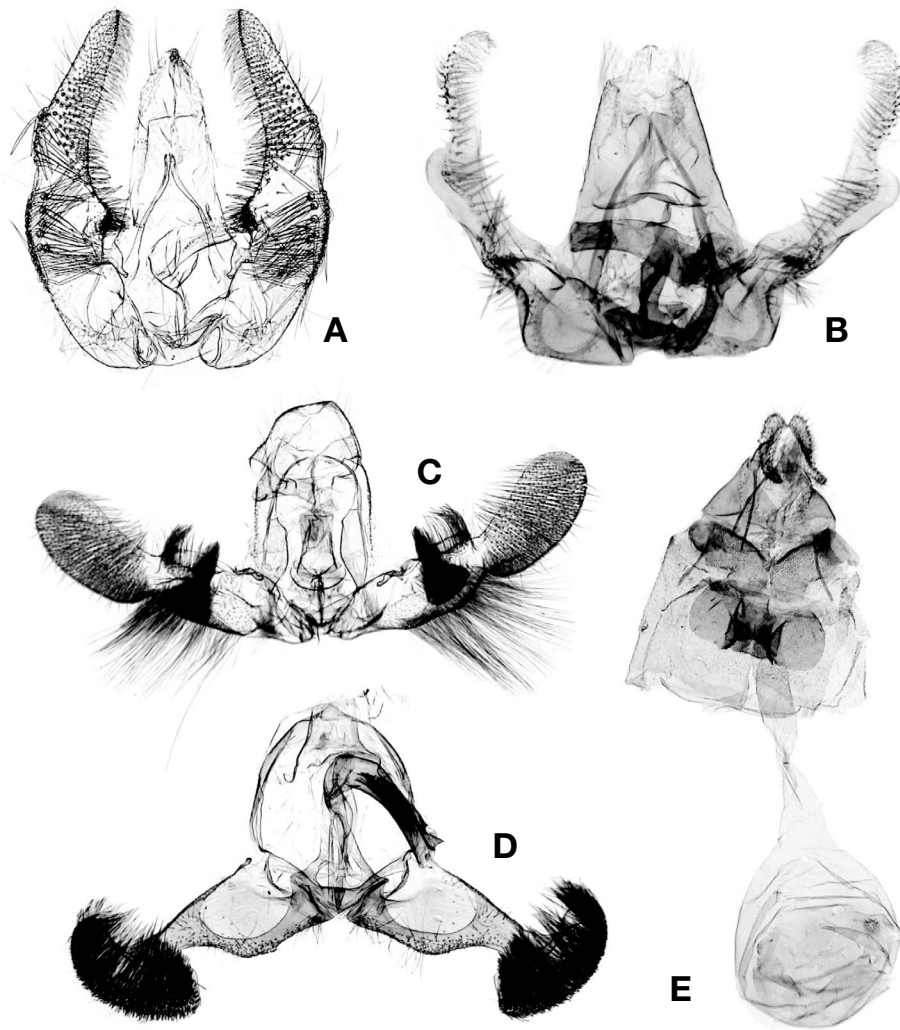
*Olethreutes exilis* Falkovitsh, 1966: 39. Type locality: Russia, Primorisk Krai, Samodon Island.

*Phiaris exilis*: Razowski, 1995: 317.

**Material examined.** Korea: 1♂, Jeonbug Prov.: Muju-gun, Mupung-myeon, Mt. Daedeogsan, 14 Jul 2004, Sohn JC, [GSN] SJC-360, NIBR.

**Description.** Head: Vertex and frons brownish white. Labial palpus pale brown, tinged with grayish brown on outer surface of 1st and 2nd segments. Antenna pale brownish gray. Thorax: Tegula and mesonotum pale grayish yellow, intermixed with grayish-brown scales. Forewing length 4.4 mm, dark brown, striolate with white; costal strigulae paired, seven in number, white; postmedian line broad, reticulate with dark brown, bifurcate in dorsal half. Hindwing fuscous. Male genitalia (Fig. 2B): Uncus small, subtriangular, sparsely setose. Tegumen long-trapezoidal, densely setose posterolaterally. Valva elongate, slightly narrowed at middle, narrowly-round apically, densely setose on distal half; costa curved, with bulge at basal 1/6; saccus expanded subtriangularly on basal 2/5 and semi-circularly on distal end, with strong-spiniform setal area at middle, juxtaposed with row of long-spiniform

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**Fig. 2.** Genitalia of Olethreutinae: A, *Olethreutes manoi* (Kawabe), male; B, *Olethreutes exilis* Falkovitsh, male; C, *Proschistis marmoropa* (Meyrick), male; D, *Dichrorampha canimaculata* Komai, male; E, *Olethreutes komaii* (Bae), female.

setae along dorsal margin of distal 1/3. Transtilla converged to distal 1/4 of tegumen. Phallus short, stout, curved at middle; cornuti as a bundle of fine needles.

**Distribution.** Korea, Japan, Russia (Far East).

**Remarks.** According to the divisions of *Olethreutes* by Razowski (1995), this species was assigned to *Phiaris* Hübner. However, Brown (2005) synonymized *Phiaris* with *Olethreutes*. We follow the latter opinion.

<sup>1</sup>*Olethreutes komaii* (Bae, 2005) (Figs. 1C, 2E)

*Phiaris komaii* Bae, 2005: 127. Type locality: Japan, Osaka Pref., Kishiwada, Ushitakisan.

*Olethreutes komaii*; Nasu, 2013: 219.

**Material examined.** Korea: 1♀, Chungbug Prov.: Boeun-

gun, Mt. Sogrisan, Mansu Valley, 26 Jul 2002, Sohn JC, [GSN] SJC-215, NIBR.

**Description.** Head: Vertex pale grayish orange, intermixed with pale-grayish-brown scales posterolaterally; frons pale grayish orange. Labial palpus pale orange, tinged with pale-grayish brown laterally. Antenna 1/2 as long as forewing; scape pale-grayish orange; flagellomeres dark brown, intermixed with grayish-yellow scales. Thorax: Patagium pale-grayish orange; tegula pale-grayish orange, with dark-brown patch medially; mesonotum pale-grayish brown, with dark-brown, transverse band at middle, intermixed with grayish-yellow scales laterally. Forewing length 5.7 mm, dark brown; costal strigulae over entire length, pale orange; basal area striolated with pale orange; antemedian fasciae paired,

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nearly straight, pale orange; postmedian fasciae paired, diverged on tornus, pale orange; subterminal fasciae oblique, paired, diverged to termen, pale orange; cilia orange. Hindwing and cilia fuscous. Female genitalia (Fig. 2E): Papillae anales narrow, converged dorsally, setose. Apophysis posterioris 1.2× longer than apophysis anterioris, slender. Lamellae postvaginales sclerotized, concave posteriorly, emarginated medially, expanded anteriorly, with lateral pit. Lamella antevaginalis rectangular, with H-shaped folds medially. Ductus bursae of even width, weakly sclerotized as column in posterior 1/9, broadened near corpus bursae. Corpus bursae globular, with small, round, scobinate signum at middle.

**Distribution.** Korea and Japan.

**Remarks.** This species has been known as an endemic species in Japan. We provide the first record of *Olethreutes komaii* out of Japan.

***Proschistis* Meyrick, 1907**

*Proschistis* Meyrick, 1907: 731. Type species: *Proschistis zeleuta* Meyrick, 1907.

*Sporocelis* Meyrick, 1907: 732. Type species: *Sporocelis marmaropa* Meyrick, 1907.

This genus comprises eight species from Asian tropics, Papua New Guinea, and Sierra Leone (Brown, 2005). The congeners share two apomorphies: the shape of the distal portion of the tegumen and the structure of the socius (Razowski, 1989). The genus *Proschistis* is new to the Korean fauna.

<sup>1</sup>\****Proschistis marmaropa* (Meyrick, 1907) (Figs. 1D, 2C)**

*Sporocelis marmaropa* Meyrick, 1907: 732. Type locality: Sri Lanka, Maskeliya.

*Proschistis marmaropa*: Diakonoff, 1973: fig. 424.

**Material examined.** Korea: 6♂♂, Jeonnam Prov.: Jindo-gun, Isl. Jindo, Dongoe-myeon, Mt. Suribongsan, 29 Jun 2004, Sohn JC, [GSN] SJC-371 & 496, GNUE; 2♂♂, Jindo-gun, Isl. Jindo, Imhwoi-myeon, Mt. Cheomchalsan, 34°28'37.8"N, 126°18'04.1"E, alt. 183 m, 29 Jun 2004, Sohn JC, GNUE & NIBR.

**Description.** Head: Vertex and frons brownish gray, intermixed with purplish-gray scales. Labial palpus with 1st segment white, intermixed with dark-brown scales; 2nd segment brownish gray, intermixed with dark-brown scales basally on outer surface, with purplish-gray, dorsal scale-tufts; 3rd segment dark-grayish brown. Antenna with dark-grayish-brown scales; flagellomere purplish brown on distal 1/3, pale grayish brown on basal 2/3. Thorax: Tegula dark-grayish brown on basal 2/3, pale-brownish gray on distal 1/3; mesonotum purplish brown. Forewing length 6.4–7.8 mm, dark brown, stri-

olate with gray and white; costa strongly curved at distal 1/4; costal strigulae eight in number, basal five paired, white, connected with gray striolae. Hindwing dark-brownish gray. Male genitalia (Fig. 2C): Uncus broad, liguiform, sparsely setose. Tegumen subrectangular. Valva elongate, slightly constricted at middle; costa convex on basal half, nearly straight on distal half; subcostal area with dense, stiff, hair-like setae; sacculus slightly concave ventrally, long-setose dorsally, with conical bundle of dense, hair-like setae near distal end; cucullus obovate, sensely setose. Phallus stout, gradually narrowed distally.

**Distribution.** Korea, Japan, China, Taiwan, India, Sri Lanka, and New Guinea.

Tribe Grapholitini

***Dichrorampha* Guenée, 1845**

Type species *Grapholitha plumbagana* Treitschke, 1830.

See Byun et al. (1998) for the synonyms of *Dichrorampha*.

<sup>2</sup>\****Dichrorampha canimaculata* Komai, 1979**

(Figs. 1E, 2D)

*Dichrorampha* (*Dichrorampha*) *canimaculata* Komai, 1979: 233. Type locality: Japan, Iwate Pref., Kuzakai.

**Material examined.** Korea: 1♂, Chungnam Prov.: Taean-gun, Wonbug-myeon, Sindu-ri [sand dune], 1 Sep 2005, Sohn JC, [GSN] SJC-386, NIBR.

**Description.** Head: Vertex and frons fuscous. Labial palpus with 1st and 2nd segments grayish orange; scale tufts on 2nd segment long, fuscous; 3rd segment fuscous. Antenna fuscous. Thorax: Patagium, tegula, mesonotum fuscous. Forewing length 6.2 mm, grayish brown, with grayish-yellow suffusion on outer 1/3; costal strigulae present from middle to apex, with five pairs, pale orange; leaden metallic streaks arising from costal strigulae; ocelloid patch with three black dots; dorsal patch pale-grayish brown; cilia fuscous. Hindwing dark brown; terminal line narrow, yellowish gray; cilia fuscous. Male genitalia (Fig. 2D): Uncus small, subtriangular. Tegumen semi-elliptical. Valva necked at distal 2/5, broad in basal 5/3, with large, circular cavity basally; costa straight; cucullus reniform, densely setose. Phallus strongly curved, enlarged basally, with large and small dentiform carinae distally; cornutal zone spinulate, 2/3 as long as phallus.

**Distribution.** Korea, Japan (Honshu), Russia (Far East).

**Host plants.** Asteraceae - *Artemisia* sp. (Ulenberg, 1992).

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## CONFLICTS OF INTEREST

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

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