

Three species of Gelechiidae (Lepidoptera: Gelechioidea) new to Korea

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뿔나방과의 3미기록종 보고

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ABSTRACT: During the course of the faunal study of Gelechiidae in Jeju, Korea, totally 12 species were recognized in this study. Of them, three species of Gelechiidae from Jeju Island; *Anarsia euphorodes* Meyrick, *A. protensa* Park, and *Toronodoxa leptopalta* Meyrick, are reported for the first time from Korea. An additional nine species which are known for the first time from Jeju Island are listed with new collecting data.

Key words: *Anarsia*, *Toronodoxa*, Gelechiidae, Lepidoptera, new record, Jeju island, Korea

초록: 제주도의 뿔나방과 곤충상 조사결과, 12종이 제주지역에서는 처음으로 기록되었다. 그 중 *Anarsia euphorodes* Meyrick, *A. protensa* Park, 그리고 *Toronodoxa leptopalta* Meyrick는 한반도에서 처음 기록되는 종으로 이들 중 동정에 필요한 성충과 생식기 사진을 함께 제공한다.

검색어: *Anarsia*, *Toronodoxa*, 뿔나방과, 나비목, 미기록종, 제주, 한국

The Gelechiidae is one of the most diverse families of Gelechioidea (Lepidoptera). The total of 172 species was enumerated in Korea by Park & Ponomarenko (2007). Jeju Island is the largest island and one of the provinces in Korea, which is located southwest of the Korean Peninsula. The island consists of some different flora and fauna from that of the Peninsula, due to the climate's being more affected by the subtropical weather conditions, but the faunal study on insects, especially on micromoths of the island, has been poorly known to date, compared with that of the other regions. Since a total of 43 species of Gelechiidae was listed for the gelechiid-fauna of Jeju Island by Park & Byun (1995) and Park & Ponomarenko (2007), four additional species of the family, *Teleiodes cylindriata*

Park and *Helcystogramma haryensis* Park, *Cnaphotola chujaensis* Park, and *Stenolechia insulalis* Park, were recently described from the island (Park & Kim, 2016; Park et al., 2016).

In a faunal study on the microlepidoptera on Jeju Island, based on specimens recently collected from Jeju Island, three species of Gelechiidae (*Anarsia euphorodes* Meyrick, *A. protensa* Park, and *Toronodoxa leptopalta* (Meyrick)) are reported for the first time from the Korean Peninsula, and added to nine species which are newly known from Jeju Island, along with their collecting data (Listed in the No. 4).

Material and methods

The specimens examined were collected on Jeju Island, off the southwestern coast of the Korean Peninsula, by using bucket-traps with ultra violet lamps (12 V / 8 W) or light traps. The specimens examined are deposited in the Jeju Regional

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Systematic accounts

Family Gelechiidae Stainton, 1854

Genus *Anarsia* Zeller, 1839

Anarsia Zeller, 1839, Isis, Leipzig, 1839: 190. Type species:
Tinea spartiella Schrank, 1802: 104.

= *Ananarsia* Amsel, 1959: 32.

The genus *Anarsia* comprises more than 100 species, with a worldwide distribution (Meyrick, 1925; Gaede, 1937; Ponomarenko, 1989; Park, 1991); mostly distributed in Ethiopian and Indo-Malay Regions, and about half of the known species are represented in East Asia. Head with appressed scales. Antenna about 2/3 length of forewing; labial palpus with 3 segments. Forewing with or without long hair pencils at ventral

base of cell on undersurface in male. The male genitalia are asymmetrical, usually with uncus bearing more or less a median knob-like process and rounded socii; the cucullus usually inflated with modified setae medially and with strong sclerotized processes on the ventral margin; the aedeagus usually slender, sinuous or curved. The female genitalia have often a glandular sac in sternal part or the tergal part of segment VIII is gutter-like, hollowed, with a round process on the anterior margin. All known host plants are Aceraceae, Elaeagnaceae, Fabaceae, and Rosaceae.

1. *Anarsia euphorodes* Meyrick, 1922 (Figs. A, D, E)

Anarsia euphorodes Meyrick, 1922. Exot. Microlep. 2: 503; Park, 1995a: 57.

Type Locality (TL): Shanghai, S. China

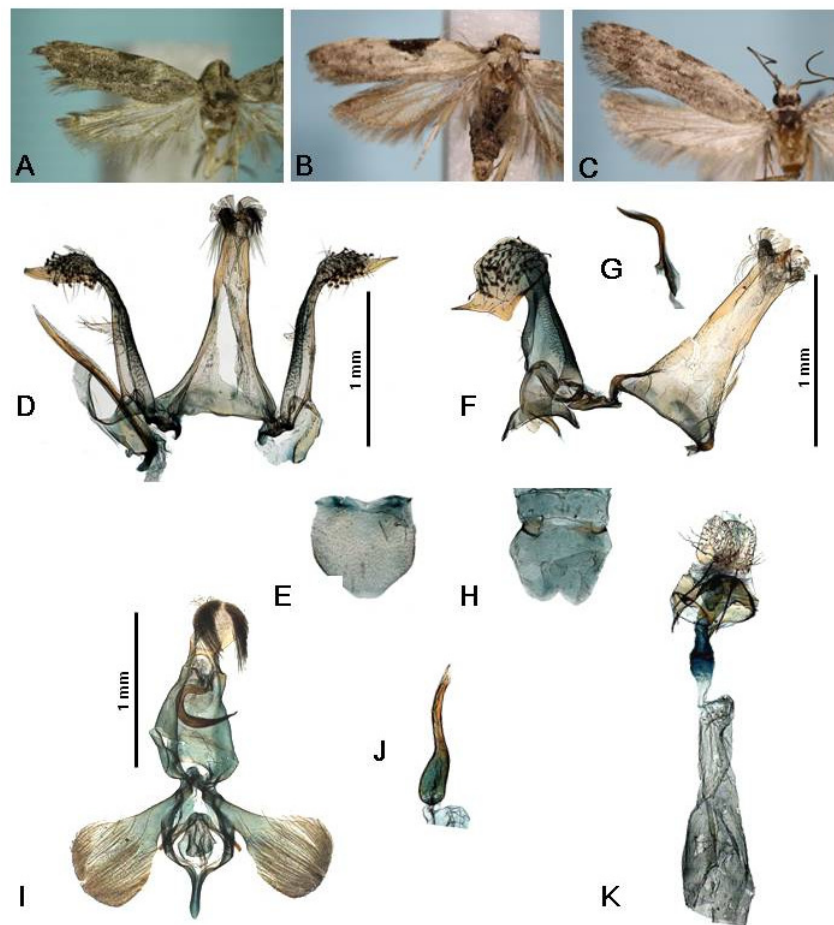


Fig. 1. Adults and genitalia: (A) *Anarsia euphorodes* Meyrick; (B) *Anarsia protensa* Park; (C) *Tornodoxa leptopalta* (Meyrick); (D) Male genitalia of *Anarsia euphorodes* Meyrick; (E) Ditto, abdominal sternite VIII; (F) Male genitalia of *Anarsia protensa* Park; (G) Ditto aedeagus; (H) Ditto, abdominal sternite VIII; (I) Male genitalia of *Tornodoxa leptopalta* (Meyrick); (J) Ditto aedeagus; (K) Female genitalia of *Anarsia protensa* Park (Scale bar: 1 mm).

Diagnosis. This species is similar to *A. aspera* Park which was described from Taiwan, but it is larger than the latter and can be easily distinguished by having slender, symmetric valvae with a heavily sclerotized sharp projection at apices in the male genitalia.

Description (Fig. A). Wingspan 13.0-14.0 mm. Head whitish-gray. Forewing ground color is ochreous-whitish, thinly and irregularly speckled with gray and with a small undefined spot of blackish-gray speckling on the middle of the costa. Hindwing gray; cilia light gray.

Male genitalia (Figs. D, E). See Park (1995a, Figs. 3-4).

Material examined. 1 ♂, Is. U-do, JeJu Prov., 7 ix 2010, coll. SM Oh & BH Kang, gen slide no. CIS-6535.

Distribution. Korea (new record), Southern China, Taiwan.

Remarks. There is a possibility that this species can be one of the invasive species from Taiwan or Southern China.

2. *Anarsia protensa* Park, 1995 (Figs. B, F, G, H)

Anarsia protensa Park, 1995a. Trop. Lepid. 6: 60; Bae et al. 2016: 250. TL: Mei-feng, Taiwan.

Diagnosis. The forewing marking is similar to an Oriental species, *A. isogona* Meyrick, but it can be distinguished by the male genitalia, having asymmetrical valvae with a large, sub-rectangular cucullus in the left and a smaller, not greatly expanded cucullus in the right.

Description (Fig. B). Wingspan 15.0-16.0 mm. Head pale gray, speckled with brownish-gray scales. Antenna pale grayish-orange with lighter rings. Forewing elongated, apex rather acute; costal mark triangular, large, dark brown, and reaching beyond middle across wing; with two short dark brown streaks before and beyond it; 3-4 inconspicuous dark spots around apex along margin, dark brown scales scattered irregularly throughout. Hindwing pale gray.

Male genitalia (Figs. F, G, H). See also Park (1995a, Fig. 13).

Female genitalia (Fig. K). See also Park (1995a, Fig. 15).

Material examined. 3 ♂, 1 ♀, Donnaeko, Seogwipo, JeJu Prov., 20 v 2011, coll. SM Oh & BH Kang, gen slide no. CIS-6569, -6570, -6571; 1 ♂, Seonheul, Jeju Prov., Korea, 14 v 2013, coll. SM Oh & RN Sohn.

Distribution. Korea (new record), Japan (Honshu, Kyushu), Taiwan, China.

Host plant. Elaeagnaceae: *Elaeagnus pungens* Thunb. (Park, 1995a; Ponomarenko, 1997; Ueda, 1997).

Remarks. There is a possibility that this species can be one of the invasive species from the southern subtropical area, including Taiwan and the southern part of Japan.

Genus *Tornodoxa* Meyrick, 1921

Tornodoxa Meyrick, 1921. Exotic Microlep. 2: 432, Type Species: *Tornodoxa tholochorda* Meyrick 1921: 432.

The genus *Tornodoxa* comprises three species distributed in East Asia. In the male genitalia, the uncus is broad and rounded, with more or less transversally dilated distal part; the valva is strongly dilated in distal part; the valvella is small, digitate, in some species with pointed apex. In the female genitalia, 8th segment has membranous sternal part; the ostial plate is absent; the ductus and corpus bursae are membranous; and the signum is flattened as a funnel.

3. *Tornodoxa leptopalta* (Meyrick, 1934) (Figs. C, I, J)

Chelatia leptopalta Meyrick, 1934. Exot. Microlepid. 4: 451; TL: Alikang, Taiwan.

Hypatima leptopalta; Kanazawa and Heppner, 1992: 70.

Homocheles leptopalta; Park, 1995b: 79.

Tornodoxa leptopalta; Ponomarenko, 1997: 46.

Diagnosis. The male genitalia are similar to those of *Tornodoxa paraleptopalpata* Ueda, 2012, but can be distinguished by the distal margin of valva rounded, the ventral margin with small angle medially, the bar-shaped, heavily sclerotized in distal 1/3 of the valvella; and the aedeagus inflated in basal half and then slender with pointed apex.

Description (Fig. C). Wingspan 15.0-16.0 mm. Head whitish, slightly tinged with pale brownish-gray. Scape of antenna whitish, with a rather slender 3rd segment, without scaletuft dorsally. Forewing gray-whitish, more or less suffused gray on the posterior half and with some scattered black scales near the base. Hindwing gray.

Material examined. 1 ♂, Harye, Namwon, Seogwipo, Jeju Prov., 26 v 2014, coll. SM Oh & RN Sohn, gen slide no. CIS-6530.

Male genitalia (Figs. I, J). See also Park (1995b, Figs. 50-51).

Distribution. Korea (new record), Taiwan.

Remarks. It was known as an endemic species in Taiwan (Park, 1995b). It is considered that this species can be one of the invasive species from the southern regions.

4. Additional species of Gelechiidae known for the first time from Is. Jeju-do

Polyhymno trapezoidella (Caradja, 1920)

Material examined. 1 ♀ (abdomen missing), Hwasun, Andeok, Seogwipo, Jeju, 30 vi 2014.

Pexicopia melitoclina (Meyrick, 1935)

Material examined. 2 ♂, Is. U-do, Jeju, 7 ix 2010, gen. slide no. CIS-6531.

Phthorimaea operculella (Zeller, 1873)

Material examined. 1 ♂, Nameup, 21 viii 2014, gen. slide no. CIS- 6575.

Stenolechia notomochla Meyrick, 1935

Material examined. 1 ♂, Sanghyo, Seogwipo, Jeju, 26 v 2014, gen. slide no. CIS-6638.

Parastenolechia argobathra (Meryrick, 1935)

Material examined. 1 ♂, Hwasun, Andeok, Seogwipo, Jeju, 26 iii 2014.

Teleiopsis motleela Ponomarenko & Park, 2007

Material examined. 2 ♂, Hwasun Andeok, Seogwipo, Jeju, 10 iv 2014, slide no. CIS-6562.

Concubina trigonalis Park & Ponomarenko, 2007

Material examined. 1 ♂, Eorimok, Nohyundong, Jeju, 20 vii 2009, gen. slide no. CIS-6560.

Anarsia ulneungensis Park, 1996

Material examined. 1 ♂, Changcheon, Andeok, Seogwipo, Jeju, 30 vi 2014, gen slide no. CIS-6536; 1 ♂, Marado, Jeju, 30 vii 2014, gen slide no. CIS-6568.

Tornodoxa longiella (Park, 1993)

Material examined. 3 ♂, Changcheon, Andeok, Jeju, 3 vi 2013; 3 ♂, same locality, 18 vi 2015, gen. slide no. CIS-6566, 1 ♂, 3 vi 2013; 3 ♂, Harye, Namwon, Jeju, 19 vi 2014; 1 ♂, Ara, Jeju, 4 vi 2013; 1 ♂, Sinrye, Namwon, Seogwipo, Jeju, 19 vi 2014; 1 ♂, Gamsan, Andeok, Jeju, 11 vi 2014; 2 ♂, Isl.

U-do, Jeju, 30 ix 2014.

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