

Two Unrecorded Species of Tortricidae (Lepidoptera) from North Korea, with Notes on Collection Localities of North Korean Tortricids Deposited at the Hungarian Natural History Museum

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北韓産 잎말이나방科 (나비목)의 2미기록종 및 새로운 채집지 보고

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ABSTRACT: Based on the specimens of Tortricidae collected from North Korea by Hungarian Natural History Museum, totally twelve species were identified. Among them, two species, *Notocelia rosaecolana* Doubleday and *Rhopobota ustomaculana* Curtis, are reported for the first time from North Korea. All identified species is enumerated with their available information including the collecting localities, the distributional ranges and host plants.

Key words: Taxonomy, Lepidoptera, Tortricidae, New record, Korea

초 록: 지난 1970년이래 헝가리자연사박물관의 북한지역 탐사를 통해 채집조사되어 보관된 표본을 대상으로 검경한 결과 북한산 잎말이나방과 12종이 추가로 분류·동정되어 보고한다. 이 중 2종(*Notocelia rosaecolana* Doubleday, *Rhopobota ustomaculana* Curtis)은 북한지역에서는 처음으로 보고되는 북한미기록종이었다. 이외에 보고되는 10종은 주로 기존문헌에 목록에만 포함되어 있어 정확한 분포정보들이 없어왔던 종들로 금번 연구를 통해 새로운 분포지가 기록되는 종들이다. 본 연구에서는 금번에 보고되는 2종의 북한미기록종과 새롭게 채집지가 확인된 10종의 목록을 정리하여 보고하며 각 종별로 채집지기록, 국내의 분포 및 기주식물정보 등을 제시하였다.

검색어: 분류, 나비목, 잎말이나방과, 미기록종, 한국

As far as we know, the first record of the subfamily Tortricidae from North Korea was reported by Zhu (1969), comprising 34 species. Later, Park and Byun (1991) reported 21 newly recorded species of the family Tortricidae from North Korea, with the material deposited in the Hungarian Natural History Museum, Budapest, Hungary (HNHM). Park and Razowski (1991) added 16 species of the tribe Tortricini for the North Korean fauna,

based on the material in the Polish Academy of Sciences, Krakow, Poland (PAS). Jaros et al. (1992) reported 28 species of Tortricidae from North Korea, based on the material in the Czech Academy of Sciences, Prague, Czech Republic (CAS). Byun et al. (1998) enumerated 350 species of Korean Tortricidae, citing 63 species of Tortricinae and 40 species of Olethreutinae from North Korea. Later, Razowski (1999) provided a list of Korean Tortricidae with additional data of the material, treating 176 species of the Tortricidae of North Korea based on previous reports and the specimens at PAS. Despite these studies, much

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of the North Korean Tortricidae deposited in the HNHM had not been examined to date.

Recently the first author examined the tortricid material in the HNHM and reported 7 newly recorded species from North Korea (Byun et al., 2007). This paper is the report for the North Korean Tortricinae, based on the material in HNHM. In the present study, we provide the faunistic information for twelve species of Tortricidae, including their localities. Among them, two species, *Notocelia rosaecolana* Doubleday and *Rhopobota ustomaculana* Curtis, are reported for the first time from North Korea. Because it is difficult to investigate the North Korean fauna of Tortricidae, this report will be helpful to understand the tortricid fauna and distribution for the country.

The aim of the present study is to update our knowledge of the fauna of Tortricidae of North Korea with recently examined material. All the examined material for each species is enumerated with their localities and available information.

Materials and Methods

Material examined for this study was based on the collection in Hungarian Natural History Museum, Budapest, Hungary. When necessary, genitalia slides were made with Euparal mountant for identification of the species. Images were captured using an iCM 3.0 IMT i-Solution Inc. digital camera (Vancouver, Canada) attached to a Nikon MMZ 800 microscope (Yokohama, Japan). Abbreviations used in this study are as follows: TL-type locality, GS-genitalia slide number.

Taxonomic accounts

Order Lepidoptera Linnaeus, 1758

Family Tortricidae Latreille, 1803

Notocelia rosaecolana Doubleday (Figs 1, 3, 5) 짙레애기잎말이나방

Spilonota rosaecolana Doubleday, 1850, Zoologist 8: CVI. TL: Great Britain.

Adult (Fig. 1). Wingspan 18-19 mm. The species is similar to Japanese species *Notocelia plumbea* Nasu, but distinguished by

the lacking of two gray fasciae on the central area of the forewing and shallowly constricted valva (Nasu, 1980).

Male genitalia. As shown in Fig. 3.

Female genitalia. As shown in Fig. 5.

Material examined. 1 ♀, Prov. South Pyongan, Pyongyang Hotel, 4. Sept. 1971, leg. S. Harvatovich & J. Papp-GS 080; 1 ♂, Prov. South Pyongan, Pyongyang Hotel garden, 17. Aug. 1971, leg. S. Harvatovich & J. Papp-GS 016; 1 ♂, Prov. South Pyongan, Pyongyang Hotel garden, 11. Aug. 1971, leg. S. Harvatovich & J. Papp-GS 041; 1 ♂, Prov. South Pyongan, Pyongyang Hotel garden, 14. Aug. 1971, leg. S. Harvatovich & J. Papp.

Distribution. Korea (S, N: new record), China, Japan, Russia (Siberia), Europe.

Host plant. *Rosa multiflora* T. (Rosaceae) (Park, 1983). *Rosa multiflora* var. *platyphylla* Thory (Rosaceae) (Liu, 1983).

Rhopobota ustomaculana Curtis (Figs 2, 4) 흰파도애기잎말이나방

Steganoptycha ustomaculana Curtis, 1831, Br. Ent. 6: 376. TL: Great Britain.

Steganoptycha dorsovittana Herrich-Schäffer, 1851, Syst. Bearbeitung Schmett. Eur. 4: 280. TL: Czech Republic, Poland

Adult (Fig. 2). Wingspan 11-13 mm. This species is similar to *R. unipunctana* (Haworth, [1811]) superficially, but it can be distinguished by the shape of end of valva and socii in *male genitalia*.

Male genitalia. As shown in Fig. 4.

Material examined. 1 ♂, Prov. Ryanggang, Chann-Pay Plateau, Sam-Ji-Yan 1700m (Mt. Paektu) 24. Jul. 1975, leg J. Papp & A. Vojnits- GS 020.

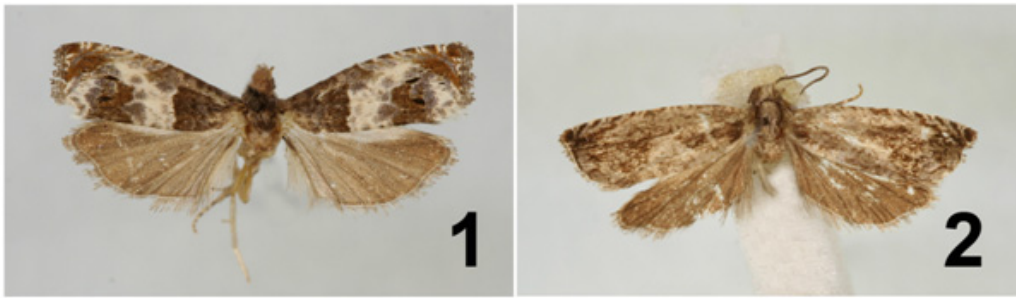
Distribution. Korea (N: new record), China, Russia, Europe.

Adoxophyes orana (Fisher von Röslerstamm) 애모무늬잎말이나방

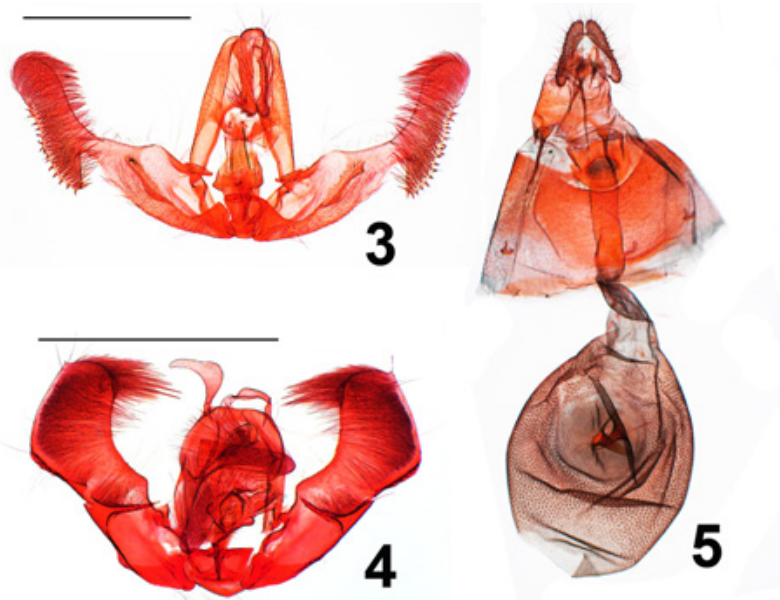
Tortrix orana Fischer von Röslerstamm, 1834, Abb. Ber. Erg. Schmett.: 13. TL: Europe.

Adoxophyes fasciata Walsingham, 1900, Ann. Mag. Nat. Hist. (7)5: 482.

Adoxophyes orana fasciata Walsingham: Yasuda, 1975,



Figs. 1-2. Adults: 1, *Notocelia rosaecolana* Doubleday; 2, *Rhopobota ustomaculana* Curtis.



Figs. 3-5. Male and female genitalia: 3 male genitalia of *Notocelia rosaecolana* Doubleday; 4, male genitalia of *Rhopobota ustomaculana* Curtis; 5, female genitalia of *Notocelia rosaecolana* Doubleday. <scale bars: 1 mm>

Bull. Univ. Osaka Pref. B(27): 129.

Wingspan 24 mm in female. The species shows considerable variation in wing patterns, especially in the southern parts of the Korean peninsula. Recently Byun et al. (2012) reviewed the Korean species of the genus *Adoxophyes* with three species, *A. orana* (Fisher von Röslerstamm), *A. paraorana* Byun, and *A. honmai* Yasuda.

Material examined. 1 ♀, Pyongyang City, 19.IX.1979, leg. H. Steinmann & T. Vasarhelyi.

Distribution. Korea (S, N), Japan, Russia, Europe.

Host plant. *Malus pumila* M., *Prunus* sp. (Rosaceae) (Park, 1983).

Remarks. Recently the genus *Adoxophyes* from southern part

of the Korean peninsula was reviewed with three recognized species (Byun et al., 2012). Thus it can be expected that the more species will be found in North Korea in the future.

Neocalyptis angustilineata (Walsingham) 꼬마홀죽 앞말이나방

Epagoge angustilineata Walsingham, 1900, Ann. Mag. Nat. Hist. (7)5: 484. TL: Japan (Kyushu).

Dichelia inconditana Kennel, 1901, Dt. ent. Z. Iris, 13: 210.

Wingspan 16 mm in female. This species is known as one of the common species in Korea, especially in the middle and southern areas of the Korean peninsula. It is similar to *A. lirata* (Christoph), but it can be distinguished by the shape of

the male and the female genitalia.

Material examined. 1 ♀, Prov. South Pyongan, Pyongyan, Hotel garden, 17. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 018.

Distribution. Korea (S, N), China, Japan.

Clepsis pallidana (Fabricius) 붉은무늬잎말이나방

Pyralis pallidana Fabricius, 1777, Gen. Ins. 2: 292. TL: Germany (Hamburg).

Tortrix strigana Hübner, Samml. Eur. Schmett., 7: pl. 22, fig. 141.

Tortrix districta Meyrick, 1920, Exot. Microlep., 2: 242.

Wingspan 17 mm in male. Obratzsov (1955) treated *E. strigna* H. as a valid name, but it is more practical to use the name *pallidana*, placing *strigna* as a junior synonym, from the result of inquiry about the type of *Pyralis pallidana* to Bradley (Park and Park, 1976).

Material examined. 1 ♂, Prov. South Pyongan, Bongwa-ri, 45 km E from Pyangyan, 16-17. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 001.

Distribution. Korea (S, N), China, Japan, Russia (Siberia), Europe.

Host plant. *Artemisia montana* P. (Compositae), *Malus pumila* M. (Rosaceae), and *Trifolium repens* L. (Leguminosae) (Park, 1983; Yasuda, 1975). Shrubs: *Caragana* sp., *Caragana sinica* (Buchoz) Rehder, *Medicago sativa* L. (Leguminosae), *Spiraea* sp. (Rosaceae), Farm crops: *Cannabis sativa* L. (Cannabinaceae), *Gossypium* sp., *Hibiscus cannabimus* (Malvaceae) (Liu, 1983; Liu and Li, 2002).

Remarks. Larva is polyphagous, causing damage to the new shoot tips or sprout of the host plants, including various farm crops and herbaceous plants (Liu, 1983).

Clepsis rurinana (Linnaeus) 반백잎말이나방

Phalaena Tortrix rurinana Linnaeus, 1758, Syst. Nat., 19: 823. TL: Europe.

Tortrix semialbana Guenée, 1845, Ann. Soc. Ent. France, 2 (3): 139.

Wingspan 15 mm in male. This species is known as one of the

common species in the southern part of the Korean peninsula. The adults fly from the middle of May to the early September in Korea.

Material examined. 1 ♂, Prov. Ryang-gang, Chann-Pay Plateau, Sam-zi-yan(=Mt. Paektu), 1700m, 24. July. 1975, leg. J. Papp & A. Vonits-GS 021.

Distribution. Korea (S, N), China, Japan, Russia (Siberia), India, Asia Minor, Europe.

Host plant. *Larix leptolepis* (S. et Z.) Gordon (Pinaceae) (Park, 1983). *Anthriscus sylvestris* Hoffm. (Umbelliferae), *Calystegia sepium* var. *americana* Matsuda (Convolvulaceae), *Chelidonium majus* var. *asiaticum* (Hara) Ohwi (Papaveraceae), *Euphorbia* sp. (Euphorbiaceae), *Lilium* sp. (Liliaceae), *Lonicera japonica* Thunb. (Caprifoliaceae), *Rosa* sp. (Rosaceae), *Urtica* L. (Urticaceae) (Liu, 1983; Liu and Li, 2002).

Acleris ulmicola (Meyrick) 참느릅잎말이나방

Acleris ulmicola Meyrick, 1930, Exot. Microl., 3: 612. TL: China (Manchuria).

Wingspan 14 mm male. The species had been known as a subspecies *Acleris boscana ulmicola* (Park, 1983; Park and Park, 1976), but (Park and Razowski, 1991) treated it as *Acleris ulmicola* (Meyrick).

Material examined. 1 ♂, Prov. South Pyongan, Pyongyan, Hotel garden, 3. Sept. 1971, leg. S. Horvatovich & J. Papp-GS 003.

Distribution. Korea (S, N), China, Japan, Russia (Amur).

Host plant. *Ulmus davidiana* P., *Ulmus* sp., and *U. propinqua* (Ulmaceae) (Razowski, 1966). *Ulmus davidiana* in China and *U. propinqua* (Ulmaceae) in East Siberia, Russia (Liu, 1983; Liu and Li, 2002).

Acleris uniformis (Filipjev) 갈색무늬잎말이나방

Acleris uniformis Filipjev, 1931, Ann. Mus. Zool. Acad. USSR, 31: 512 (*Peronea*). TL: Russia (Siberia).

Wingspan 15-19 mm. This species is similar to those of *A.*

hastiana, especially in male genitalia, but it differs in the shape of the valva and the socius.

Material examined. 1♂, Prov. South Pyongan, Pyongyan, Hotel garden, 4-5. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 013; 1♂, Prov. South Pyongan, Pyongyan, Hotel garden, 3. Sept. 1971, leg. S. Horvatovich & J. Papp-GS 027; 1♀, Prov. South Pyongan, Pyongyan, Hotel garden, 12. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 007; 1♀, Prov. South Pyongan, Pyongyan, Hotel garden, 19. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 095.

Distribution. Korea (S, N), Japan, Russia (Ussuri, Siberia).

Cochylidia richteriana (Fischer von Röslerstamm) 갈색가는잎말이나방

Cochylis richteriana Fischer von Röslerstamm, 1837, Abhandl. Bericht. Ergänz Schmett-kunde, p. 92, t. 40, f. 3ab, b. TL: Europe.

Cochylis olindiana Snellen, 1883, Tijds. Ent. 26: 194.

Cochylis ineptana Kennel, 1900, Dt. ent. Z. Iris. 13: 233.

Phalonia xanthodryas Meyrick, 1936, [in] Caradja and Meyrick, Dt. ent. Z. Iris. 50: 155.

Wingspan 14-15 mm. This species has the variations in wing patterns. It can be differentiated from the allied species by the distinct and straight medial fascia followed by several blackish tiny dots subterminally (Byun and Li, 2006).

Material examined. 1♀, Prov. South Pyongan, Pyongyan, Hotel garden, 10. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 009.

Distribution. Korea (S, N), China, Japan, Russia (Amur, Siberia), Mongolia, Europe.

Host plant. Kawabe (1982) recorded *Artemisia* sp. (Asteraceae) as the host plant of this species.

Gynnidomorpha luridana (Gregson) 연황색가는잎말이나방

Argyrolepis luridana Gregson, 1870, Entomologist, 5: 80. TL: England (Witherslack).

Wingspan 12 mm in female. This species has relatively uniform whitish ochreous ground color and the pale ochreous-brown markings are characteristic for the species (Byun and Li, 2006).

Material examined. 1♀, Kaesong, Mts. Pakyon, Pakyo Popo, 27km NE from Kaesong, 10-12. Sept. 1971, leg. S. Horvatovich & J. Papp-GS 029.

Distribution. Korea (S, N), China, Russia (Kuril Is.), Asia Minor, Europe.

Gynnidomorpha permixtana (Denis et Schiffermüller, 1775) 송이풀가는잎말이나방

Tortrix permixtana Denis et Schiffermüller, 1775, Ank. Verz. Schmett. Wien. Geg.: 129. TL: Australia (Wien).

Cochylis mussehiliana Treitschke, 1835, Schmett. Eur. 10 (3): 141.

Cochylis dymotana Treitschke, 1835, Schmett. Eur. 10 (3): 142.

Wingspan 12 mm. The blackish gray suffusion at the middle of the outer margin of the medial fascia and the grey suffusion in the distal half are characteristic for this species (Byun and Li, 2006).

Material examined. 1♀, Prov. South Pyongan, Bongwa-ri, 45 km E from Pyangyan, 16-17. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 008; 1♂, Prov. South Pyongan, Pyongyan, Hotel garden, 3. Sept. 1971, leg. S. Horvatovich & J. Papp-GS 011; 1♂, Prov. South Pyongan, Pyongyan, Hotel garden, 19. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 010; 1♂, Prov. South Pyongan, Pyongyan, Hotel garden, 2. Sept. 1971, leg. S. Horvatovich & J. Papp-GS 012.

Distribution. Korea (S, N), China, Japan, Mongolia, Russia (Siberia), Afghanistan, Europe.

Host plant. *Alisma* sp. (Alismataceae), *Gentiana* sp. (Gentianaceae), *Euphrasia* sp., and *Pedicularis* sp. (Scrophulariaceae) have been known from Japan (Kawabe, 1982). *Alisma orientale* (Sam.) Juzepcz (Alismataceae), *Euphrasia pectinata* Ten., *Pedicularis* L. (Scrophulariaceae), *Gentiana lutea* L. (Gentianaceae) (Liu and Li, 2002).

Pandemis heparana (Denis et Schiffermüller) 갈색 앞말이나방

Tortrix heparana Denis & Schiffermüller, 1775, Ank. Syst. Werk. Schmett: 128 (*Tortrix*). TL: Austria (Wien).

Pyralis pasquagana Fabricius, 1787, Mont. Ins. 2: 226.

Tortrix rubrana Sodoffsky, 1830, Bull. Soc. Imp. Nat. Moscou 2: 71.

Wingspan 23 mm in female. This species is similar to the *P. dumetana* Treitschke, but it can be distinguished by the characters of uncus and valva of the male genitalia.

Material examined. 1 ♀, Prov. South Pyongan, Pyongyang, Hotel garden, 31. Aug. 1971, leg. S. Horvatovich & J. Papp-GS 006.

Distribution. Korea (S, N), Japan, China, Russia, India, Europe.

Host plant. *Alnus japonica* S., *Betula platyphylla* S. (Betulaceae), *Arctium lappa* L., *Artemisia montana* P. (Compositae), *Beta vulgaris* L. (Chenopodiaceae), *Castanea crenata* S. & Z., *Quercus dentata* T. (Fagaceae), *Cornus controversa* H. (Cornaceae), *Crataegus* sp., *Fragaria ananassa* D., *Malus pumila* M., *Prunus armeniaca* var. *ansu* Max., *Prunus persica* (L.) Batsch, *Prunus serrulata* var. *spontanea* W., *Pyrus serotina* R. (Rosaceae), *Erigeron annuus* (L.) Pers. (Compositae), *Ligustrum* sp. (Oleaceae), *Syringa* sp. (Oleaceae), *Linum usitatissimum* L. (Linaceae), *Phellodendron amurense* R. (Rutaceae), *Rhododendron mucronulatum* T. (Ericaceae), *Vaccinium vitis-idaea* L. (Ericaceae), *Salix* sp. (Salicaceae), *Trifolium repens* L. (Leguminosae), and *Ulmus davidiana* P. (Ulmaceae) (Park, 1983). *Anchusa* sp. (Boraginaceae), *Fagus* sp., *Quercus* sp. (Fagaceae), *Fraxinus* sp. (Oleaceae), *Humulus* sp. (Cannabinaceae), *Lysimachia* sp. (Primulaceae), *Pyrus* sp., *Sorbus* sp. (Rosaceae), *Rhamnus* sp. (Rhamnaceae), *Salix caprea* L. (Salicaceae), *Ulmus* sp. (Ulmaceae), and *Vaccinium* sp. (Ericaceae) (Hannemann, 1961). *Alnus japonica* var. *rufa* Nak. (Betulaceae), *Cerylus heterophyllus* (Berberidaceae), *Fagus* sp. (Fagaceae), *Fraxinus mandshurica* R. (Oleaceae), *Humulus lupulus* L. (Cannabinaceae), *Lysimachia clethroides* Duby (Primulaceae), *Malus pumila* Mill., *Prunus armeniaca* var. *ansu* Max., *Prunus persica*, *Prunus pseudocerasus*, *Pyrus* sp.,

Sorbus sp., *Spiraea* sp. (Rosaceae), *Morus alba* (Moraceae), *Quercus* sp. (Fagaceae), *Salix koreensis* A. (Salicaceae), *Tilia* sp. (Tiliaceae), *Ulmus* sp. (Ulmaceae), *Vaccinium vitis-idaea* L. (Ericaceae) (Liu and Li, 2002).

Remarks. There are two generations a year in apple farm of Province Liaoning. It overwinters as larva within the bark on the trunk. And then, they resume to act in April in the next year. Moths fly during June to mid-July. Adults appear again in mid-August to late September (Liu, 1983).

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