

A Review of the Genus *Phalonidia* (Lepidoptera, Tortricidae) in Korea韓國產 *Phalonidia*屬 (나비목, 잎말이나방科)의 分類學的 整理B. K. Byun<sup>1</sup> and K. T. Park<sup>2</sup>邊鳳奎<sup>1</sup> · 朴奎澤<sup>2</sup>

**ABSTRACT** Among 15 recognized species of the genus *Phalonidia* from Korea, following 9 species are reported for the first time from Korea: *Phalonidia aliena* Kuznetsov, *P. lyidae* Filipjev, *P. scabra* Liu et Ge, *P. zygota* Razowski, *P. alismana* (Ragonot), *P. luridana* (Gregson), *P. permixtana* ([Denis et Schiffmüller]), *P. rubricana* (Peyerimhoff), and *P. silvestris* Kuznetsov.

**KEY WORDS** Systematics, Lepidoptera, Tortricidae, Cochylini, *Phalonidia*, Korea

**초 록** 우리나라產 *Phalonidia*屬은 총 15종으로 정리되며 이중 다음의 9種은 우리나라에서 처음으로 報告되는 未記錄種들이다: *Phalonidia aliena* Kuznetsov, 꼬마검정가는잎말이나방, *P. lyidae* Filipjev, 흰머리가는잎말이나방, *P. scabra* Liu et Ge, 흑줄가는잎말이나방, *P. zygota* Razowski, 어깨부너가는잎말이나방, *P. alismana* (Ragonot), 텍사가는잎말이나방, *P. luridana* (Gregson), 연황색가는잎말이나방, *P. permixtana* ([Denis et Schiffmüller]), 송이풀가는잎말이나방, *P. rubricana* (Peyerimhoff), 뒷검은가는잎말이나방, *P. silvestris* Kuznetsov, 은빛가는잎말이나방

**검색어** 分類, 나비목, 잎말이나방科, *Phalonidia*屬, 韓國.

Tribe Cochylini belonging to the family Tortricidae is small to medium sized moth. The distributional range of the tribe is more or less cosmopolitan. The tribe has peculiar characteristics with a oblique fascia on the forewing, and genitalic structures indicate that the tribe has been evolved to a different line from neighboring groups. The taxonomic rank of the group has been so confused, because of different opinions by different authors (Razowski, 1970, 1976; Park, 1976, 1983; Kawabe, 1982; Kuznetsov, 1987). The authors placed it as a tribe belonging to Tortricinae for the time being.

In Korea, the taxonomical study on the tribe Cochylini has scarcely been made with only 4 papers, even the genus *Phalonidia* is the largest group in the tribe. Park (1976) recorded three species, *Phalonidia curvistrigana* (Stainton), *P. vectisana* (Humpery & Westwood), and *P. minimana* (Caradja) from Korea, and later he (1983) added another species, *P.*

*fraterana* Razowski. Recently further two species, *P. chlorolitha* (Meyrick) and *P. latifasciana* Razowski were reported (Byun et al, 1993). In this study, nine species are reported for the first time from Korea. The materials examined for this study are now preserved in the Center for Insect Systematics, Kangwon National University, Chuncheon and partly in the Department of Entomology, Agricultural Sciences and Technology Institute, RDA. Suweon in Korea.

#### Abbreviation used for provinces and organizations

GG: Gyeonggi-do, GW: Gangwon-do, CB: Chungcheongbug-do, CN: Chungcheongnam-do, JB: Jeolabug-do, JN: Jeolanam-do, GB: Gyeongsangbug-do, GN: Gyeongsannam-do, JJ: Jeju-do, CIS/KWNU: Center for Insect Systematics, Kangwon National University, Chuncheon, ASTI: Agricultural

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**Table 1. Comparison of the morphology between two species groups of the genus *Phalonidia***

characteristics	<i>minima</i> group	<i>aliena</i> group
socius	large, well sclerotized with strong setae at apex	slender, membranous without apical setae at apex
tegumen	narrow	broad
valva	slender, slightly sclerotized	broad, expanded to apex,
sacculus	strongly developed	weak
vinculum	narrow, strong	broad, weak
aedeagus	stout, with well developed caulis, curved at middle, elongated terminally	slender, short with nearly straight caulis
cornutus	relatively long	relatively short, stout

Sciences and Technology Institute, RDA.

### SYSTEMATICS

#### *Phalonidia* Le Marchand 1933

*Phalonidia* Le Marchand 1933,  
Amat. Papill., 6: 242.

<Type species: *Cochylis affinitana* Douglas 1846>  
= *Piersea* Filipjev 1940, Trav Inst. Zool. Acad. Sci.  
U.R.S.S. 6: 171.  
= *Brevisociaria* Obratzov 1943, Mitt. münch ent.  
Ges., 33: 96.

Wing venation. Forewing with  $R_5$  merged into apex; Base  $R_1$  and  $R_2$  about 2 times distance of  $R_2$  and  $R_3$ ;  $M_1$  and  $M_2$  parallel as well as  $M_2$  and  $M_3$ . R and  $M_1$  stalked in hindwing.

Male genitalia: Uncus absent; transtilla with a long median process; valva simple, narrow; vinculum divided into two sclerites ventrally. Aedeagus with a cornutus.

Authors propose to divide the genus into 2 species groups in this study, namely the *aliena* group and the *minimana* group, based on the characteristics of male genitalia.

#### The *aliena* group

*Phalonidia aliena* Kuznetsov 꼬마검정기는앞말이나방(新稱) (fig. 1)

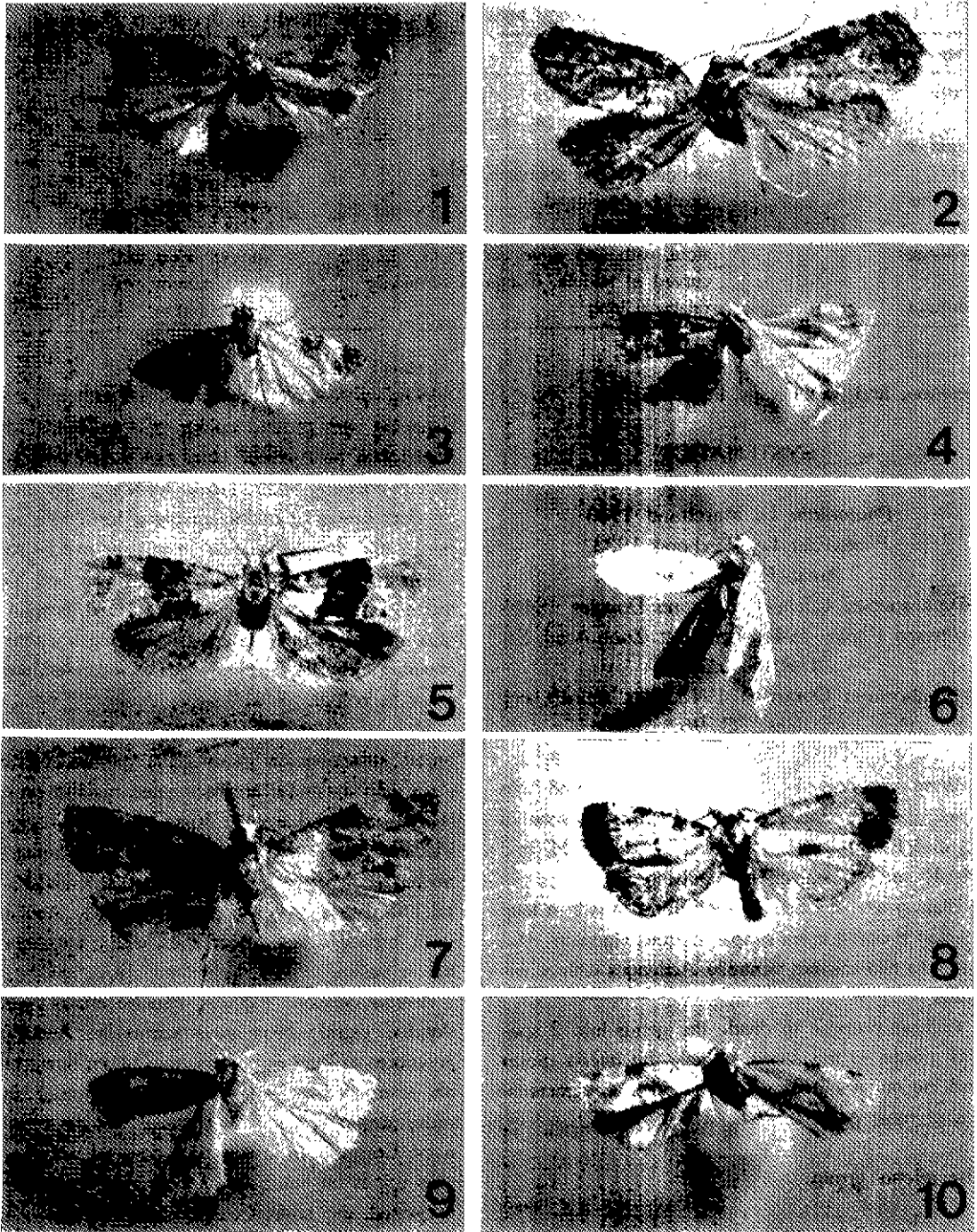
*Phalonidia aliena* Kuznetsov, 1966, 200, f. 21a, b, 22; Razowski, 1970, 217, pl. 12, fig. 127.

Wing span, 11 mm in male, 14 mm in female. Forewing with ground colour pale yellowish white, tinged with pale yellow; basal patch pale yellow, indistinct covering about 1/5 of forewing; median fascia dark brown at middle of costa, forming a rectangular and then developed from near middle towards half of dorsum, several dots developed along the dorsum near middle; apex rounded; termen slightly oblique with a broad streak along the termen, covering distal 1/5. Hindwing dark brown, rather weak in colour.

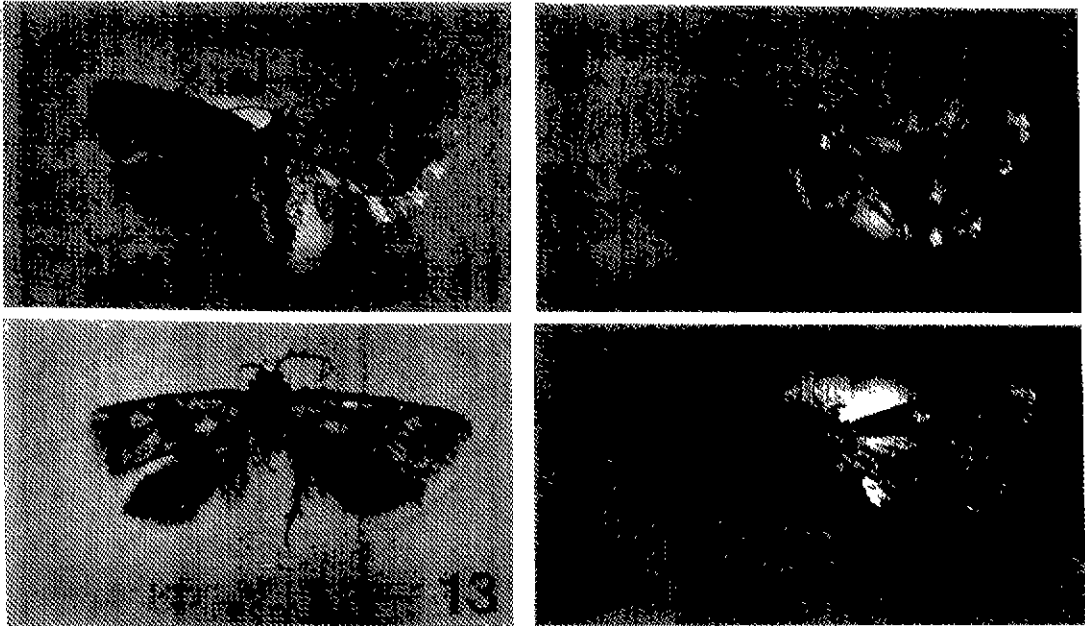
*Male genitalia* (fig. 15). Tegumen narrow. Socius broad, subtriangular, narrowed terminally. Transtilla short with a slender and elongated median process, shortly bifurcated apically. Juxta broad, subtriangular. Valva long, elongate, rounded terminally, slightly narrowed at distal half; sacculus short, reaching to basal 1/4, with a drooping portion ventrally. Aedeagus stout, broad, widened near apex, with a large cornutus in vesica.

*Female genitalia* (fig. 27). Papillae anales narrow, slender, slightly broadened terminally. Apophyses anteriores as long as posteriores. Ostium bursa broadly sclerotized, subtriangular. Ductus bursae short, wide, strongly plicated vertically, narrowed at its neck. Corpus bursae rounded, covered with numerous spines on inner wall, containing a ring shaped, thickened and sclerotized part with numerous long spines in it.

*Material examined*. GW: 1♂, 1♀, Hongcheon, 14. VII. 1987 (K. T. Park); 1♀, Bongmyoung-ri, near Hongcheon, 31. VIII. 1992 (B. K. Byun); 1♀, Chu-



**Figs. 1-10.** Adults: 1, *Phalonidia aliena* Kuznetsov; 2, *P. chlorolitha* (Meyrick); 3, *P. curvistrigana* (Stainton); 4, *P. fraterna* Razowski; 5, *P. latifasciana* Razowska; 6, *P. lyidae* Filipjev; 7, *P. scabra* Liu et Ge; 8, *P. zygoia* Razowski; 9, *P. alsmiana* (Ragonot); 10, *P. luridana* (Gregson)



**Figs. 11-14.** Adults: 11, *Phalonidia minima* (Caradja); 12, *P. permixtana* ([Denis et Schiffmüller]); 13, *P. rubricana* (Peyerimhoff); 14, *P. vectisana* (Humphreys and Westwood).

ncheon, 3. VIII. 1990 (B. K. Byun); 1 ♀. Chuncheon, 25. VIII. 1988 (K. T. Park); 1 ♀, Sogumgang, 9. VIII. 1988 (K. T. Park)-gen slide no 2680, 2815- coll. CIS/KWNU

*Distribution.* Korea (new record), Russian Far East (Vladivostok)

***Phalonidia chlorolitha* (Meyrick) 얼룩무늬가는잎말이나방 (fig. 2)**

*Phalonidia chlorolitha* Meyrick, 1931, 157, Razowski, 1970, 218, fig. 129; Kawabe, 1982, part 1: 154, part 2: 182, pl. 31: 22, Liu et Ge, 1991, 351; Byun et al., 1993, 20, figs. 2, 6. 6a.

*Phalonidia azyga* Meyrick, 1935, 47.

*Male genitalia.* As shown in fig. 16.

*Material examined* GW: 1 ♂, Mt. Yaksu-san, 9. VIII. 1989 (K. T. Park)-coll. CIS/KWNU.

*Previous record.* GW: Mt. Yaksu-san (Byun, Park & Kawabe, 1993)

*Distribution.* Korea, Japan, China (Manchuria), Russian Far East (Ussuri)

***Phalonidia curvistrigana* (Stainton) 검무늬가는잎말이나방 (fig. 3)**

*Eupoecilia curvistrigana* Stainton, 1859, 272.

*Phalonia curvistrigana:* Kennel, 1913, Zool., 268, pl. 12, fig. 10.

*Phalonidia curvistrigana:* Razowski, 1970, 204-205, pl. 11, 60, 132. fig. 116; Bradely *et al.*, 1973, 46, fig. 22: 22; Park, 1976, 70; Razowski, 1981, 68; Kawabe, 1982, part 1: 154, part 2: 182, pl. 31: 17; Park, 1983a, 596, pl. 38: 675; Park, 1983b, 50, Kuznetsov 1987, 398; Liu et Ge, 1991, 349.

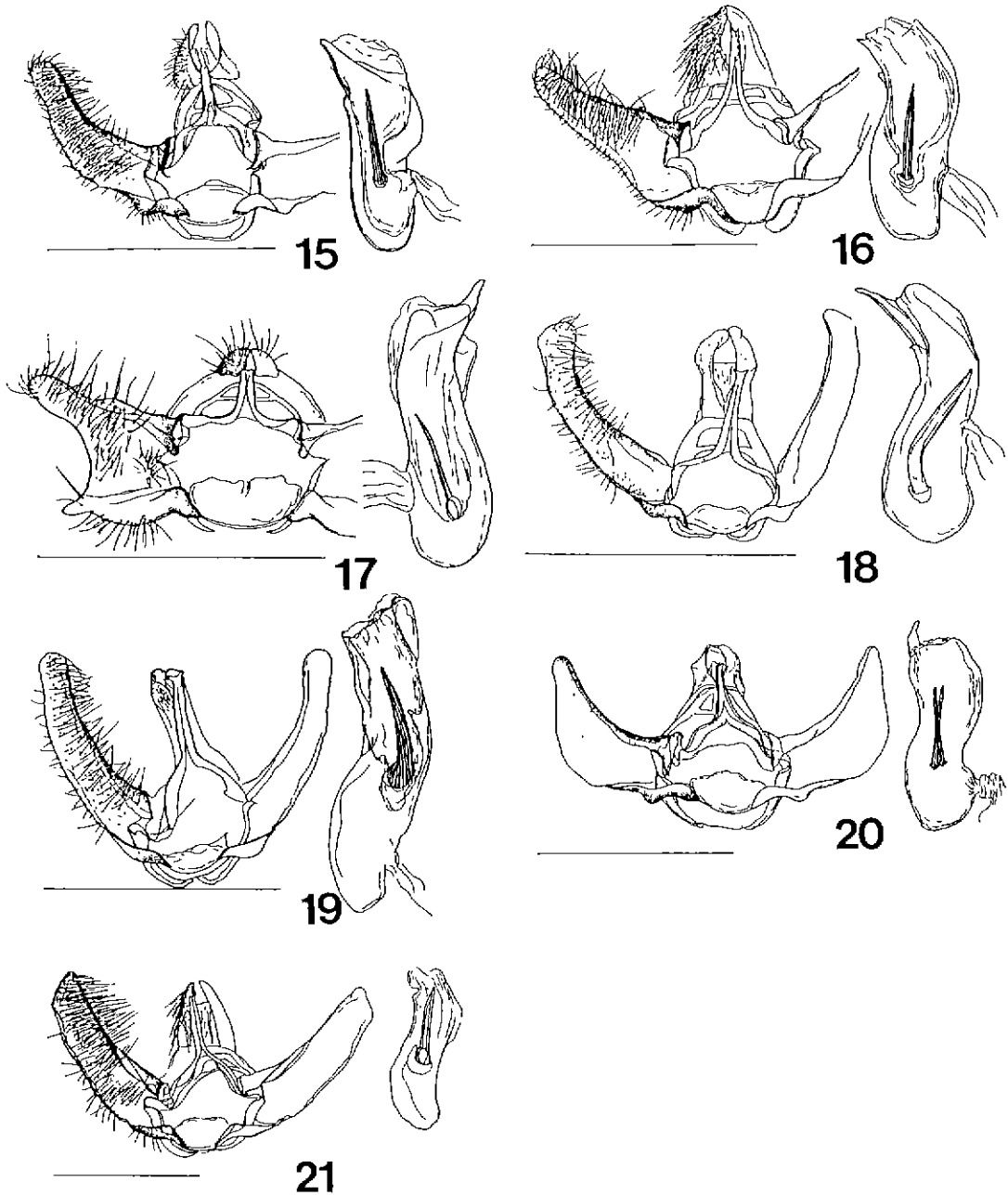
*Male genitalia.* As shown in fig. 17.

*Material examined.* JB: 1 ♂. Mt. Deugyoo-san, near Muju, 13. VIII. 1975 (K. T. Park)-coll. CIS/KWNU GG: 1 ♂, Suweon, 10. V. 1976- coll. ASTI.

*Previous record.* GG: Suweon (Park, 1983b).

*Distribution.* Korea, Japan, China, Russian Far East (Ussuri), Central and North Europe

*Host plants* *Solidago* spp, and *Glycyne max* Merr (Park, 1983b).



Figs. 15-21. Male genitalia: 15, *Phalonia aliena* Kuznetsov; 16, *P. chlorolitha* (Meyrick); 17, *P. curvistrigana* (Stainton); 18, *P. fraterna* Razowski; 19, *P. lyidae* Filipjev; 20, *Phalonia scabra* Liu et Ge. 21, *P. zygota* Razowski. <scale bars: 1 mm>.

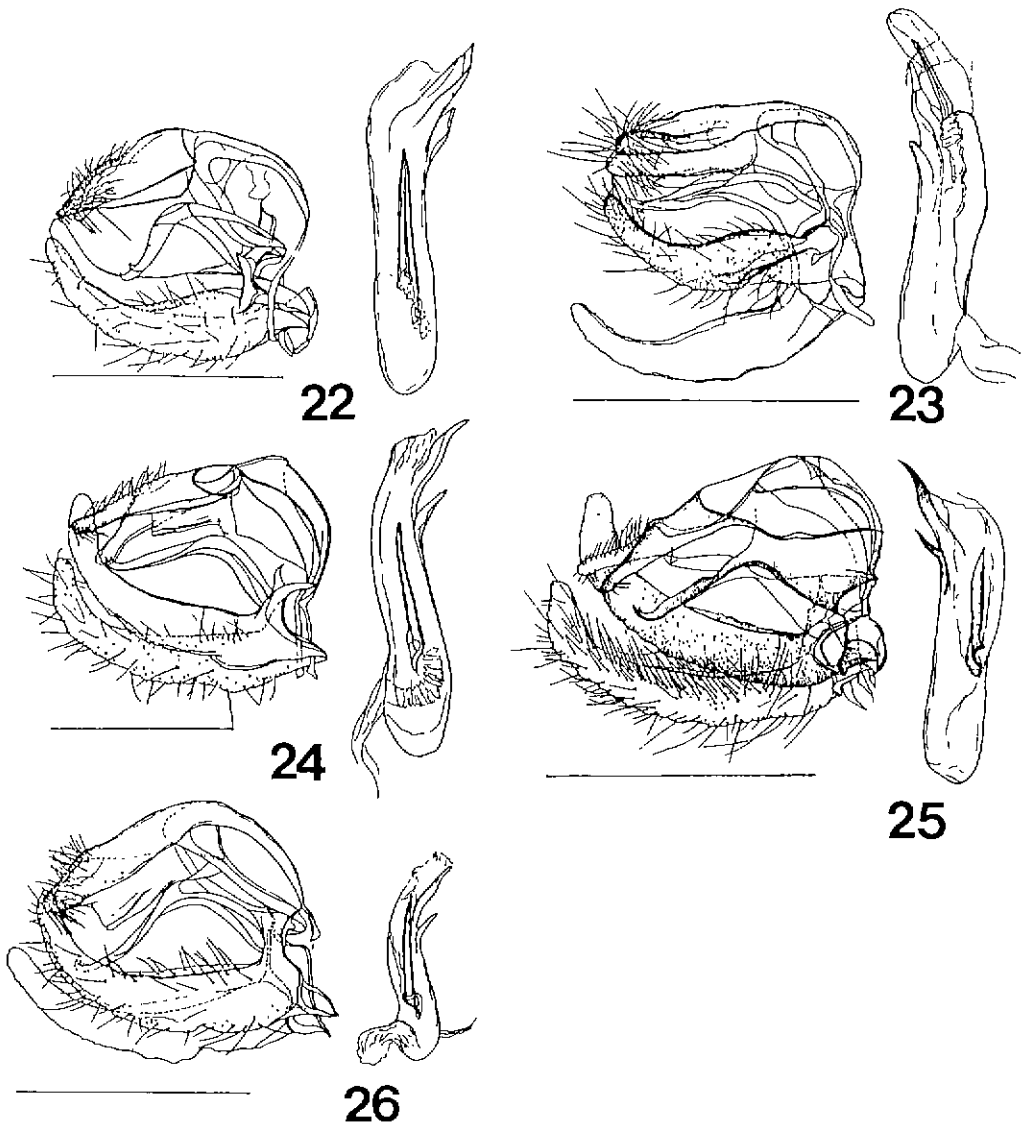
*Phalonia fraterna* Razowski 북방가는잎말이나방 (fig. 4)

*Phalonia fraterna* Razowski, 1970, 216, pl. 11,

fig. 126; Park, 1983b, 50.

Male genitalia. As shown in fig. 18.

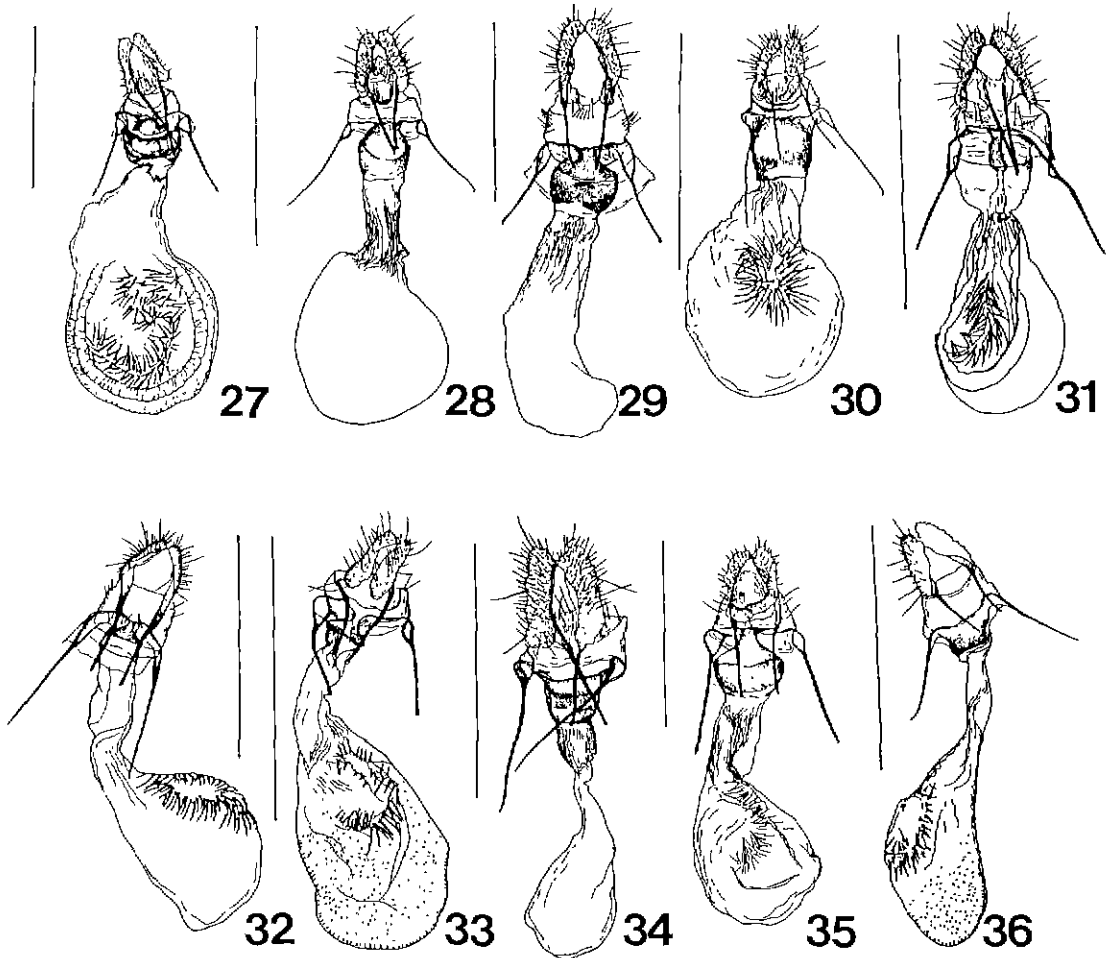
Female genitalia. As shown in fig. 28.



**Figs. 22-26.** Male genitalia: 22, *Phalonidia alismana* (Ragonot); 23, *P. luridana* (Gregson); 24, *P. minimana* (Czuczaj), 25, *P. permixtana* ([Denis et Schiffermüller); 26, *P. vectisana* (Humpreys and Westwood). <scale bars 1 mm>.

*Material examined.* GW: 3♀, Chuncheon, 5. VIII. 1983 (K. T. Park); 1♀, Chuncheon, 12. VIII. 1988 (K. T. Park); 1♀, Naemyun, Hongcheon, 14. VIII. 1987 (K. T. Park); 1♂, Mt Jeombong-san, 10. VIII. 1992 (B. K. Byun); 1♂, Mt Seolak-san, 9. VIII. 1989 (B. K. Byun); 1♀, Mt. Seolak-san, 10. VIII. 1989 (B. K. Byun); 1♀, Seomyun (Yangyang), 17. VIII. 1992 (B. K. Byun). GG. 1♂, 1♀, Suweon,

11. VIII 1980 (K. T. Park); 1♂, Suweon, 2. VIII. 1974 (K. T. Park). CB: 1♀, Mt. Wolak-san, 18. VIII. 1993 (B. K. Byun). GN: 1♂, Mt. Gaji-san, 19. VIII. 1993 (B. K. Byun). JN: 3♂, Mt. Pekun-san, 19. VIII. 1992 (B. K. Byun). JJ: 1♂, Mockseokwon, 30. V. 1992 (B. K. Byun)-gen. slide no. 2835, 2860. coll. CIS/KWNU. GG. 1♀, Mt. Cheonggye-san, 12. VIII. 1976- coll. ASI



**Figs. 27-36.** Female genitalia: 27, *Phalonidia aliena* Kuznetsov, 28, *P. fraterna* Razowski; 29, *P. latifasciana* Razowski; 30, *P. scabra* Liu et Ge. 31, *P. zygota* Razowski; 32, *P. minimana* (Caradja); 33, *P. permixtana* ([Denis et Schiffemüller); 34, *P. rubricana* (Peyerimhoff); 35, *P. silvestris* Kuznetsov; 36, *P. vectisana* (Humpreys and Westwood). (scale bars: 1 mm)

*Previous record.* GG: Suweon (Park, 1983b).

*Distribution.* Korea, Russian Far East (Siberia, Ussuri, Vladivostok).

*Remarks.* The present species is similar to *P. lyidae* (Filipjev) superficially, but it can be distinguished by genital characteristics.

***Phalonidia latifasciana* Razowski 왕줄무늬가는잎말이나방 (fig. 5)**

*Phalonidia latifasciana* Razowski, 1970, 206, fig. 118; Kawabe, 1972, 248, fig. 4, 21; Kawabe, 1982,

part 1, 154, part 2, 182, pl 31: 18; Liu et Ge, 1991, 353, Byun et al., 1993, 21, figs. 3, 8.

*Female genitalia.* As shown in fig 29.

*Material examined.* GW: 1♀, Naemyun, Hongcheon, 14. VIII. 1987 (K. T. Park)-coll. CIS/KWNU.

*Previous record.* GW: Naemyun, Hongcheon (Byun, Park & Kawabe, 1993).

*Distribution.* Korea, Japan, China, Russian Far East.

***Phalonidia lyidae* Filipjev 흰머리가는앞말이나방 (新稱) (fig. 6)**

*Ptercerca lyidae* Filipjev, 1940, Trudy Zool. Inst. Leningr., 6: 180, Razowski, 1970, 220, pl. 12, fig. 131; Liu et Ge, 1991, 353.

Wing span, 11 mm. Ground colour of forewing whitish yellow, sometimes strigulate with brown distally; basal fascia indistinct; median fascia narrow, distinct. Hindwing pale gray.

*Male genitalia* (fig. 19). Tegumen narrow, short. Socius long, expanded, rounded apically, slender, long with distinctly bifurcated at the terminal shortly. Valva long, with well sclerotized costal margin at basal 1/3; sacculus short restricted to basal 1/7. Aedeagus large, stout, sharpened apically, with a big, thickened cornutus in vesica.

*Material examined.* GW: 1 ♂, Mockuje, near Soccho, 9. VIII. 1992 (B. K. Byun) CN: 1 ♂, Mt. Sokrisan, 19. VIII. 1993 (B. K. Byun)-gen. slide no. 3639-coll. CIS/KWNU.

*Distribution.* Korea (new record), Japan, China, Russian Far East (Ussuri).

***Phalonidia scabra* Liu et Ge 흑줄가는앞말이나방 (新稱) (fig. 7)**

*Phalonidia scabra* Liu et Ge, 1991, 355, figs. 2, 24.

Wing span, 12-15 mm in male, 13-16 mm in female. Ground colour of forewing white; basal patch pale yellowish brown, covering 1/5 of forewing; median fascia brown, arcuated inwardly, colouration rather weak in female; subapical streak located on 4/5 of costa, pale brown; temen oblique. Hindwing pale gray.

*Male genitalia* (fig. 20). Uncus atrophied. Median process of transtilla trapezoidal, broad medially. Valva broad at base, gradually narrowed toward apex, with rounded apex; costa of valva well sclerotized to about 5/6. Aedeagus fairly long, very stout; coecum penis rounded basally with two different sized cornuti.

*Female genitalia* (fig. 30). Apophysis anterioris 2

times as long as apophysis posterioris. Ostium bursa very broad, weakly sclerotized. Ductus bursa as long as corpus bursa; distal 1/3 twisted, membranous, then slightly sclerotized to corpus bursae. Corpus bursa large, semiovalate; appendix bursa arising from middle of corpus bursae.

*Material examined.* GW: 1 ♂, Naemyun, Hongcheon, 14. VIII. 1987 (K. T. Park); 1 ♀, Chuncheon, 12. VIII. 1988 (K. T. Park)-gen. slide no. 2705, 2685-coll. CIS/KWNU.

*Distribution.* Korea (new record), China

***Phalonidia zygota* Razowski 어깨무늬가는앞말이나방 (新稱) (fig. 8)**

*Phalonidia zygota* Razowski, 1964, 338, fig. 1, 2; Razowski, 1970, 215, fig. 125; Kawabe, 1972, 248, figs. 5, 14, 23; Kawabe, 1982, part 1; 154, part 2: 182, pl. 31: 20; Kuznetsov, 1987, 398, fig. 260: 1; Liu et Ge, 1991, 353.

Wing span, 12-15 mm.

*Male genitalia* (fig. 21). Socius long, covered with numerous long hairs. Transtilla thin, long with two very small spines in the apical portion. Valva long, with parallel edges, rounded terminally. Sacculus strongly sclerotized, reaching 1/4 ventral margin. Aedeagus broad, short, with a very strong cornutus, provided with basal plate.

*Female genitalia* (fig. 31). Apophysis anterioris 2 times as long as apophysis posterioris. Ostium bursa very broad, weakly sclerotized. Ductus bursae as long as corpus bursa, distal 1/3 twisted, membranous, then slightly sclerotized to corpus bursae. Corpus bursae very large, semiovalate; appendix bursa arising from middle of corpus bursae.

*Material examined.* GG: 1 ♂, 1 ♀, Ipori, Yeouju, 20. VIII. 1990 (D. S. Park et S. Y. Joo). GW: 1 ♂, 1 ♀, Mt. Jeombong-san, Chuncheon: 2 ♂, 30. VIII. 1990, 3 ♂, 21. IX. 1988 (K. T. Park); 4 ♂, 2 ♀, 25. VII. 1988 (K. T. Park); 3 ♂, 9. IX. 1988 (K. T. Park). GB: 1 ♂, Mt. Juwang-san, 18. VIII. 1993 (B. K. Byun)-gen. slide no. 2682, 2820-coll. CIS/KWNU.

*Distribution.* Korea, Japan, Russian Far East, Mongolia, China.



### The *minima* group

#### *Phalonidia alismana* (Ragonot) 택사가는잎말이나밤(新稱) (fig. 9)

*Phalonidia alismana* Ragonot, 1883, Bull. Soc. Ent. Fr (6)3: CXVII; Razowski, 1970, 224, pl. 12, fig. 136; Bradely *et al.*, 1973, 41, fig. 22: 17; Razowski, 1981, 71, pl. 4: 8, figs. 85, 86, 378; Kuznetsov, 1987, 401, fig. 261: 4; Liu *et Ge.* 1991, 350.

Wing span, 11-14 mm. Forewing with ground colour whitish ochreous, sparsely strigulate with ochreous and fuscous scales, mostly distal portion; costal and dorsal margin variably dotted with blackish; marking olive-brown, variably suffused with gray; basal patch tinged with sub-basal fascia, sub-basal fascia outwardly oblique from dorsum to beyond middle, sometimes darkened with grayish fuscous, curved at costa; median fascia moderately broad, well defined with grayish suffusion on costa and dorsum, angulate below costa, outer edge slightly indented, a sprinkling of black scales sometimes forming a blackish spot adjacent to indentation; a triangular postmedian marking on dorsum, its apex contiguous with outer edge of median fascia in fold; pre-apical spot fasciate, reaching nearly to termen, continuing as a stria or striae to tornal area; cilia whitish ochreous, darker basally, irregularly irrorate with blackish. Hindwing gray, infuscate apically and narrowly edged around margins; cilia whitish with a dark gray sub-basal line.

*Male genitalia* (fig 22). Tegumen narrow Socius long, elongated, with rounded apex having several long setae around apical area. Transtilla slender, sharpened terminally, shortly bifurcated, rather broadened basally. Valva elongated, long, slightly broad at basal 2/3, then narrowed towards terminal; sacculus short, broad, reaching to basal 1/4 Aedeagus long, slightly broadened at near terminal, sharpened apically with a big cornutus in vesica.

*Material examined.* GW: 1♂, Pyongchang, GW, 31. VII. 1991 (B. K. Byun); 1♂, Yanggu, 15. VII. 1985 (K. T. Park); 1♂, Chuncheon, 16. V. 1986 (K. T. Park). GG: 1♂, Suweon, 20. VI. 1977 (K. T. Park)-gen. slide no. 2875- coll. CIS/KWNU. GG:

1♂, Suweon, 20. VII. 1977 (K. T. Park); 1♂, 23. VIII. 1975; 1♂, 13. VII. 1975; 1♂, 24. VII. 1975 (K. T. Park); 1♀, Banwol, 9. V. 1977 (Y. Y. Ha). JN: 1♀, Naju, 18. IV. 1985 (S.B. Ahn)-coll. ASTI. *Distribution.* Korea (new record), China, North and Central Europe.

*Host plant.* *Alisma plantago* Linne. (Razowski, 1970).

*Remarks.* The species is quite similar to *P. minima* Caradja but distinguished by the less angulate median fascia of the forewing and the pre-apical spot which is usually strigulated or fractured in the tornal area.

#### *Phalonidia luridana* (Gregson) 연황색가는잎말이나밤(新稱) (fig. 10)

*Argyrolepis luridana* Gregson, 1870, 5: 80; Razowski, 1970, 134, pl. 12, fig. 134; Bradely *et al.*, 1973, 42, figs. 22: 18; Kuznetsov, 1987, 400, fig. 261: 2; Liu *et Ge.* 1991, 349.

Wing span. 12 mm

*Male genitalia* (fig. 23) Tegumen narrow. Socius long, elongated, with rounded apex having several long setae around apical area. Transtilla slender, sharpened terminally, shortly bifurcated, rather broadened basally. Valva elongated, long, slightly broad at basal 2/3, then narrowed towards terminal; sacculus short, broad, covering basal 1/4. Aedeagus long, slightly broadened at near terminal, sharpened apically with a big cornutus in vesica, showing a 1/3 length of aedeagus.

*Material examined.* GW: 1♂, Chuncheon, 5. VII. 1983 (K. T. Park). GG: 1♂, Mt. Yumyoung-san, 17. VI. 1990 (B. K. Byun). CB: 1♂, Mt. Wolak-san, 18. VIII. 1993 (K. T. Park & B. K. Byun)-gen. slide no. 2855-coll. CIS/KWNU.

*Distribution.* Korea (new record), Russian Far East, North, Central, South Europe, Asia Minor, China, Japan

#### *Phalonidia minima* (Caradja) 꼬마가는잎말이나밤 (fig. 11)

*Cochylis minima* Caradja, 1916, 30: 52.

*Phalonia walsinghamana* Meyrick, 1928, : 489.

*Phalonia minima*: Meyrick, 1928, : 489; Razowski, 1970, 226-227; Bradely et al., 1973, 37, figs. 22: 10, 11; Park, 1976, 71; Razowski, 1981, 69, pl. 5: 1, figs. 87, 88, 379; Park, 1983a, 596, pl. 38: 676; Park, 1983b, 50; Kuznetsov, 1987, 401, fig. 261: 5; Liu et Ge, 1991, 351.

*Male genitalia*. As shown in fig. 24.

*Female genitalia*. As shown in fig. 32.

*Material examined*. GW: 1♀, Chuncheon, 10. VIII. 1983 (K. T. Park); 2♂, Chuncheon, 7. VII. 1987 (K. T. Park); 1♂, Chunsung, 17. VII. 1985 (K. T. Park); 1♂, Hongcheon, 5. IX. 1986 (K. T. Park); 2♂, Naemyun, Hongcheon, 14. VIII. 1987 (K. T. Park); 1♂, Hongcheon, 10. VI. 1988 (K. T. Park); 1♀, Seomyun, Yangyang, 30. V. 1987 (K. T. Park); 1♀, Seomyun, Yangyang, 4. VI. 1987 (K. T. Park); 4♂, Seomyun, Yangyang, 10. VII. 1987 (K. T. Park); 1♀, Seomyun, Yangyang, 25. VII. 1987 (K. T. Park); 1♂, Chuncheon, 18. VII. 1989 (B. K. Byun); 1♂, Chuncheon, 30. VII. 1990 (B. K. Byun); 1♂, Kangwon Nat. Univ. campus, 3. VI. 1992 (B. K. Byun); 2♀, Jeongseon, 30. VII. 1991 (B. K. Byun). GG: 1♀, Gapyong, 15. VII. 1986 (K. T. Park); 1♂, Mt. Myoungji-san, 23. V. 1991 (B. K. Byun) JJ: 1♀, Mt. Halla-san, 5. VII. 1986 (K. T. Park)-gen. slide no. 2874, 2832- coll. CIS/KWNU. GG. Suweon: 1♀, 23. V. 1974; 1♀, 24. VI. 1974; 1??, 2. VII. 1974; 2♂, 12. VIII. 1974; 2♀♀, 24. VII. 1974; 1♀, 2. VIII. 1974; 1♂, 9. VI. 1975; 3♀, 18. VIII. 1975; 1♀, 23. VIII. 1975; 3♀, 28. VIII. 1975; 1♀, 7. VI. 1976; 2♀, 11. VIII. 1980 (K. R. Choe); 1♂, 10. IX. 1980; 2♀, Mt. Suri-san, 14. VI. 1989 (S. H. Lee); 1♀, Gwangleung, 8. VI. 1977 (K. R. Choe) GB: 1♀, Sangu, 9. V. 1976 (K. T. Park)-coll. ASTI.

*Previous record*. GG: Suweon (Park, 1976)

*Distribution*. Korea, Japan, China, Russia (Ussuri, Ukraine, Siberia), Europe.

*Host plant*. *Pedicularis palustris* Linne. (Kawabe, 1982).

*Remarks*. A similar range of minor variation in the general colouration of the forewing, which varies from whitish ochreous to yellowish or grayish ochreous, is found in both sexes. The present species

is similar to *P. alismiana* (Ragonot) but it can be distinguished by the more angulate median fascia.

***Phalonia permixtana* ([Denis et Schiffermüller]) 송이풀가는잎말이나방(新稱) (fig. 12)**

*Tortrix permixtana* [Denis et Schiffermüller], 1775, 129.

*Cochylis mussehiliana* Treitschke, 1835, 141.

*Cochylis dymotana* Treitschke, 1835, 142.

*Phalonia permixtana*: Razowski, 1970, 227-228, fig. 138; Bradely et al., 1973, 38, figs. 22: 12; Razowski, 1981, 73, figs. 89, 90, 380; Kawabe, 1982, part 1: 155, part 2: 182, pl. 31: 28, 29; Kuznetsov, 1987, 402, fig. 261: 6; Liu et Ge, 1991, 349.

Wing span 12 mm in female. Forewing relatively narrow, ground colour pale; basal and sub-basal fascia diffuse, weakly defined; basal patch covering 1/5 of forewing, pale yellowish brown; median fascia well developed, narrow, bent inwardly below costa, originated from middle of costa to 1/3 of dorsum; pre-apical spot distinct, subrectangular; apex sharp; termen oblique. Hindwing pale gray; cilia paler, with a gray sub-basal line.

*Male genitalia* (fig. 25). Uncus atrophied. Median process of transtilla trapezoidal, broad medially. Valva broad at base, narrower beyond 1/3, with rounded apex; costa of valva well sclerotized to about 5/6. Aedeagus fairly long, very stout; coecum penis rounded basally with two different size comuti.

*Female genitalia* (fig. 33). Apophysis anterioris 2 times as long as apophysis posterioris. Ostium bursa very broad, weakly sclerotized. Ductus bursae as long as corpus bursae; distal 1/3 twisted, membranous, then slightly sclerotized to corpus bursae. Corpus bursae very large, semioval; appendix bursa arising from middle of corpus bursae.

*Material examined*. GW: 1♀, Chuncheon, 9. IX. 1987 (K. T. Park); 2♀, Chuncheon, 25. VIII. 1988 (K. T. Park); 1♀, Chuncheon, 7. VII. 1987 (K. T. Park); 1♂, Chugok, 30. VII. 1986 (K. T. Park); 1♂, Chunsung, 7. VII. 1987 (K. T. Park); 1♂, Chunsung, 20. VII. 1987 (K. T. Park). 1♀, Sogumgang, 24. V. 1988 (K. T. Park); 1♂, Mt. Palbong-san, 9. IX. 1990 (B. K. Byun); 1♀, Mt. Seolak-san, 26. VIII.

1989 (B. K. Byun) GG: 1♀, Ipoŋ, 20. VIII. 1990 (B. K. Byun); 1♀, Gwangleung, 13. VIII. 1986 (K. T. Park). CN: 1♂, 1♀, Mt. Sokri-san, 19. VIII. 1993 (B. K. Byun). GB: 1♂, Sangju, 9 V. 1976 (K. T. Park)-gen. slide no. 2699, 2843-coll. CIS/KWNU. GN: 1♂, Mt. Jiri-san, 14. VII. 1976 (Y. Y. Ha)-coll. ASTI.

*Distribution.* Korea, Japan, Mongolia, China, Russia (Siberia), Europe.

*Host plants.* *Alisma* sp., *Gentiana* sp., *Euphrasia* sp., and *Pedicularis* sp. have been known from Japan (Kawabe, 1982).

***Phalonidia rubricana* Peyerimhoff 뒷검은가는잎말이나방(新稱) (fig. 13)**

*Phalonidia rubricana* Peyerimhoff, 1877, 101; Razowski, 1970, 221, pl. 12, fig. 133; Kuznetsov, 1987, 400, fig. 261: 1; Liu et Ge, 1991, 349.

Wing span, 15 mm in female. Forewing relatively broad, ground colour pale ochreous yellow; basal and sub-basal fascia diffuse, weakly indicated; basal patch pale yellowish brown, covering 1/5 of forewing; median fascia well defined, broad, arcuated inwardly below costa, originated from middle of costa to 1/3 of dorsum; pre-apical spot well developed, sub-rectangular; cilia pale ochreous; termen slightly oblique. Hindwing pale grayish brown.

*Female genitalia* (fig. 34). *Papillae anales* short. Apophysis anterioris slightly longer than posterioris. Ostium bursa wide, rounded, sclerotized, short-cup shaped, rounded towards ductus bursa. Ductus bursa moderate, rather broad at its entrance. Corpus bursa ovate, weakly plicated.

*Material examined.* GG: 1♀, Gapyoung, 21. V. 1983 (K. T. Park)-gen. slide no. 5261- coll. CIS/KWNU.

*Distribution.* Korea (new record), China, Europe.

***Phalonidia silvestris* Kuznetsov 은빛가는잎말이나방(新稱)**

*Phalonidia silvestris* Kuznetsov, 1966, 198; Razowski, 1970, 205; Liu et Ge, 1991, 353.

Wing span, 13mm in male, 14mm in female. Ground colour of forewing white; basal patch pale yellowish brown, covering 1/5 of forewing; median fascia brown, arcuated inwardly, originated from middle of costa to 1/3 of dorsum, colouration rather weak in female; subapical streak on 4/5 of costa pale brown, apex sharp; termen oblique. Hindwing pale gray.

*Female genitalia* (fig. 35). Apophysis anterioris 2 times as long as posterioris. Ostium bursa very broad, weakly sclerotized. Ductus bursa as long as corpus bursa; distal 1/3 twisted, membranous, then slightly sclerotized to corpus bursa. Corpus bursa very large, semioval; appendix bursa arising from middle of corpus bursa.

*Material examined.* GW: 1 ♀, Naemyoung, Hongcheon, 14. VIII. 1987 (K. T. Park)-gen. slide no. 5262-coll. CIS/KWNU

*Distribution.* Korea (new record), China, Russia (Amur, Vladivostok)

***Phalonidia vectisana* (Humpreys & Westwood) 자두가는잎말이나방(fig. 14)**

*Cochylis vectisana* Humpreys & Westwood, 1845, 176.

*Phalonia griseseens* Durrant & Joannis, 1922, 209.

*Cochylis geieriana* Herrsch-Schäffer, 1851, 4: 189

*Tortrix griseana* Haworth, [1811] (nec Hubner), 402.

*Phalonidia vectisana*: Razowski, 1970, 223; Bradely et al., 1973, 39, fig. 22: 13-16; Park, 1976, 71; Razowski, 1981, 70, pl. 4: 7; Kawabe, 1982, part 1: 155, part 2: 182, pl. 31: 24, 25, 294: 2, 295: 9; Park, 1983a, 595, pl. 38: 674, Park, 1983b, 50; Kuznetsov, 1987, 400, fig. 261: 3; Liu et Ge, 1991, 349.

Wing span, 9-12 mm.

*Male genitalia.* As shown in fig. 26

*Female genitalia.* As shown in fig. 36.

*Material examined.* Seoul: 1♀, Sungsan, 24. VIII. 1990 (B. K. Byun). GW: 1♀. Chuncheon, 30. VII.

1986 (K T Park); 1 ♀, Chuncheon, 14. VIII. 1987 (K. T. Park); 1 ♂, Chuncheon, 25. VIII. 1987 (K. T. Park); 1 ♂, Chuncheon, 2. IX. 1988 (K. T. Park). GG: 1 ♀, Mt. Myoungji-san, 28. VII. 1992 (B. K. Byun). JN: 1 ♂, Gwangyang, 8. VII. 1991 (B. K. Byun). JJ: 1 ♀, Kwanumsa, 24. VIII. 1992 (B. K. Byun); 1 ♀, Mt. Halla-san, 5. VII. 1986 (K. T. Park)-gen. slide no. 2885. 2864- coll. CIS/KWNU.

GG: Suweon: 3 ♂, 1 ♀, 12. VII. 1974; 1 ♂, 23. VII. 1974; 1 ♂, 22. VIII. 1974; 1 ♂, 28. VIII. 1974; 1 ♂, 1 ♀, 17. VI. 1975 (from leaves of soybean); 1 ♀, 12. VII. 1975; 3 ♂, 1 ♀, 18. VIII. 1975; 5 ♂, 3 ♀, 13-28. VIII. 1975; 2 ♂, 1 ♀, 9. X. 1975; 1 ♀, 9. V. 1976; 1 ♀, 10. V. 1976; 1 ♀, 11. V. 1976; 1 ♂, 7. VI. 1976; 1 ♀, 29. VI. 1976; 1 ♀, 8. VIII. 1976; 1 ♂, Gwangju, 1. VII. 1974 (from leaves of plum); 1 ♀, Mt. Cheonggye-san, 9. VII. 1976; 1 ♀, Banwol, 9. V. 1977. GB: 1 ♀, Sangju, 9. V. 1976. JN: 1 ♂, Mt Deugyoo-san. Muju, 13. VIII. 1975-coll. ASTI.

*Previous record.* GG: Suweon, Gwangju. JB: Muju (Park, 1976).

*Distribution.* Korea, Japan, China, Russian Far East. North and Central Europe.

*Host plants.* *Glycyne max* Merr., and *Prunus salicina* Lindl. (Park, 1983b).

*Remarks.* It has been known that the larvae of the species feed on flower head, stalk, and roots of *Plantago* sp. and *Salicornia* sp. in Japan (Kawabe, 1982). Although extremely variable in wing pattern, the small size of this species and the olive-brown general coloration of the forewing, and the reticulation in the distal area are its characteristics.

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