

## Herminiinae亞科 中國 미기록 6種과 장백산 미기록 7種에 관한 보고(나비目, 밤나방과)

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## Six Species of the Subfamily Herminiinae (Lepidoptera, Noctuidae) New to China, with Seven New Records from Mt. Changbai

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**ABSTRACT :** Twenty-six species of the subfamily Herminiinae were recognized from the lepidopteran surveys in Mt. Changbai (China) during 1999-2004. Among them, six species are reported for the first time from China: *Paracolax fascialis* (Leech), *P. fentoni* (Butler), *Polypogon gryphalis* Herrich-Schäffer, *Sinarella japonica* (Butler), *S. punctalis* (Herz), and *S. cristulalis* (Staudinger); and seven species are new to Mt. Changbai: *Hadennia incongruens* (Butler), *Paracolax tristalis* (Fabricius), *Paracolax trilinealis* (Bremer), *Idia quadra* (Graeser), *Hydrellodes morosa* (Butler), *Herminia grisealis* [Denis & Schiffermüller], and *Sinarella nigrisigna* (Leech). For the six newly reported species from China, taxonomical notes, color images of adults, and figures of the male or the female genitalia are provided.

**KEY WORDS :** New records, Herminiinae, Noctuidae, Mt. Changbai, China

**초 록 :** 중국 장백산(백두산의 중국측 면) 나비목 조사에서(1999-2004) 밤나방과의 Herminiinae아과에 속한 27종이 확인되었다. 이 중 *Paracolax fascialis* (Leech), *P. fentoni* (Butler), *Polypogon gryphalis* Herrich-Schäffer, *Sinarella japonica* (Butler), *S. punctalis* (Herz), *S. cristulalis* (Staudinger) 등 6종은 중국에서 처음 보고되는 종이었고, *Hadennia incongruens* (Butler), *Paracolax tristalis* (Fabricius), *Paracolax trilinealis* (Bremer), *Idia quadra* (Graeser), *Hydrellodes morosa* (Butler), *Herminia grisealis* (Denis & Schiffermüller), *Sinarella nigrisigna* (Leech) 등 7종은 장백산 지역에서 처음 발견된 종이었다. 이들 6종의 중국 미기록 종에 대한 분류학적 특징과 성충 및 암수 생식기의 사진을 제시한다.

**검색어 :** 분류, 미기록종, Herminiinae, 밤나방과, 장백산, 중국

### Introduction

The subfamily Herminiinae is a relatively small group, comprising more than 1,000 species in the world (Poole,

1989). In China, 95 species of the subfamily are known (Chu *et al.*, 1964; Chen, 1999 Han *et al.*, 2005). For the subfamily in Mt. Changbai (= Chinese slope of Mt. Beakdu), Wu *et al.* (1999) reported seven species and

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Han *et al.* (2005) reported additional seven species as listed in the Table 1.

From a result of the expeditions on moth fauna in Mt. Changbai during 2000-2004, 27 species of the subfamily Hermininae were recognized. Among them, six species (*Paracolax fascialis* (Leech, 1889), *Paracolax fentoni* (Butler, 1879), *Polypogon gryphalis* Herrich-Schäffer, 1851, *Sinarella japonica* (Butler, 1881), *S. punctalis* (Herz, 1904), *S. cristulalis* (Staudinger, 1892) are newly added to Chinese fauna, and seven species (*Hadennia incongruens* (Butler, 1879), *Paracolax tristalis* (Fabricius, 1794), *Paracolax trilinealis* (Bremer, 1864), *Idia quadra* (Graeser, 1888), *Hydrillodes morosa* (Butler, 1879), *Herminia grisealis* ([Denis & Schiffermüller], 1775), and *Sinarella nigrisigna* (Leech, 1900) are new to Mt. Changbai, China. In the present paper, taxonomic review for

the six newly recorded species from China are provided, with photographs of adults and figures of their male or female genitalia, and seven additional species for Mt. Changbai are listed with collecting data.

## Materials and Methods

Materials examined are based on the collections in the Center for Insect Systematics, Kangwon National University, Korea, and College of Agriculture, Yanbian National University, China. For the identification, the male or female genitalia were dissected and examined, in addition to external characters. Type localities (TL) of the species are given and depository of types are indicated in the parenthesis[ ].

**Table 1.** List of the known species of the Hermininae in Mt. Changbai (= Changbai), with their distributional data in the eastern Asia.

Species	First records	Distribution			
		Ch	Ko	Jp	Ru
<i>Edessena hamada</i> (Felder et Rogenhofer, 1874)	Wu <i>et. al.</i> (1999)	●	●	●	●
<i>Hadennia incongruens</i> (Butler, 1879)	New to CB	●	●	●	●
<i>Paracolax fascialis</i> (Leech, 1889)	New to China	●	●	●	●
<i>Paracolax tristalis</i> (Fabricius, 1794)	New to CB	●	●	●	●
<i>Paracolax trilinealis</i> (Bremer, 1864)	New to CB	●	●	●	●
<i>Paracolax fentoni</i> (Butler, 1879)	New to China	●	●	●	●
<i>Idia quadra</i> (Graeser, 1888)	New to CB	●	●	●	●
<i>Bertula bistrigata</i> (Staudinger, 1888)	Wu <i>et. al.</i> (1999)	●	●	●	●
<i>Hydrillodes morosa</i> (Butler, 1879)	New to CB	●	●	●	●
<i>Simplicia niphona</i> (Butler, 1878)	Wu <i>et. al.</i> (1999)	●	●	●	●
<i>Zanclognatha lunalis</i> (Scopoli, 1763)	Wu <i>et. al.</i> (1999)	●	●	●	●
<i>Zanclognatha lui</i> Han & Park, 2005	Han <i>et. al.</i> (2005)	●			
<i>Zanclognatha fumosa</i> Butler, 1879	Han <i>et. al.</i> (2005)	●	●	●	●
<i>Zanclognatha tarsipennalis</i> Treitschke, 1835	Han <i>et. al.</i> (2005)	●	●	●	●
<i>Zanclognatha curvilinea</i> Wileman & South, 1917	Wu <i>et. al.</i> (1999)	●	●	●	●
<i>Zanclognatha umbrosalis</i> Staudinger, 1892	Han <i>et. al.</i> (2005)	●	●	●	●
<i>Zanclognatha lilacina</i> Butler, 1879	Han <i>et. al.</i> (2005)	●	●	●	●
<i>Zanclognatha violacealis</i> Staudinger, 1892	Han <i>et. al.</i> (2005)	●	●	●	●
<i>Zanclognatha perfractalis</i> Bryk, 1948	Han <i>et. al.</i> (2005)	●	●	●	●
<i>Zanclognatha helva</i> (Butler, 1879)	Wu <i>et. al.</i> (1999)	●	●	●	●
<i>Polypogon gryphalis</i> Herrich-Schäffer, 1851	New to China	●	●	●	●
<i>Herminia grisealis</i> ([Denis & Schiffermüller], 1775)	New to CB	●	●	●	●
<i>Hermininia tarsicinalis</i> (Knoch, 1782)	Wu <i>et. al.</i> (1999)	●	●	●	●
<i>Sinarella japonica</i> (Butler, 1881)	New to China	●	●	●	●
<i>Sinarella nigrisigna</i> (Leech, 1900)	New to CB	●	●	●	●
<i>Sinarella punctalis</i> (Herz, 1904)	New to China	●	●	●	●
<i>Sinarella cristulalis</i> (Staudinger, 1892)	New to China	●	●	●	●

Ch-China, Ko-Korea, Jp-Japan, Ru-Russia(Russian Far East), BS-Mt. Changbai

### New records for China

***Paracolax fascialis* (Leech, 1889) 宽带奴夜蛾 (新称)**  
**(Figs. 1, 7-8, 15)**

*Herminia fascialis* Leech, 1889. Entomologist 22: 64, pl. 2: 3. TL: Japan, Hakodate [BMNH, London].

*Zanclognatha helialis* Staudinger, 1892. In Romanoff, Mem. Lepid. 6: 615. TL: Russian Far East, [Raddefka] [MNHU, Berlin].

**Diagnosis (Fig. 1).** Wingspan 23-29 mm. This species is superficially similar to *P. trilinealis* (Bremer), but can be distinguished by following characters: forewing ground colour grayish brown in male, ochreous in female; antemedial line thin, gently curved; median line, parallel with antemedial line; reniform spot blurred; brownish fuscous in inner side of postmedial line; postmedial line convex at 1/4 from costa; hindwing brownishfuscous at basal 2/3; postmedial line slightly convex before middle; marginal shade pale gray.

**Male genitalia (Figs. 7-8).** Uncus slender, smooth, abruptly narrower to apex. Valva narrow basally, then broadening with pointed apex; sacculus developed, separated from middle. Saccus large, broad. Aedeagus membranous at basal half, but slightly sclerotized along ventral margin, without cornutus in vesica.

**Female genitalia (Fig. 15).** Ostium bursae wider than ductus bursae. Ductus bursae laterally sclerotized. Corpus bursae long, contractus at 1/3 away from conjunction, with dense spicules on surface medially; signum well sclerotized, sunflower-shaped.

**Material examined.** 1♀, Heping Forestry Centre, 27 VII 2000 (Park, Lee, Han); 1♂, Dixia Forest, 29 VII 2000 (Park, Lee, Han); 1♀, Changbai Electric Stn., Erdaobaihe ca. 760 m, 30 VII 2000 (Park, Lee, Han); 1♀, Weidong, Fusong ca. 1225 m, 16 VII 2001; 2♂, Malugou, Changbai-xian ca. 730 m, 17 VII 2001; 1♂, Changbai Electric Stn., Erdaobaihe ca. 760 m, 18 VII 2002.

**Distribution.** China (new record), Korea (North, South), Japan, Russia (Russian Far East).

***Paracolax fentoni* (Butler, 1879) 圆斑奴夜蛾 (新称)**  
**(Figs. 2, 16)**

*Herminia fentoni* Butler, 1879, Ill. typical Specimens

Lepid. Heterocera Colln Br. Mus. 3: 63, pl. 56: 12 (TL: Japan [BMNH, London]).

**Diagnosis (Fig. 2).** Wingspan 19-22 mm. This species is superficially similar to *P. tristalis* (Fabricius), but can be distinguished by the following characters: forewing with slender, antemedian line; orbicular spot small, round; median line thin; reniform spot I-shaped, dark; postmedial line, slightly curved to M1, then curved inwardly, sometimes indistinct; terminal line brown.

**Female genitalia (Fig. 16).** Ostium bursae broader than ductus bursae, sclerotized part similar to *P. fascialis*. Ductus bursae longer than 1/3 of corpus bursae, with numerous spicules on surface from around 2/3 to 1/3 away from terminal. Ductus seminalis arising from near conjunction; broad basally.

**Material examined.** 1♀, Yongxin, Longjing, ca. 570 m, 16 VIII 2003.

**Distribution.** China (new record), Korea (North, South), Japan, Russia (Russian Far East).

***Polypogon gryphalis* Herrich-Schäffer, 1851 暗翅须夜蛾 (新称) (Figs. 3, 9-10, 17)**

*Herminia gryphalis* Herrich-Schäffer, 1851. Syst. Bearb. Schmett. Eur. 2: 385, figs 601, 602. (TL: Europe, Syrmien).

*Zanclognatha tarsicrinata* Bryk, 1948. (TL: North Korea near Kyeongseong, [NRM, Stockholm])

**Diagnosis (Fig. 3).** Wingspan 24-25 mm. This species is close to *P. tentacularia* (Linnaeus), but can be distinguished by following characters: forewing with antemedial line brown; reniform spot crescent-shaped; postmedial line strongly convex before middle, then incurved and suddenly straight towards inner margin; subterminal line almost straight. Hindwing with three distinctly developed lines.

**Male genitalia (Figs. 9-10).** Uncus bent at near base, then straight, abruptly sharpened apically. Valva bifurcate, costa well developed, large, slightly incised on apical margin; sacculus slender, separated before middle, then reaching to 2/3 of valva. Aedeagus large, with prominent sclerites at entrance of vesica; no cornutus.

**Female genitalia (Fig. 17).** Ostium bursae broader than ductus bursae. Ductus bursae weakly sclerotized at en-

trance forming in V-shape, slightly sclerotized. Corpus bursae contracted at middle part, with dense spicules on surface beyond middle; no signum

**Material examined.** 1♀, Changbai Electric power Stn., Erdaobaihe, ca. 760 m, 8 VIII 1999; 1♀, Chongshan, Helong, ca. 600 m, 31 VII 2000; 1♀, Chongshan, Helong, ca. 600 m, 14 VII 2001; 1♂, 1♀, Yadong Electric power Stn., Helong ca. 734 m, 19 VII 2001.

**Distribution.** China (new record), Korea (North, South), Japan (Hokkaido, Honshu), Russia (S. European part, Siberia, Russian Far East), Caucasus.

***Sinarella japonica* (Butler, 1881) 重斑辛夜蛾 (新称)  
(Figs. 4, 11-12)**

*Olybama japonica* Butler, 1881. Trans. ent. Soc. Lond. 1881: 583. [BMNH, London].

**Diagnosis (Fig. 4).** Wingspan 20-22 mm. This species is close to *S. aegrota* (Butler), but can be distinguished by following characters: forewing fuscous; reniform spot large; subterminal line yellow brown, with black interior edge, slender, but conspicuous along costa, indistinct at other part; hindwing postmedial line slender, smooth; inner side of subterminal line blackish.

**Male genitalia (Figs. 11-12).** Uncus gradually broadened towards apex; apex pointed. Valva broad, broadly con-

caved beyond 2/3 of costa; apex pointed. Aedeagus curved, with a strong cornutus in vesica.

**Material examined.** 1♂, Heping Forestry Centre, 27 VII 2000.

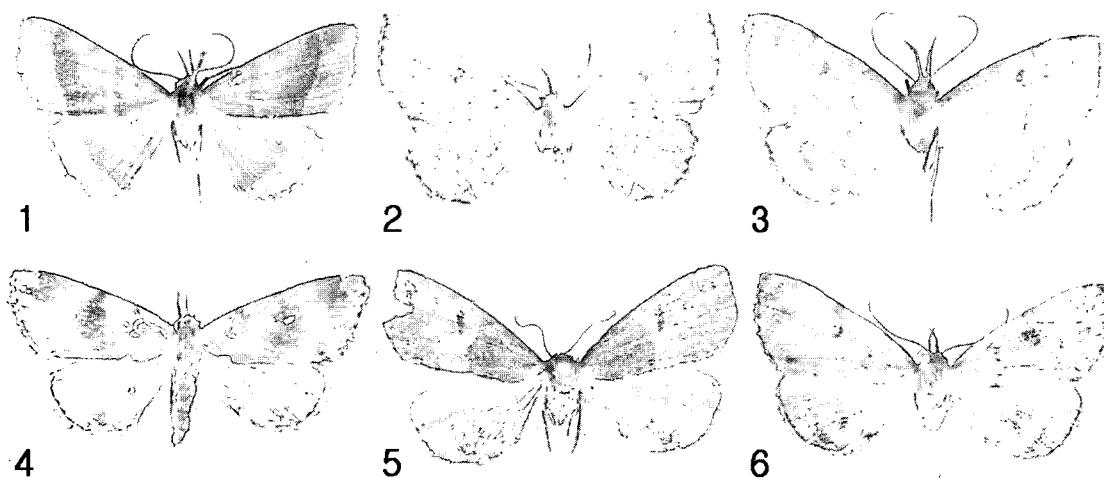
**Distribution.** China (new record), Korea (North, South), Japan (Hokkaido, Honshu, Shikoku), Russia (Russian Far East).

***Sinarella punctalis* (Herz, 1904) 基暗辛夜蛾 (新称)  
(Figs. 5, 13-14, 18)**

*Zanclognatha punctalis* Herz, 1904. Ann. Mus. Zool. Acad. Imp. Sci. St.-Petersb. 9: 324, pl. 1: 9. North Korea. [ZI, St. Petersburg].

**Diagnosis (Fig. 5).** Wingspan 21-23 mm. Superficially similar to *S. japonica* (Butler), but can be distinguished by the forewing grayishbrown; antemedial line blurred; median line dark brown, slightly waved, more grayish internally; reniform spot I-shaped; postmedial line very thin.

**Male genitalia (Figs. 13-14).** Uncus slender, slightly curved beyond 4/5. Valva broader beyond 2/3, bifurcate apically; dorsal lobe extended forming a hook, ventral lobe simply pointed. Succus produced on anterior apex. Aedeagus slightly curved inwardly, with three well sclerotized cornuti.



**Figs. 1-6.** Adults. 1. *Paracolax fascialis* (Leech); 2. *P. fentoni* (Butler); 3. *Polypogon gryphalis* Herrich-Schäffer; 4. *Sinarella japonica* (Butler); 5. *S. punctalis* (Herz); 6. *S. cristulalis* (Staudinger).

**Female genitalia (Fig. 18).** Ductus bursae extremely broad, retracted at middle, heavily sclerotized beyond middle. Corpus bursae spheroidal, covered with numerous spicules on surface spine from entrance to middle.

**Material examined.** 1 ♀ Malugou, Changbai-Xian, ca. 630 m, 7 VIII 2002; 1 ♂ Weidong, Fusong, ca. 1,400 m, 5 VIII 2003.

**Distribution.** China (new record), Korea (South), Japan (Hokkaido, Honshu), Russia (Russian Far East).

*Sinarella cristulalis* (Staudinger, 1892) 淡色辛夜蛾  
(新称) (Figs. 6, 19)

*Zanclognatha cristulalis* Staudinger, 1892, In Romanoff, Mem. Lepid. 6: 610, pl. 14: 7 Russian Far East, Vladivostok [Sutschan] [MNHU, Berlin].

**Diagnosis (Fig. 6).** Wingspan 22-23 mm. This species is superficially similar to *S. aegrota* (Butler), but can

be distinguished as follow: forewing paler; reniform spot large; postmedial line slender, slightly waved; hindwing with roundly curved median line.

**Female genitalia (Fig. 19).** Ductus bursae retracted at middle, weakly sclerotized. Corpus bursae longer than ductus bursae, as long as 1.5 times of ductus bursae.

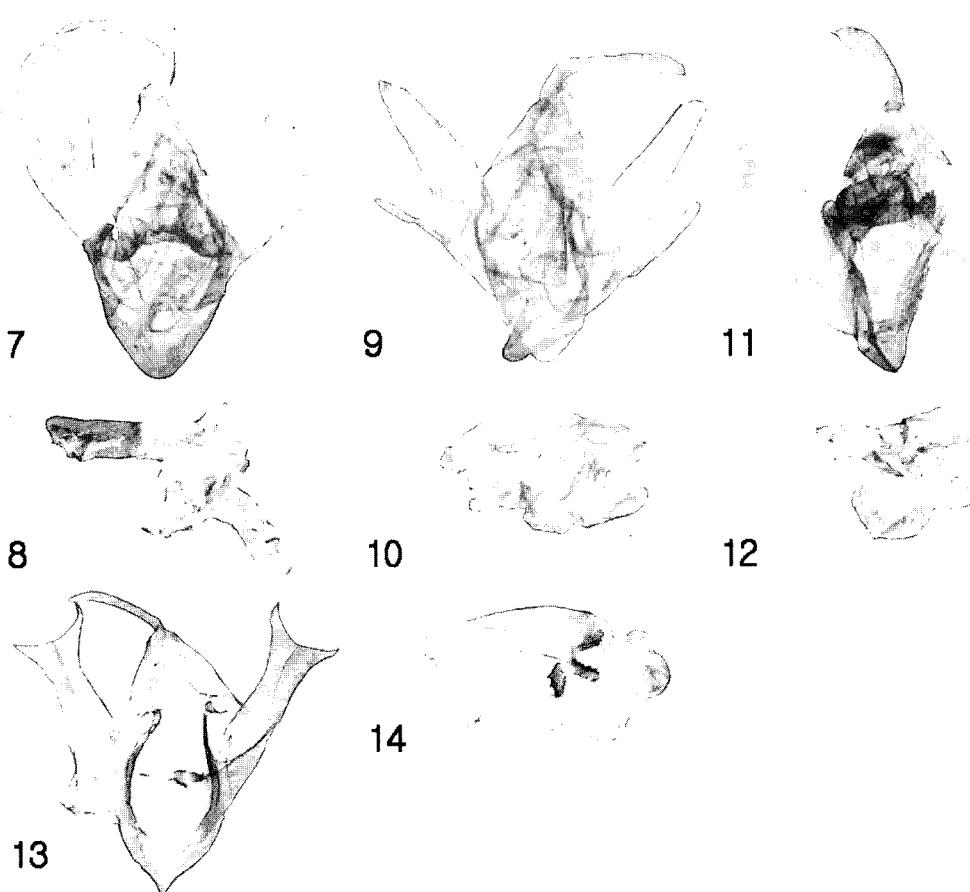
**Material examined.** 1 ♀, Lushuihe Forestry Centre, Fusong, ca. 770 m, 1 ♀, 13 VIII 2003.

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

#### Following seven species new to Mt. Changbai

##### 1. *Hadennia incongruens* (Butler, 1879) 白点后角夜蛾

: 1♂ 1♀ Jiashan, Helong, ca. 600 m, 1-2 VIII 2000, 1♀ Weidong, Fusong, ca. 1,250 m, 16 VII 2001.



**Figs. 7-14.** Male genitalia. 7-8. *Paracolax fascialis* (Leech); 9-10. *Polypogon gryphalis* Herrich-Schäffer; 11-12. *Sinarella japonica* (Butler); 13-14. *S. punctalis* (Herz)

2. *Paracolax tristalis* (Fabricius, 1794) 曲线奴夜蛾 :  
 2♂ 1♀ Jiashan, Helong, ca. 600 m, 1-2 VIII 2000;  
 1♂ 1♀ Chongshan, Helong, ca. 600 m, 14 VII 2001;  
 2♂ Wiedong, Fusong, ca. 1,250 m, 16 VII 2001;  
 1♂ 4♀ Renchuan, Longjing, ca. 370 m, 15 VIII  
 2003; 4♂ 3♀ Guangming Forestry centre, Antu,  
 ca. 870 m, 18-19 VII 2004.

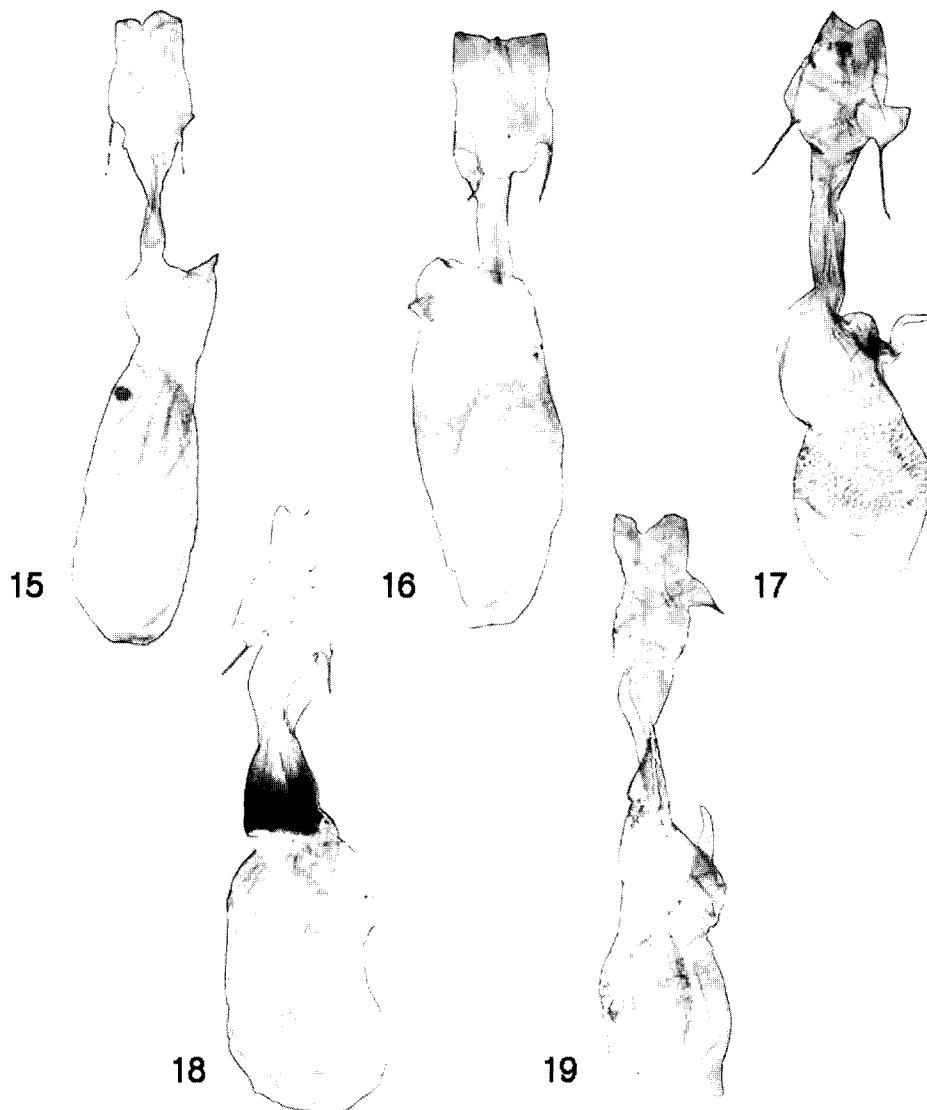
3. *Paracolax trilinealis* (Bremer, 1864) 三线奴夜蛾 :  
 2♂ 1♀ Heping Forestry centre, Antu, ca. 850 m,  
 27 VII 2000; 1♀ Jiashan, Helong, ca. 600 m, 1-2  
 VIII 2000; 1♂ 2♀ Malugou, Changbai-Xian, ca.

730 m, 17 VII 2001; 1♀ Yongxin, Longjing, ca.  
 570 m, 16 VIII 2003.

4. *Idia quadra* (Graeser, 1888) 波纹极夜蛾 : 1♀ Wei-  
 dong, Fusong, ca. 1,250m, 16 VII 2001.

5. *Hydrillodes morosa* (Butler, 1879) 弓须亥夜蛾 : 2  
 ♂ 5♀ Jiashan, Helong, ca. 600 m, 1-2 VIII 2000;  
 3♂ Datong, Helong, ca. 720 m, 3 VIII 2002; 2♂  
 4♀ Lushuihe, Fusong, ca. 780 m, 13 VIII 2003; 5♂  
 1♀ Anbei, Antu, ca. 740 m, 21 VII 2004.

6. *Herminia grisealis* ([Denis & Schiffermüller], 1775)  
 柄长须夜蛾 : 2♂ 1♀ Jiashan, Helong, ca. 510 m,



Figs. 15-19. Female genitalia. 15. *Paracolax fascialis* (Leech); 16. *P. fentoni* (Butler); 17. *Polypogon gryphalis* Herrich-Schäffer; 18. *S. punctalis* (Herz); 19. *S. cristulalis* (Staudinger)

14 VIII 2003.

7. *Sinarella nigrisigna* (Leech, 1900) 黑斑辛夜蛾 : 1♀  
Malugou, Changbai-Xian, ca. 730 m, 6-7 VIII 2002.

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### Literature Cited

- Chen, Y.X. 1999. Lepidoptera: Noctuidae. [Fauna Sinica] Insect Vol. 16: 810-813, pls. XXXVII.
- Chu, H.F., Yang J.K., Lu J.R., and Chen Y.X. 1964. Lepidoptera: Noctuidae (2). [Economic Insect Fauna of China] 6: i-xvii, 1-183, pls. i-xi.
- Han, H.L., K.T. Park and L.S. Lu. 2005. *Zanclognatha* species in Mt. Changbai, with description of a new species and two unknown species from China (Lepidoptera, Noctuidae). Korean J. Syst. Zool. 21(1): 1-10.
- Poole, R.W. 1989. Noctuidae. Lepidopterorum Catalogus (New Series). Fascicle 118, Part 1: v-xii+1-500, part 2: 501-1013. E.J. Brill, Leiden
- Wu, K.Y., S.P. Sun, F. Chen, L.T. Wang and B. Yu. 1999. A list of the insects in the forest areas of Changbai mountains II Noctuidae. Forest Pest and Disease. No. 3: 34-36.

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