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Three Species of the Genus *Meganola* Dyar, 1898 (Lepidoptera, Noctuidae, Nolinae) New to China

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중국산 *Meganola* 속의 미기록 3종 관한 보고

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ABSTRACT: Three species of the genus *Meganola* Dyar, 1898 (*M. bryophilalis* (Staudinger, 1887), *M. costalis* (Staudinger, 1887) and *M. strigulosa* (Staudinger, 1887)), are reported for the first time from China. The adults and genitalia of the species are briefly redescribed and illustrated with their distributions and host plants.

Key words: Nolinae, *Meganola*, New record, Northeast China

초 록: *Meganola*속 3종 *M. bryophilalis* (Staudinger, 1887), *M. costalis* (Staudinger, 1887) 와 *M. strigulosa* (Staudinger, 1887)을 중국에서는 처음으로 보고된다. 성충의 외부특징에 대하여 간략하게 재기재하고, 암수생식기의 도해도, 기주식물 및 분포정보를 제시하였다.

검색어: 혹나방아과, *Meganola*, 미기록, 중국동북지역

A total of seven species of the tribe Nolini, belonging to the subfamily Nolinae of Noctuidae from Northeast China are recorded in Northeast China to date: *Meganola fumosa* (Butler, 1879), *M. subgigas* Inoue, 1982, *M. gigas* (Butler, 1884), *M. albula* (Denis & Schiffermüller, 1775), *M. liaoningensis* Li & Han, 2008, *Evonima mandschuriana* (Oberthür, 1880) and *Nola aerugula* (Hübner, 1793) (Fang, 1982; Hua, 2005; Li & Han, 2008). In neighbouring areas, 33 species of 6 genera were distributed in the Siberian region from Russia (Kononenko, 2010), 21 species of 3 genera in the Russia Far East (Tshistjakov, 2008); 33 species of 5 genera in the Korean Peninsula (Kononenko & Han, 2007); 40 species of 4 genera in Japan (Inoue *et al.*, 1982; Inoue, 2001; Yazaki, 1995).

In this study, three species, *Meganola bryophilalis* (Staudinger, 1887), *M. costalis* (Staudinger, 1887) and *M. strigulosa* (Staudinger, 1887) are reported for the first time from China. External morphology including adults and genitalia are examined and illustrated. Material examined herein are deposited in the Northeast Forestry University (NEFU), Harbin, Heilongjiang, China.

Taxonomic accounts

Genus *Meganola* Dyar, 1898

Roeselia Hübner, [1825], Cat. Lep. Phalaenae Br. Mus., 2: 51. Type-species: *Roeselia cucullatella* Linnaeus, 1758, TL: Europe.

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Mimerastria Butler, 1881, Ann. Mag. nat. Hist., (5)7(39): 236. Type-species: *Erastria mandschuriana* Oberthür, 1880, TL: Siberia, in Askold.

Antennola Freina & Witt, 1984, Entomofauna 5 (23): 269. Type-species: *Nola impura* Mann, 1862, TL: Syria, in Brussa.

Rhynchopalpus Hampson, 1894, Fauna Br. India (Moths) 2: 142. Type-species: *Aglossa argentalis* Moore, 1867, TL: Sikkim.

Meganola Dyar, 1898, Jl N. Y. ent. Soc., 6: 43, Type-species: *Meganola conspicua* Dyar, 1898, SL: USA, Texas, in USNM.

Adult. Head rather small, labial palpus short and smooth curved at 2nd segment; antenna extend to about two-third of forewing length. Forewing usually with smooth round apex; median line broad, districted at costal margin; with radial sector branching of R_2, R_3, R_4 and R_5; hindwing usually with M3 and Cu1 stalked.

Male genitalia. Uncus strong; valva broad and thick; succulus thick, long, process of sacculus well developed, and incurved; aedeagus straight, vesica small and simple.

Female genitalia. Apophysis anterioris shorter than apophysis posterioris; ductus boursae curved or lump; corpus oval, with large and sclerotized signa, patch or taper shaped.

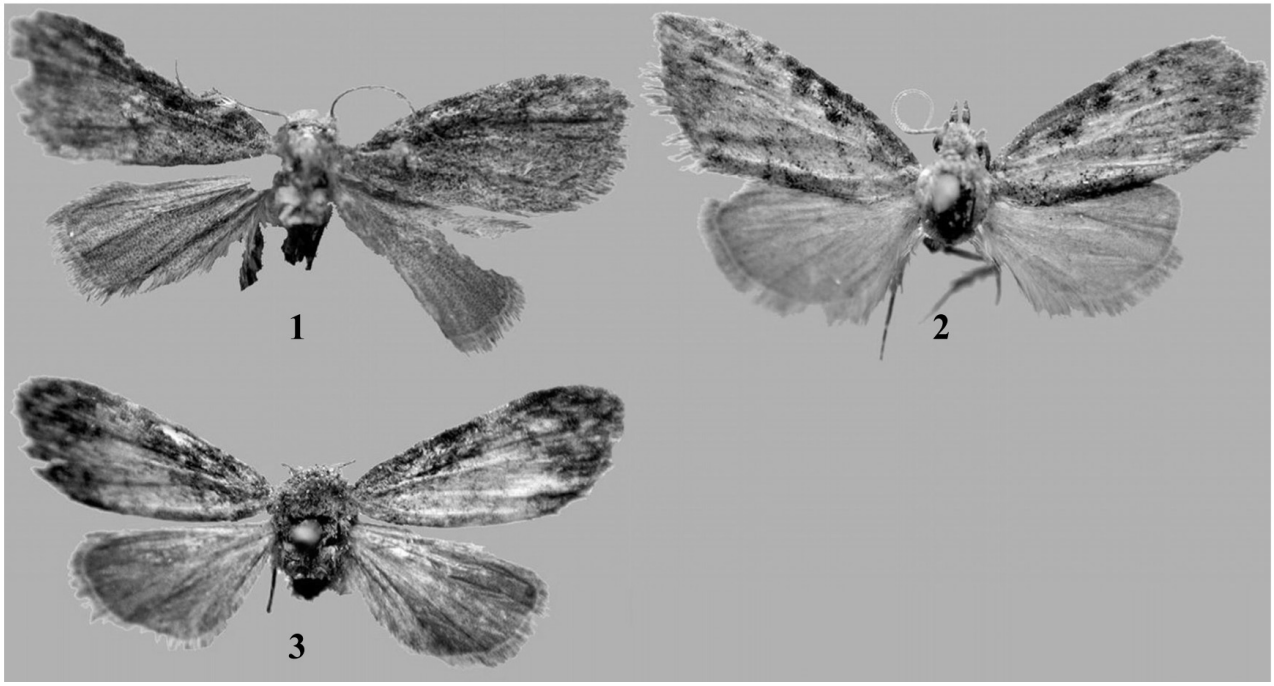
About 60 species were including to this genus in the Palaearctic region (Fibiger *et. al.*, 2009; Poole, 1989), about 130 species in the Oriental region (László*t et al.*, 2010; Poole, 1989).

***Meganola bryophilalis* (Staudinger, 1887)** (Figs. 1, 5)

Nola bryophilalis Staudinger, 1887, in Romanoff, Mém. Lépid. 3: 181, pl. 10: 5. (TL: Russia, Primorye terr, Askold I.)

Diagnosis. This species is very similar to *M. costalis* (Staudinger, 1887), but can be distinguished by the following characters: forewing dark gray to brown; brown patch small between antemedial and postmedial lines at costal area, *costalis* big; in female genitalia, corpus bursae with two signa bands, two separate signa on left, and smaller than that of *M. costalis* Staudinger.

Adult (Fig. 1). Wingspan 17-20 mm. Head and thorax blackish brown to grayish brown; abdomen dark brown. Forewing ground dark gray to brown color; basal line black, distinct at costal part; antemedial line black, curved; median line black, blurred; postmedial line black and distinct at costal area; subterminal line black, indistinct, curved on M1; small, blackish brown dots form a line at inside of terminal line; hindwing lighter than forewing, diffuse blackish brown grain.



Figs. 1-3. Adult. 1. *Meganola bryophilalis* (Staudinger, 1887); 2. *M. costalis* (Staudinger, 1887); 3. *M. strigulosa* (Staudinger, 1887).

Female genitalia (Fig. 5). Anal tube broad, densely covered spine. Apophysis posterioris isometric as anterioris, moderately sclerotized. Ostium bursae flat crateriform shaped. Ductus bursae membranous, slender, weakly shrink foreside, and shorter than corpus bursae. Corpus bursae long oval shaped, 2.5 times as long as ductus; two separate signa on left medially; a straight signa band dorsally, a curved signa band ventrally.

Material examined. 2♀, Prov. Liaoning, Anshan, Mt. Qianshan, 10-12 VIII 2008 (HL Han, MJ Qi).

Distribution. China (Liaoning), Russia, Japan.

Remarks. This species occur between July and August in the hardwood forestry, the needle and broad-leaved mixed forest. Larvae feed on *Malus* and *Sorbus* (Kononenko, 2010).

Meganola costalis (Staudinger, 1887) (Figs. 2, 4)

Nola costalis Staudinger, 1887, in Romanoff, *Mém. Lépid.* 3: 179, pl. 10: 3 (TL: Russia, Primorye terr, Askold I.).

= *melanocosta* Inoue, 1961 (*Roeselia*), Rikusuisha, 683.

Diagnosis. This species is very similar to *M. strigulosa* (Staudinger, 1887), but can be distinguished by the following characters: forewing light gray; black or brown patch small between antemedial and postmedial lines at costal area, *strigulosa* big and process to Cu_2; in male genitalia, harpe bifurcate, vesica with long cornutus, *costalis* upper edge with small pine, vesica without cornutus.

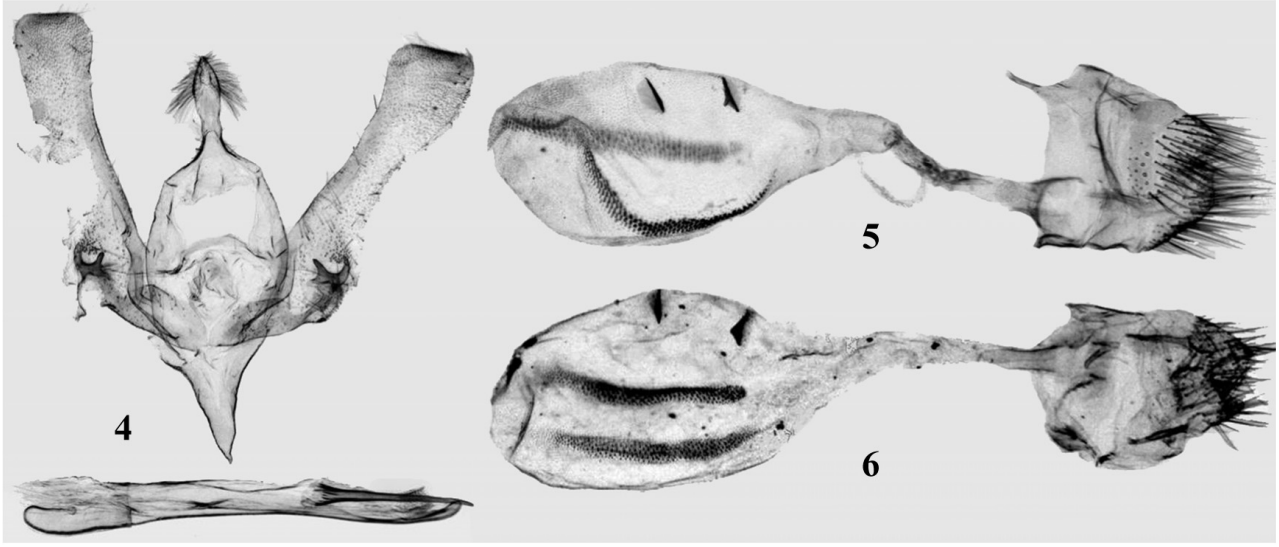
Adult (Fig. 2). Wingspan 15-17mm. Head and thorax grayish white, spread cyan; abdoment black, mixed reddish brown. Forewing ground gray, mixed cyan; blackish brown patch between basae and postmedial line in costal area; antemedial, median, postmedial lines and postmedial lines black, distinct at costal area, other parts indistinct; subterminal line black, blurried, dark on vein; blacked btween base and postmedial line of inner margin; hindwing gray, discal spot small dot shaped.

Male genitalia (Fig. 4). Uncus strong shuttle shaped; tegumen triangle shaped; saccus narrow V shaped. Valva flat bar shaped, and sunk at middle part of the ventral margin; cucullus swollen, and straight terminally; sacculus short, weakly sclerotized, and thick; costa ribbed at basal part, process part close up cucullus; harpe bifurcate, small hook shaped, sclerotized. Juxta rhombic shaped. Phallus cylindrical, coecum narrow, dorso-apically blunt apex; vesica with a long and sclerotized cornutus.

Material examined. 1♂, Prov. Liaoning, Anshan, Mt. Qianshan, 10-12 VIII 2008 (HL Han, MJ Qi) ; 19♂, Prov. Jilin, Mt. Changbaishan, 25-28 VII 2008 (HL Han, MJ Qi) ; 1♂, Prov. Liaoning, Jianchang, Mt. Bailang, 5-8 VIII 2009 (MJ Qi); 2♂, Prov. Liaoning, Anshan, Mt. Qianshan, 13-14 VII 2011 (MJ Qi).

Distribution. China (Heilongjiang, Jilin, Liaoning), Russia, Korea, Japan.

Remarks. This species occur in broad-leaved forestry, border on grassplot, and flies in July and August. Larvae feed on *Malus*



Figs. 4-6. Genitalia. 4. *Meganola costalis* (Staudinger, 1887); 5. *M. bryophilalis* (Staudinger, 1887); 6. *M. strigulosa* (Staudinger, 1887).

sieboldi, *Prunus incisa* and *Sorbus japonica* (Kononenko, 2010).

Meganola strigulosa (Staudinger, 1887) (Figs. 3, 6)
Nola strigulosa Staudinger, 1887, in Romanoff, Mém. Lépid. 3: 180, pl. 11: 4 (TL: Russia: Vladivostok, Askold I.).
= *satoi* Inoue, 1970 (*Roeselia*), Bulletin of the Japan Entomological Academy, 6:4, figs. 19-21 adults, fig. 34 male genitalia, fig. 49 female genitalia.

Diagnosis. This species is very similar to *M. shimekii* Inoue, 1970, but can be distinguished by the following characters: forewing light blackish gray; black or brown patch small between antemedial and postmedial lines at costal area, *shimekii* big and process to inner margin; in female genitalia, corpus bursae olive shaped, signa band dark, thick, *shimekii* global, signa band thin.

Adult (Fig. 3). Wingspan 18-19mm. Head, thorax and abdomen black to brown. Forewing ground gray to brown; antemedial and median lines curved, black, distinct on costal area; postmedial line black, light than antemedial line, distinct at foreside; subterminal line broad, black and wave; terminal line area blackish gray; a blackish gray patch between basal part and postmedial line in costal region; hindwing brown to dark gray.

Female genitalia (Fig. 6). Anal tube coniform shaped, thick, densely covered spine. Apophysis posterioris 4 times as long as anterioris. Ostium flat common. Ductus bursea membranous, slender, and shorter than corpus bursae. Corpus bursae oval shaped, 1.5 times as long as ductus; two separate signa on left at rearward; two signa band symmetrical.

Material examined. 2♀, Prov. Jilin, Baishan, VII 1987 (Jilin forestry academy of Sciences); 6♀, Prov. Jilin, Mt. Changbai, 25-28 VII 2008 (HL Han, MJ Qi).

Distribution. China (Jilin), Russia, Korea, Japan.

Remarks. This species occur in edge strip area between forestry and grassplot, and flies in May to June, July and August. Larvae feed on *Quercus mongolica* and *Q. Dentata* (Kononenko, 2010).

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