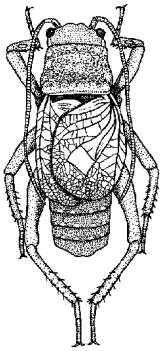

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology,
Institute of Biology and Soil Sciences,
Vladivostok

Number 185: 1-19 ISSN 1026-051X May 2008

A REVIEW OF THE SUBFAMILY NOLINAE (LEPIDOPTERA, NOLIDAE) OF THE RUSSIAN FAR EAST

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Twenty one species from 3 genera of Nolinae are listed on the basis of the collections examined and literature data; among them 4 species (*Nola emi* Inoue, *N. taeniata* Snel., *N. neglecta* Inoue and *N. japonibia* Strand) are recorded for the first time from Russia. The following new synonymies are proposed: *Nola cicatricalis* (Treitschke, 1853) = *N. longicosta* Oh, 2001, **syn. n.**; *Meganola strigulosa* (Staudinger, 1887) = *Roeselia satoi* Inoue, 1970, **syn. n.**; *M. bryophilalis* (Staudinger, 1887) = *Roeselia basifascia* Inoue, 1958, **syn. n.** The data on biology and distribution of all observed species are summarized. Male and female genitalia of newly recorded and little known species are described and illustrated.

KEY WORDS: Nolidae, taxonomy, faunistics, Russian Far East.

Ю.А. Чистяков. Обзор подсемейства Nolinae (Lepidoptera, Nolidae) Дальнего Востока России // Дальневосточный энтомолог. 2008. N 185. С. 1-19.

Приводится аннотированный список 21 вида из 3 родов подсемейства Nolinae, составленный по коллекционным материалам и литературным данным; из них 4 вида (*Nola emi* Inoue, *N. taeniata* Snel., *N. neglecta* Inoue and *N. japonibia* Strand) впервые указываются для фауны России. Установлена новая синонимия: *Nola cicatricalis* (Treitschke, 1853) = *N. longicosta* Oh, 2001, **syn. n.**; *Meganola strigulosa* (Staudinger, 1887) = *Roeselia satoi* Inoue, 1970, **syn. n.**; *M. bryophilalis* (Staudinger, 1887) = *Roeselia basifascia* Inoue, 1958, **syn. n.** Обобщены сведения по биологии и географическому распространению рассматриваемых видов. Для

малоизвестных и впервые указываемых для Росси видов даны описания и приводятся рисунки гениталий самцов и самок.

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INTRODUCTION

Family Nolidae contains of small to medium-sized moths with characteristic tufts of raised scales at the base, middle and end of cell on the forewings. So far they have been inadequately studied and conceptualizations on position of this group among other families of Noctuoidea still remain controversial. Previously they were included in Arctiidae. Actually, their larvae resemble those of Arctiidae, but differ from them by lacking the first pair of prolegs only. Recently they usually are included in Noctuidae in a rank of subfamily (Fibiger, Hacker, 1991; Speidel et al., 1996), or considered to be a separate family, which is closely allied to the Arctiidae and Lymantriidae (Holloway, 1998; Kitching & Rawlins, 1999). The latter conclusion, in my estimation, seems to be more reasoned. In this account only a subfamily Nolinae is included.

Subfamily Nolinae is one of the poorly studied groups in the fauna of the Russian Far East. Apart from thorough works of the 19-th century with original faunistic data and descriptions of some new species of Nolinae from this region (Oberthür, 1880; Staudinger, 1887; Graeser, 1888) there are only a few small faunistic papers, based on the local material of various groups of Lepidoptera, with scanty information about the representatives of this subfamily, where 12 species are recorded for Russian Far East in whole. Since that time only one species – *Meganola banghaasi* has been described from this territory (West, 1929). Some recent publications with notes about newly recorded species from Sakhalinskaya oblast, including Southern Kuriles (Dubatolov, 1991) and from Primorskii krai (Dubatolov & Zolotarenko, 1990) added 3 another species. In the course of the author's study this list has been enlarged up to 21 species, 20 of those were included in the "Key book of the Insects of the Russian Far East" (Tshistjakov, 2003), but without reference to material examined and nomenclature changes, have been done. Some these data were published already (Tshistjakov, 2006), but the most part of them still remains to be unpublished.

The aim of this work is to summarize all known literature data and available materials on this family from the Russian Far East. The paper based mainly on the author's material and on the collection of the Institute of Biology and Soil Science (both of those are given in present paper without special indication). A place of deposition some material from other museums, mentioned herein and the collector's names (excluding the author's material) are indicated in the text. In the case when observed material does not cover all known localities within Russian Far East, such additional data are borrowed from the literature (the modern names of mentioned sites are given in square brackets) and placed in special section of species' essay. The literature has been cited for every species includes only the sources based on the local material and those, consisting nomenclature data need to be changed.

Abbreviations used for the localities throughout the text are as follows: Barabash-Levada – Barabash-Levada vil., 50 km N Pogranichny; Ussuryiskyi Nature Reserve – 32 km SE Ussuriysk; Gornotayozhnoye – Gornotayozhnoye, 18 km SE Ussuriysk; Okeanskaya – Okeanskaya station near Vladivostok, Chernaya river; Ryasanovka – Ryasanovka vil., 14 km SSE Slavyanka. Abbreviation used for the museums is as follow: ZMMU – Zoological Museum of Moscow State University, Moscow.

LIST OF THE SPECIES

***Nola emi* (Inoue, 1956)**
Figs 5, 6, 22

Nola emi: Dubatolov, 1991: 186 (Kunashir Is.: Alekhino); Tshistjakov, 2003: 644, Pl. 372, figs 1, 2; Pl. 374, fig. 1; Tshistjakov, 2006: 221.

MALE GENITALIA (Figs 5, 6). Costal margin of valva weakly concave; harpe short, stout at base, its distal part with clipping on inner side before pointed top; aedeagus conical, about 1/3 length of valva, cornutus strongly curved, claw-form.

FEMALE GENITALIA (Fig. 22). Anthrum broad, barrel-form, well sclerotized, about twice of ductus bursae in width; corpus bursae pear-form, without signum.

MATERIAL EXAMINED. Primorskii krai: 1♂, Gornotayozhnoye, 28.V 1979; 1♂, same locality, 14.VI 1996; 6♂, 3♀, 9 km. S Anisimovka, Litovka Mt., 400-900 m, 3-23.V 1998 (E. Belyaev leg.).

DISTRIBUTION. Russian Far East (south part of Primorskii krai, Southern Kuriles); Korea, Japan (Honshu, Shikoku).

BIOLOGY. The moths fly in mixed coniferous-broad-leaved forest in May – June. The host plants are unknown.

***Nola nami* (Inoue, 1956)**
Figs 1, 2, 26

Nola nami: Dubatolov, 1991: 186 (Kunasir Is.: Ivanovsky cape).

MALE GENITALIA (Figs 1, 2). Costal margin of valva straight in basal half; harpa abruptly narrows in distal half; aedeagus cylindrical, no more than 1.5 times shorter of valva.

FEMALE GENITALIA (Fig. 26). Antrum well sclerotized, 1.5 times wider of ductus bursae; ductus bursae more than 2 times shorter of corpus bursae; corpus bursae pear-shaped, with large trumpet-like signum.

DISTRIBUTION. Russia (Southern Kuriles: Kunasir Is.); Korea, Japan (Honshu, Shikoku).

HOST PLANTS. The host plants in the Russian Far East are unknown. In Japan the larvae feed on *Euptela polyandra* (Trochodendraceae), *Enkianthus perlatus* (Ericaceae) and *Clethra barbinervis* (Clethraceae) (Inoue, 1982).

REMARKS. This species was omitted in the "Key book of the Insects of the Russian Far East" (Tshistjakov, 2003) and the proper paragraph in the text on page 644 of this book after the text dealt with *Nola emi* should be added by following antithesis and a couplet:

– Forewing light-grey, without dusting of brown scales 9
9. Postmedian line of forewing below Cu_1 straight, perpendicular to hind margin of wing. In male genitalia (fig. 372, *7–10*) costal margin of valva concave in basal half; harpa gradually tapering to top; aedeagus cylindrical, short, more than 2 times shorter of valva's length. In female genitalia apophyses posterior long; two times longer then apophyses antherior; antrum cylindrical, weakly sclerotized, nearly of the same width as ductus bursae; ductus bursae 1.5 times shorter then corpus bursae; corpus bursae pear-shaped, with small spinulose signum. Male: 17–19, female 18-20. – South of Primorskii krai. – Korea, Japan (Hokkaido, Honshu). – VI . . . . . **N. neglecta** Inoue
– Postmedian line of forewing below Cu_1 wavy, oblique to hind margin of wing. In male genitalia costal margin of valva straight in basal half; harpa abruptly narrows in distal half; aedeagus cylindrical, no more than 1.5 times shorter of valva's length. In female genitalia apophyses posterior nearly of the same length as apophyses antherior; antrum cylindrical, heavily sclerotized, 1.5 times wider of ductus bursae; ductus bursae more than 2 times shorter of corpus bursae; corpus bursae pear-shaped, with large trumpet-like signum. – Southern Kuriles (Kunashir Is.); Korea, Japan (**Hokkaido**, Honshu**,** Shikoku, **Kyushu**). – VII . . . . . **N. nami** Inoue

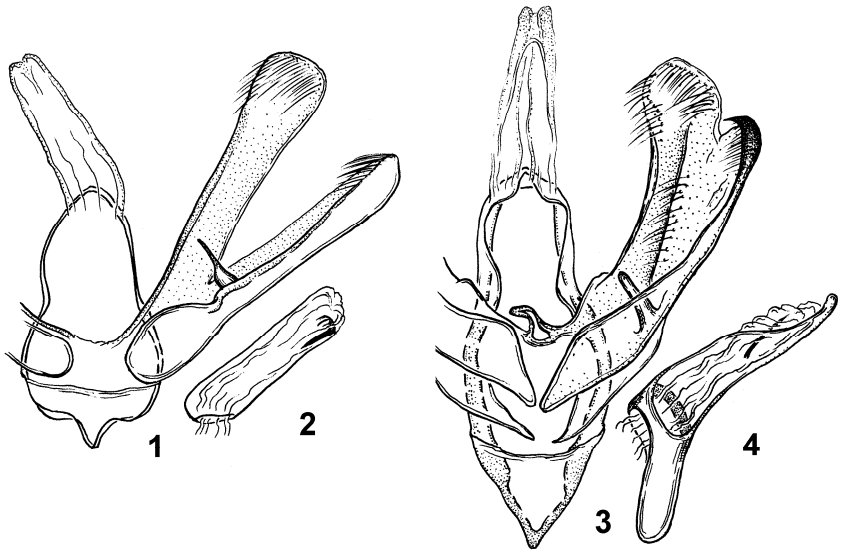
***Nola chlamitulalis minutalis* (Leech, 1888)**
Figs 7, 8

Nola cristatula minutalis: Inoue, 1958: 219; Inoue, 1961: 651.
Nola cristatula: Inoue, 1982, 1: 660, 2: pls.154, 349, 352; Oh, 2001: 125.
Nola chlamitulalis minutalis: Tshistjakov, 2003: 642, Pl. 373, figs 9, 10; Tshistjakov, 2006: 221.

MALE GENITALIA (Figs 7, 8). Valva lobe-like, sacculus with horn-like process on top; harpe very wide near base, with small spine on top; aedeagus cylindrical, about 4/5 length of valva, with 3 cornuti: 2 of them aciform and the third one strongly curved, claw-form.

MATERIAL EXAMINED. Primorskii krai: 2♂, Gornotayozhnoye, 14.VI 1996 (E. Belyaev leg.).

DISTRIBUTION. Amphipalaearctic species, spreading in West and South Europe, North Africa, Asia Minor (nominotypical subspecies) and in south part of the Russian Far East, Korea and Japan (Honshu, Shikoku, Kyushu), where it is represented by subspecies *minutalis*.



Figs 1-4. Male genitalia. 1-2) *Nola nami*: 1) caudal view, 2) aedeagus; 3-4) *N. taeniata*: 3) caudal view, 4) aedeagus.

BIOLOGY. The moths fly in mixed coniferous-broad-leaved forest in June. In the Russian Far East the trophic relations of this species are still unknown, in Europe (Freina & Witt, 1987) the larvae feed on *Odontides*, *Teucrium* and *Scabiosa* spp.

REMARKS. As it was pointed out already (Freina & Witt, 1987) the *minutalis* Leech described from Japan actually is a subspecies of *N. chlamitulalis* Hübner, but not of *N. cristatula* Hübner, which does not occur in East Asia. The color illustrations of moths and the figures of their male and female genitalia treated as *N. cristatula* Hübner by H. Inoue (1982) and by S.H. Oh (2001) undoubtedly belong to discussed taxon.

Nola aerugula atomosa (Bremer, 1861)

Glaphyra atomosa Bremer, 1861: 491 (Ussuri).

Nola centonalis atomosa: Greaser, 1888:112 (Khabarovsk, Blagoveschensk, Vladivostok, Ussuri); Matsumura, 1925: 116 (South Sakhalin, Ichinisawa).

Nola candidalis Staudinger, 1892: 258 (Amur).

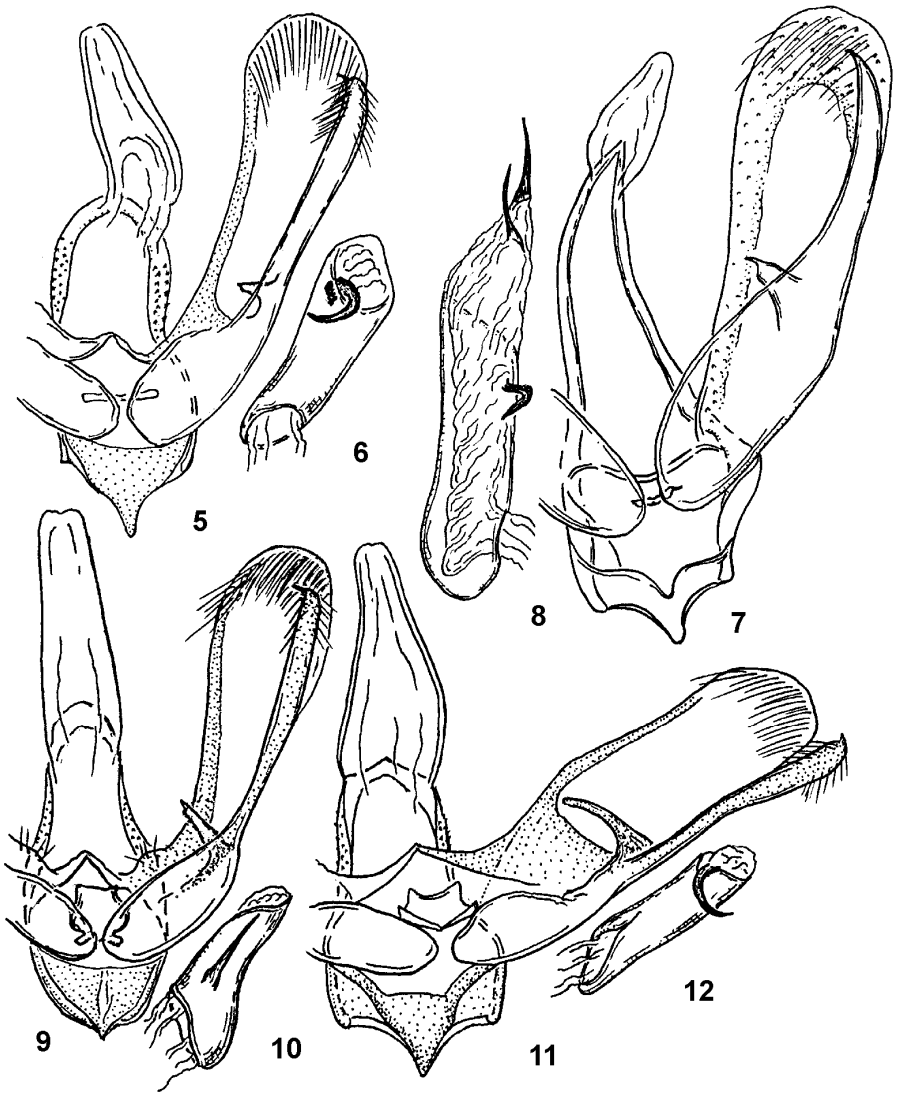
Celama centonalis atomosa: Filipjev, 1927: 259 (Tigrovoi).

Nola aerugula: Tshistjakov, 1992: 154.

Nola aerugula atomosa: Dubatolov, 1991: 186 (Sakhalin Is.:Yuzhno-Sakhalinsk; Kunashir Is.:, Ivanovsky cape, Stolbchatyi cape, Golovnino); Tshistjakov, 2003: 642, Pl. 371, fig 6; Pl. 372, figs 3, 4; Pl. 374, fig. 2; Tshistjakov, 2006: 221.

MATERIAL EXAMINED. Amurskaya Oblast': 12♂, 5♀, Khinganskii Nature Reserve, Kundur, 20-23.VII 1988. Khabarovskii krai: 1♂, 9.VII 1984 (A. L'vovskyi

leg.). Primorskii krai: 1♀, Verhnii Pereval, 18.VII 1990 (M. Omel'ko leg.); 3♂, 6 km NE Slinkino, 2.VIII 1995; 5♂, 4♀, 12 km E Yasnoe, 3.VIII 1995; 3♂, 8 km NW Scherbakovka, 5, 6.VIII 1995; 5♂, 18 km SW Krounovka vil., 27-29.VII 1990; 3♂, same locality, 13-15.VII 1992; 1♂, Vladivostok, VII 1930; 1♂, Gornotayozhnoye,



Figs 5-12. Male genitalia. 5-6) *Nola emi*: 5) caudal view, 6) aedeagus; 7-8) *N. chlamitulalis minutalis*: 7) caudal view, 8) aedeagus; 9-10) *N. japonibia*: 9) caudal view, 10) aedeagus; 11-12) *N. neglecta*: 11) caudal view, 12) aedeagus.

6.VIII 1984 (S. Sinev leg.); 3♂, 1♀, same locality, 18.VII 1990; 2♂, 2♀, Ussuriyskii Nature Reserve, 13.VII 1990; 7♂, 3♀, 6 km N Zanadvorovka, 29.VII-7.VIII 1984 (Yu. Tshistjakov, S. Sinev leg.); 3♂, 1♀, same locality, 7.VII-6.VIII 1985; 1♂, Brovnichi, 27.VII 1993; 2♂, 1♀, Anisimovka, 19, 29.VI 1988; same locality, 10, 12.VII 1999; 2♂, Ryasanovka, 29.VII 1986 (E. Belyaev leg.); 4♂, 1♀, same locality, 27.VI-28.VII 1992; 1♀, same locality, 22.VII 1997 (E. Belyaev leg.).

DISTRIBUTION. Transpalaearctic species, wide spreading throughout moderate zone of Eurasia from Europe to Russian Far East, East China, and Japan.

BIOLOGY. The moths fly in various types of forest from end of June to early August. The larvae feed on *Quercus mongolica*, *Betula* spp., *Lotus* spp., *Trifolium* spp., *Fragaria* spp., *Rubus* spp., and *Potentilla* spp.

***Nola taeniata* Snellen, 1874**
Figs 3, 4, 25

Nola taeniata: Tshistjakov, 2003: 640, Pl. 374, fig. 4; Tshistjakov, 2006: 221.

MALE GENITALIA (Figs 3, 4). Sacculus well sclerotized, with clear visible sharp process on top; aedeagus short, slightly curved near middle, with aciform cornutus in vesica.

FEMALE GENITALIA (Fig. 25). Antrum and posterior apophyses long; antherior apophyses wide in caudal half; ductus bursae broad and hard sclerotized in caudal half, nearly of the same length as corpus bursae; corpus bursae elliptical, without signum.

MATERIAL EXAMINED. Amurskaya oblast: 1♂, Khinganskii Nature Reserve, Kundur, 22.VII 1988. Primorskii krai: 1♂, 1♀, Ryasanovka, 16.VIII 1986; 1♂, same locality, 10.VIII 1987 (Belyaev leg.); 1♀, same locality, 18.VIII 1992 (Belyaev leg.); 1♂, 2 km W Ekaterinovka, 12.VII 1993.

DISTRIBUTION. Russian Far East (Amurskaya oblast', Primorskii krai); Korea, Japan (Honshu, Shikoku, Kyushu, Tsushima, Okinawa), China, Malaysia, India, Myanmar, Australia.

BIOLOGY. The moths fly in disperse woods along the forest boundary in end of July – first half of August. The host plants of this species in the Russian Far East are still unknown, in China larvae feed on *Oryza sativa*, *Morus alba*, and *Gossypium indicum* (Fang, 1983)

***Nola innocua costimacula* (Staudinger, 1887)**
Figs 13, 14, 23

Nola costimacula Staudinger, 1887: 182, Pl. X, fig. 6 (Amur).

Nola innocua: Matsumura, 1925: 116 (South Sakhalin: Ichinisawa [now: Pervaya Pad'], Sakayehama [now: Starodubskoe])

Nola innocua costimacula: Tshistjakov, 2003: 642, Pl. 373, figs 5-8; Pl. 374, fig. 6; Pl. 379, fig. 2; Tshistjakov, 2006: 221.

MALE GENITALIA (Figs 13, 14). Dorsal lobe of valva gradually broadened towards distal margin; harpe hook-like, rather stout at base; aedeagus straight, about 1/2 length of valva, cornutus nearly to 1/3 length of aedeagus, strongly curved in basal 1/4 of its length.

FEMALE GENITALIA (Fig. 23). Ductus bursae thin and long, nearly equal to corpus bursae in length; anthrum broad, cylindrical, hard sclerotized, less of 1/3 of ductus bursae; corpus bursae oblong, somewhat broadened near confluence with ductus, with small cap-like signum in proximal 1/3 of its length.

MATERIAL EXAMINED. Primorskii krai: 1♂, 1♀, Gornotayozhnoye, 14.VI 1996; 1♂, Ussuriyskii Nature Reserve, 26.VII 1990.

DISTRIBUTION. Russian Far East (Khabarovskii krai, Primorskii krai, Southern Sakhalin). Nominotypical subspecies occurs in Southern Korea, Japan (Honshu, Shikoku, Kyushu, Tsushima, Okinawa), and Taiwan.

BIOLOGY. The moths fly in mixed coniferous-broad-leaved forest in June – July. The host plants in the Russian Far East are unknown; in Japan larvae feed in the aphids galls on *Distilium racemosum* (Sugi, 1987).

REMARKS. This subspecies clearly differs from the nominotypical one not by wing pattern only. Male and female genitalia structure of the specimens from south part of Primorskii krai differ essentially from those of *Nola innocua* Butl., illustrated by Inoue (1982) and Oh (2001) and quite probably in this case we have a deal with a separate species.

***Nola confusalis* (**Herrrich-Schäffer, 1847)

Nola confusalis: Dubatolov, 1991: 186 (Sakhalin Is.: Urozhaynoe; Kunashir Is.: Ivanovsky cape); Tshistjakov, 1992: 154; Tshistjakov, 2003: 644, Pl. 373, figs 3, 4; Pl. 374, fig. 5; Pl. 379, fig. 4; Tshistjakov, 2006: 221.

MATERIAL EXAMINED. Primorskii krai: 2 ♂, 17 km SSW Krounovka, 28.V 1992; 1♂, Gornotayozhnoye, 14.VI 1996; 7♂, 3♀, 9 km S Anisimovka, Litovka Mt., 400-900 m, 22-23.V 1998 (E. Belyaev leg.).

DISTRIBUTION. Transpalaearctic species, wide spreading throughout moderate zone of Eurasia from Europe to North East China, Korea, and Japan.

BIOLOGY. The moths fly in various types of the forest in the end of May – June. The larvae feed on *Quercus* spp., *Carpinus* spp., *Tilia* spp. *Prunus* spp., *Vaccinium* spp., *Mentha* spp.

***Nola cicatricalis* (Treitschke, 1853)**

Nola cicatricalis: Graeser, 1888: 111 (Nikolaevsk-na-Amure, Khabarovsk); Tshistjakov, 2003: 644, Pl. 372, figs 1, 2; Pl. 374, fig. 3; Tshistjakov, 2006: 222.

Nola longicosta Oh, 2001: 131, figs 7, 19, 31, 40 [holotype: ♂, Gwangleung, Gyeonggi Province, Central Korea, 25.YI 1986 (K.J. Won leg.); deposited in the collection of the Center for Insect Systematics, Kangweon National University, Chuncheon, Korea, unstudied], **syn. n.**

MATERIAL EXAMINED. Primorskii krai: 11♂, 5♀, Gornotayozhnoye, 26.IV-10.V 1995 (E. Belyaev, Yu. Tshistjakov leg.); 1♂, Ussuriyskii Nature Reserve, 10.V 1996.

DISTRIBUTION. Amphipalaearctic species, spreading in South Europe and then in the south part of the Russian Far East (Khabarovskii krai, Amurskaya oblast' and Primorskii krai).

BIOLOGY. The moths occur in various types of the broad-leaved and mixed forest in May – June. The larvae feed on *Quercus* spp. and *Betula* spp.

REMARKS. Color photograph of adult and the photographs of male and female genitalia adjunct by Oh (2001) to his description of *N. longicosta* clearly show the characteristic features of discussed species, which actually could be distinguished from all other known representatives of the genus by elongate forewings with acute apex and by absence of spine-like process on the top of sacculus in male genitalia.

***Nola neglecta* Inoue, 1991**
Figs 11, 12

Tshistjakov, 2003: 644, Pl. 372, figs 7-10; Pl. 379, fig. 3; Tshistjakov, 2006: 222.

MALE GENITALIA (Figs 11, 12). Costal margin of valva convex in basal half; distal part of harpe gradually tapering towards top; aedeagus cylindrical, about 1/3 length of valva, cornutus strongly curved, claw-form.

FEMALE GENITALIA. Anthrum cylindrical, weakly sclerotized, as broad as ductus bursae; ductus bursae about 1.5 shorter of corpus bursae; corpus bursae pear-form, with small thorn-like signum.

MATERIAL EXAMINED. Primorskii krai: 1♂, 24 km E Yasnoe, 29.VII 1993; 1♀, "Tachin-Guan Range" [now: Partisanskii Range], Lysaya Mt., 1600 m, 30.VI 1973 (V. Vasyurin leg.); 2♂, Gornotayozhnoye, 28.V 1979; 1♂, same locality, 18.VII 1990; 5♂, 2♀, same locality, 6-10.V 1995 (E. Belyaev leg.); 2♂, Ussuriyskii Nature Reserve, 13.VII 1990; 1♂, same locality, 7.V 1995; 7♂, 3♀, Okeanskaya, 12-26.VII 1994; 1♂, Andreevka, 30.V 1992.

DISTRIBUTION. Russian Far East (south part of Primorskii krai); Japan (Hokkaido, Honshu).

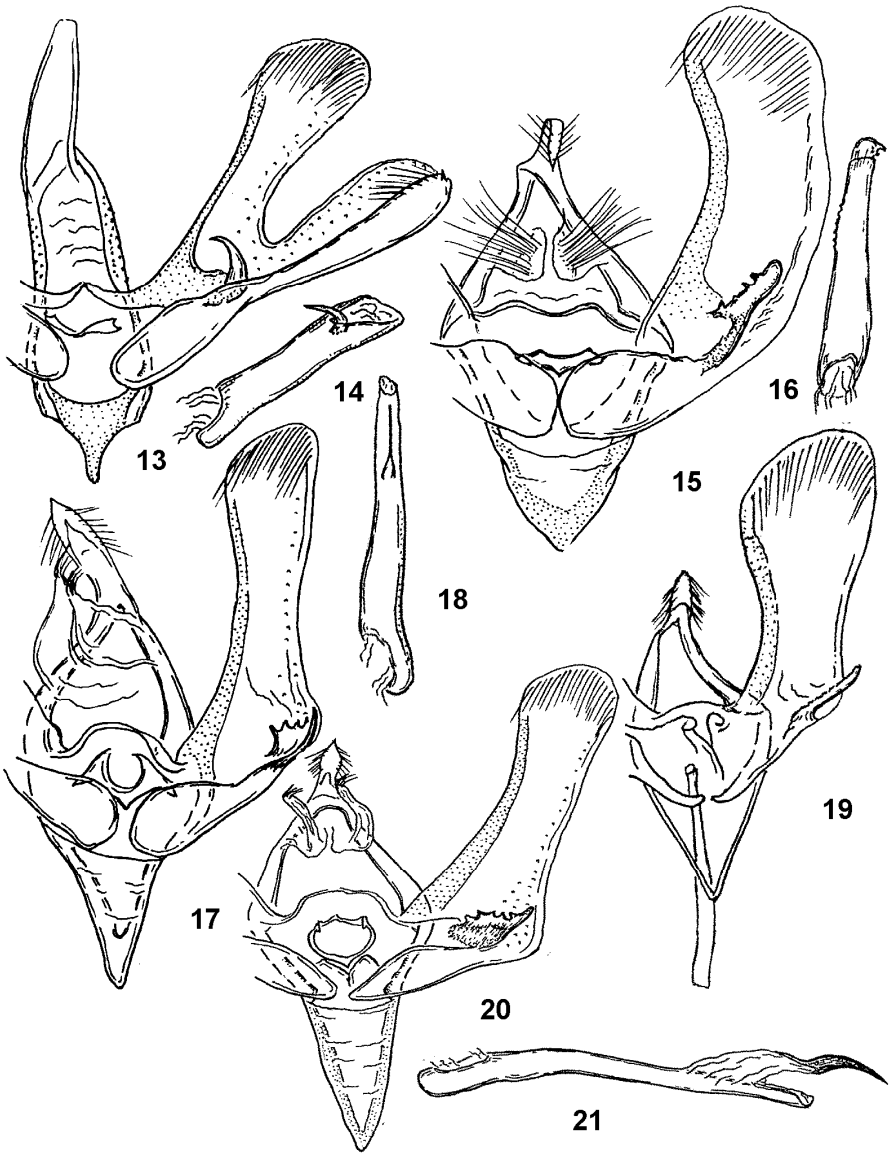
BIOLOGY. The moths fly in mixed coniferous-broad-leaved forest in two generations: in May – June and then in July. The host plants are unknown.

***Nola japonibia* (Strand, 1920)**
Figs 9, 10, 24

Nola japonibia: Tshistjakov, 2003: 642, Pl. 371, fig. 7; Pl. 372, figs 5, 6; Pl. 374, fig. 7; Tshistjakov, 2006: 222.

MALE GENITALIA (Figs 9, 10). Valva weakly concave along dorsal margin; harpe thorn-like, straight, with pointed apex; aedeagus short, its ventral margin concave, cornutus rod-like, slender, inflated at base.

FEMALE GENITALIA (Fig. 24). Ductus bursae long, nearly twice of corpus bursae; from the ostium, 1/6 part of ductus weakly sclerotized, then membranous and gradually broadened towards corpus bursae. Corpus bursae spherical, with one cap-like signum.



Figs 13-21. Male genitalia. 13-14) *Nola innocua costimacula*: 13) caudal view, 14) aedeagus; 15-16) *Meganola micabo*: 15) caudal view, 16) aedeagus; 17-18) *M. strigulosa*: 17) caudal view, 18) aedeagus; 19) *M. shimekii*, caudal view; 20-21) *M. bryophilalis*: 20) caudal view, 21) aedeagus.

MATERIAL EXAMINED. Primorskii krai: 1♂, Dersu, 40 km SEE Roshchino, 13.VI 1990; 2♂, Gornotayozhnoe, 18 km SE Ussuriisk, 29.V 1989; 1♂, Gribnoe, 24.VI 1996; 4♂, 1♀, Ussuriiskii Nature Reserve, 19.VII 1990, 31.VII 1994; 2♂, Brovnichi, 27.VII 1993.

DISTRIBUTION. Russian Far East (south part of Primorskii krai); Korea (Central, South), and Japan (Hokkaido, Honshu, Shikoku, Kyushu).

BIOLOGY. The moths fly in mixed coniferous-broad-leaved forest from the end of May to the end of July. The host plants are unknown.

Rhynchopalpus banghaasi (West, 1929)

Nola banghaasi West, 1929: 194 (Ussuri).

Meganola banghaasi: Tshistjakov, 1992: 154; Tshistjakov, 2003: 648, Pl. 375, figs 5, 6; Pl. 378, fig. 5; Pl. 379, fig. 5; Tshistjakov, 2006: 222.

MATERIAL EXAMINED. Amurskaya oblast': 1♂, 1♀, Khinganskii Nature Reserve, 4 km NW Kundur, 23.VII 1988. Primorskii krai: 1♂, 17 km NE Glubinnoe, 18.VI 1990; 1♂, Glubinnoe, 19.VI 1990; 10♂, 2♀, Dersu, 13.VI 1990; 1♂, "Tachin-Guan Range" [now: Partisanskii Range], 19.VII 1973 (V. Vasyurin leg.); 1♂, Gribnoe, 24.VI 1996; 1♂, Gornotayozhnoye, 10.V 1995.

DISTRIBUTION. Russian Far East (Khabarovskii krai, Amurskaya oblast', Primorskii krai); North East China, Korea, Japan.

BIOLOGY. The moths occur in various types of the forest, producing 2 generations: in May – June and then in July – early August. The host plants are unknown.

Rhynchopalpus albula (Denis et Schiffermüller, 1775)

Nola albula: Greaser, 1888: 112 (Khabarovsk, Blagoveschensk, Ussuri).

Meganola albula: Tshistjakov, 1992: 155; Tshistjakov, 2003: 646, Pl. 371, fig. 3; Pl. 376, figs 7, 8; Pl. 378, fig. 3; Tshistjakov, 2006: 222.

MATERIAL EXAMINED. Amurskaya oblast': 10♂, 4♀, Kundur, 20-22.VII 1988; 3♂, 2♀, Khinganskii Nature Reserve, 4 km NW Kundur, 23.VII 1988; 1♂, Kniganskii Nature Reserve, 16 km N Kundur, 26.VII 1988. Primorskii krai: 2♂, 8 km S Krounovka, 13-15.VII 1992; 2♂, Gornotayozhnoye, 18.VII 1990; 1♂, Ussuryiskii Nature Reserve, 19.VII 1966 (L. Konovalova leg.); 5♂, 2♀, same locality, 13.VII 1993; 3♂, Kedrovaya Pad' Nature Reserve, 7-20.VIII 1976; 5 ♂, 1♀,10 km N Zanadvorovka, 29.VII-12.VII 1984 (Yu. Tshistjakov, S. Sinev leg.); 3♂, 1♀, Anisimovka, 10,12.VII 1999; 2♂, Ryasanovka, 5-7.VIII 1986 (E. Belyaev leg.); 2♂, 1 ♀, same locality, 19-28.VII 1992 (E. Belyaev leg.).

DISTRIBUTION. Transpalaearctic species, widespreading throughout moderate zone of Eurasia from Central Europe to the Russian Far East, North East China, Korea and Japan.

BIOLOGY. The moths fly in 2 generations: in the end of May – June and then in July – early August, inhabiting various types of the forest. The larvae feed on *Rubus* spp., *Fragaria* spp., *Potentilla* spp., *Vaccinium* spp., *Lotus* spp., *Trifolium* spp., and *Mentha* spp.

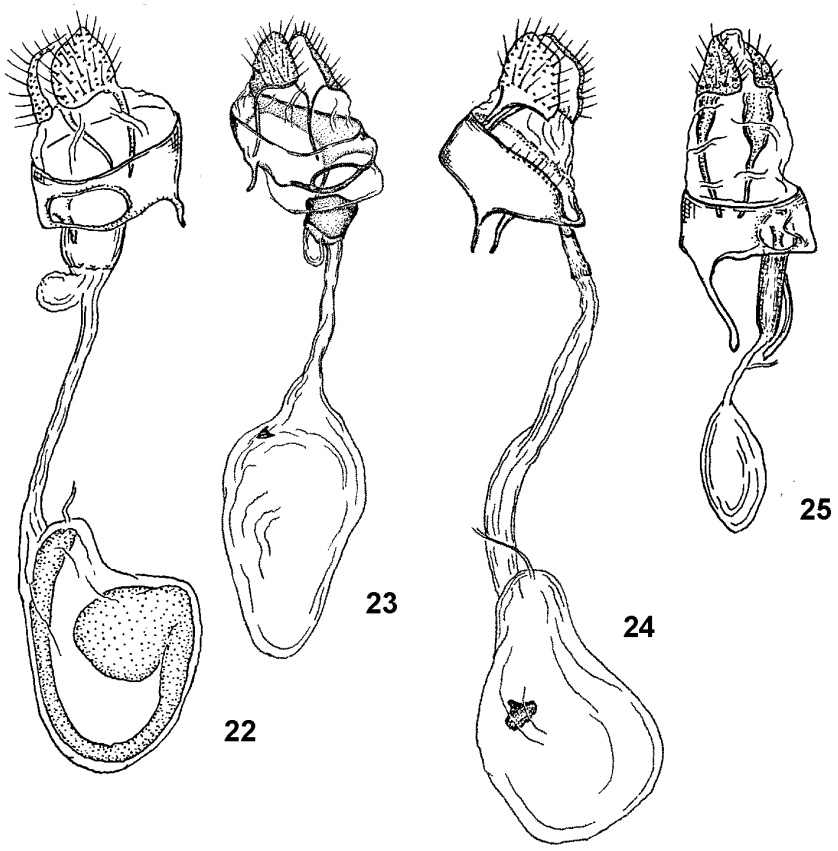
***Rhynchopalpus gigas* (Butler, 1884)**

Nola maculata Staudinger, 1887: 180 ("Suifun river" [now: Rasdol'naya river]). Synonymized by Inoue, 1958: 236; Greaser, 1888: 111 (Vladivostok).

Roeselia maculata: Filipjev, 1927: 259 (Tigrovoi).

Meganola gigas: Tshistjakov, 2003: 646, Pl. 375, figs 7, 8; Pl. 378, fig. 7; Pl. 379, fig. 7; Tshistjakov, 2006: 222.

MATERIAL EXAMINED. Primorskii krai: 3♂, 2♀, Gornotayozhnoe, 18 km SE Ussuriisk, 10,13.VII-4.VIII 1982, 4.VIII 1983 (Belyaev, Tshistjakov leg.); 1♂, Kaimanovka, 20 km SE Ussuriisk, 19.VII 1961 (Tsvetaev leg., ZMMU); 4♂, 2♀, Kedrovaya Pad' Nature Reserve, 13.VII-7.VIII 1976; 2♂, 1♀, De-Friz Peninsula, 14 km NNE Vladivostok, 16-21.VII 1961 (Omelko leg.); 1♂, same locality, 6.VII 1963 (Omelko leg.); 1♂, Anisimovka, 10.VII 1999; 1♂, Brovnichi, 27.VII 1993; 1♂, 8 km N Ekaterinovka, 8.VIII 1995.



Figs 22-25. Female genitalia. 22) *Nola emi*; 23) *N. innocua costimacula*; 24) *N. japonibia*; 25) *N. taeniata*.

DISTRIBUTION. Russian Far East (south part of Primorskyi krai); North East China, Korea, and Japan (Honshu).

BIOLOGY. The moths fly in July – early August in the valley mixed coniferous-broad-leaved and broad-leaved forests. The larvae feed on *Juglans mandshurica*.

Rhynchopalpus gigantula **(Staudinger, 1878)**

Nola gigantula Staudinger, 1878: 328 (Ussuri).

Meganola subgigas Inoue, 1982: 665, Pl. 229, fig. 45; Pl. 351, fig. 10; Pl. 353, fig. 8. Synonymized by Dubatolov & Zolotarenko, 1990.

Meganola gigantula: Dubatolov & Zolotarenko, 1990: 87; Tshistjakov, 2003: 646, Pl. 375, figs 3, 4; Pl. 378, fig. 2; Tshistjakov, 2006: 223.

MATERIAL EXAMINED. Primorskii krai: 7♂, 17 km SSW Krounovka, 13-15. VII 1992; 5♂, Gribnoe, 30.VI 1999; male, Gornotayozhnoye, 7.VII 1985 (S. Sinev); 1♂, Kaimanovka, 8.VII 1986 (A. Zvetaev leg., ZMMU); 3♂, Ussuriyskii Nature Reserve, 12-13.VII 1990; 2♂, 2♀, same locality, 13.VII 1993; 1♂, 6 km E Novo-Moskwa, 14.VII 1995; 1♂, 10 km N Zanadvorovka, 3.VIII 1984; 2♂, 2♀, Kedrovaya Pad' Nature Reserve, 8-20.VII 1976; 1♂, Okeanskaya, 26.VII 1994; 10♂, 4♀, Anisimovka, 10-12.VII 1999.

DISTRIBUTION. Russian Far East (south part of Primorskii krai); North East and North China, Korea, Japan (Honshu), Asia Minor, south part of East Europe.

BIOLOGY. The moths fly in 2 generations: in May – June and then in July – early August in the valley mixed coniferous-broad-leaved and broad-leaved forests. The host plants are unknown.

Rhynchopalpus micabo **(Inoue, 1970)**
Figs. 15, 16, 27

Meganola micabo: Dubatolov & Zolotarenko, 1990: 87 (Ryasanovka); Tshistjakov, 2003: 646, Pl. 371, fig. 4; Pl. 375, figs 1, 2; Pl. 378, fig. 8.

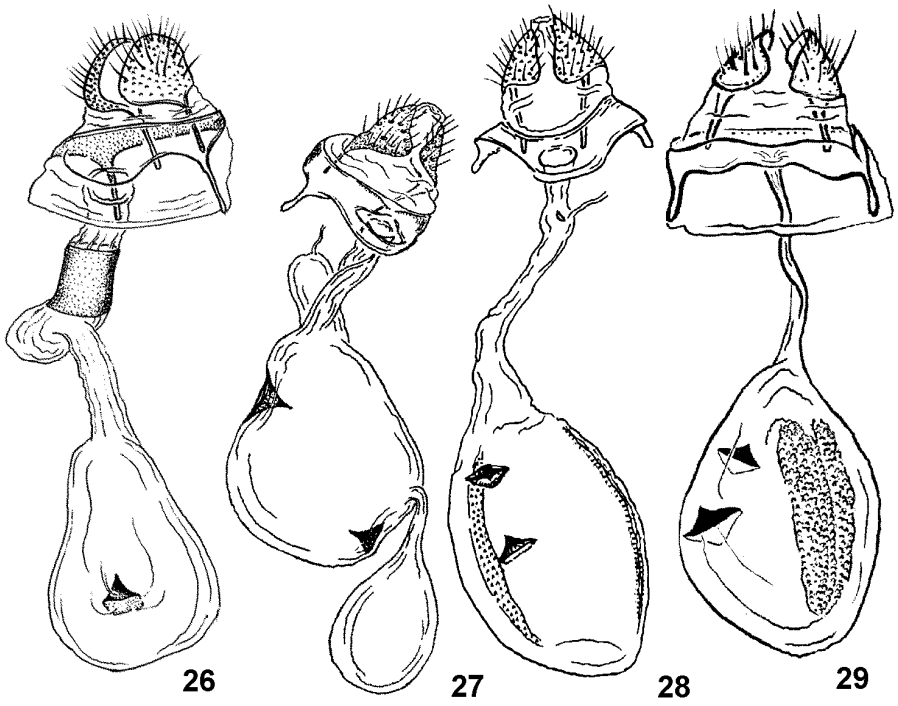
MALE GENITALIA (Figs 15, 16). Valva weakly concave, with rounded apex; harpe cylindrical, straight, cogged on dorsal surface; aedeagus gradually tapering to top, with serration on lateral wall.

FEMALE GENITALIA (Fig. 27). Ductus bursae cylindrical, membranous; corpus bursae pear-shaped, with additional sacciform process near bottom and with two large cap-like signa.

MATERIAL EXAMINED. Primorskii krai: 1♀, "Sutschan" [now: Partisansk], 4.VIII 1948 (A. Zvetaev leg., ZMMU); 2♂, 1♀, Ryasanovka, 5-24.VIII 1986 (E. Belyaev leg.).

DISTRIBUTION. Russian Far East (south part of Primorskii krai); Korea, Japan (Honshu).

BIOLOGY. The moths fly in August in the disperse woods with *Quercus dentata*, which is a host plant of their larvae.



Figs 26-29. Female genitalia. 26) *Nola nami*; 27) *Meganola micabo*; 28) *M. strigulosa*; 29) *M. shimekii*.

***Rhynchopalpus costalis* (Staudinger, 1887)**

Nola costalis Staudinger, 1887: 179, Pl. X, fig. 3 (Ussuri, Askold Is.); Greaser, 1888: 111 (Khabarovsk).

Roeselia costalis: Filipjev, 1927: 259 (Tigrovoi).

Meganola costalis: Tshistjakov, 2003: 648, Pl. 376, figs 1, 2; Pl. 378, fig. 1; Pl. 379, fig. 6; Tshistjakov, 2006: 223.

MATERIAL EXAMINED. Primorskii krai: 4♂, Scherbakovka, 5,6.VIII 1995; 1♂, 6 km NE Slinkino, 2.VIII 1995; 12♂, 8♀, 8 km S Krounovka, 13-15.VII 1992; 1♂, 5 km N Rettihovka, 23.VII 1990; 1♂, Gornotayozhnoye, 4.VIII 1982 (E. Belyaev leg.); 2♂, same locality, 18.VII 1990; 3♂, Kaimanovka, 19-25.VII 1961 (A. Zvetaev leg., ZMMU); 2♂, 3♀, Ussuryiskii Nature Reserve, 13.VII 1990; 5♂, Kedrovaya Pad' Nature Reserve, 13.VII-8.VIII 1976; 1♂, 10 km N Zanadvorovka, 3.VIII 1984; 1♂, same locality, 6.VIII 1985; 1♂, Anisimovka, 19.VII 1975; 5♂, Brovnichi, 27.VII 1993; 4 males, Ryasanovka, 29.VII-7.VIII 1986 (E. Belyaev leg.).

DISTRIBUTION. Russian Far East (Khabarovskii krai, Primoskii krai); North East China, Korea, Japan.

BIOLOGY. The moths fly in July – early August in the valley broad-leaved forest. The larvae feed on *Malus* spp. and *Sorbus* spp.

***Rhynchopalpus shimekii* (Inoue, 1970)**
Figs. 19, 29

Meganola shimekii: Dubatolov & Zolotarenko, 1990: 87 (Ryasanovka); Tshistjakov, 2003: 648, Pl. 377, fig. 5; Tshistjakov, 2006: 223.

MALE GENITALIA (Fig. 19). Costal margin of valva convex; valvae rounded at top; distal part of harpe dactyloid, with small knobles on dorsal surface; aedeagus cylindrical, gradually tapering to top, approximately equal to length of valva, without cornutus in vesica.

FEMALE GENITALIA (Fig. 29). Anthrum cylindrical, weakly sclerotized, as broad as ductus bursae; ductus bursae about of the same length as corpus bursae; corpus bursae elliptical, with 2 large thorn-like signa and with longitudinal granulated plate.

MATERIAL EXAMINED. Primorskii krai: 5♂, 1♀, Kedrovaya Pad' Nature Reserve, 13.VII-8.VIII 1976.

DISTRIBUTION. Russian Far East (south part of Primoskii krai); North East China, Korea, Japan.

BIOLOGY. The moths fly in July – early August in the mixed coniferous- broad-leaved forest. Host plants are unknown.

***Rhynchopalpus fumosa* (Butler, 1879)**

Roeselia fumosa; Filipjev, 1927: 259 (Tigrovoi).

Meganola fumosa: Dubatolov, 1991: 187 (Kunashir Is.: Ivanovsky cape); Tshistjakov, 2003: Pl. 371, fig. 5; 648, Pl. 376, figs 5, 6; Pl. 378, fig. 6; Tshistjakov, 2006: 223.

MATERIAL EXAMINED. Primorskii krai: 1♂, 24 km E Yasnoe, 29.VII 1993; 1♂, Chernigovka, 30.VI 1999; 1♂, 8 km N Rettihovka, 23.VII 1990; 18 km SW Krounovka, 27-29.VII 1990; 6♂, 8 km S Krounovka, 11-15.VII 1992; 2♂, Gornotayozhnoye, 15.VII-4.VIII 1982; 3♂, 2♀, same locality, 18.VII 1990; 3♂, Ussuryiskii Nature Reserve, 13.VII 1990; 4♂, 1♀, same locality, 2-31.VII 1993; 2♀, 1♀, same locality, 2.VII-1.VIII 1994; 3♂, 2♀, Kedrovaya Pad' Nature Reserve, 8.VII-7.VIII 1976; 37♂, 11♀, 10 km N Zanadvorovka, 29.VII-2.IX 1984; 1♀ (ex larva), Vladivostok, 5.VIII 1980; 1♂, Okeanskaya, 12.VII 1994; 3♂, same locality, 15.VII-8.VIII 1984; 1♀, Anisimovka, 11.VIII 1975; 3♂, same locality, 19-29.VI 1988; 3♂, 1♀, same locality, 10-12.VII 1999; 1♂, 8 km E Anisimovka, Litovka Mt., 1150 m, 20.VII 1995; 1♂, Brovnichi, 27.VII 1993; 3♂, Ryasanovka, 4.VII 1985.

DISTRIBUTION. Russian Far East (Khabarovskii krai, Primoskii krai, Southern Kuriles); North East China, Korea, Japan.

BIOLOGY. The moths fly in 2 generations: in June and then from July to September in various types of broad-leaved forest with oak. The larvae feed on *Quercus mongolica* and *Q. dentata.*

***Rhynchopalpus strigulosa* Staudinger, 1887**
Figs. 17, 18, 28

Nola strigulosa Staudinger, 1887: 180 (Pl. X, fig. 4) (Vladivostok, Askold, Blagoveshchensk); Greaser, 1888: 111 (Khabarovsk, Vladivostok).

Roeselia satoi Inoue, 1970: 4, Pl. 1, figs 19-21 [holotype: ♂, Mt. Akiba, Niitsu City, Niigata Pref., (Honshu, Japan) 18.YIII 1959 (R. Sato leg.); deposited in the collection of Natural History Museum, London, unstudied], **syn. n.**

Meganola satoi: Dubatolov, Zolotarenko, 1990: 87 (Ryazanovka).

Meganola strigulosa satoi Inoue, 1991: 72.

Meganola strigulosa: Tshistjakov et al., 1998: 78; Tshistjakov, 2003: 648, Pl. 371, fig. 2; Pl. 376, figs 3, 4; Pl. 378, fig. 4; Tshistjakov, 2006: 223.

MALE GENITALIA (Figs 17, 18). Valva with clear visible constriction in the middle; harpe laminate, with sharp triangle dents on distal margin; aedeagus about 1.5 times shorter then length of valva, gradually tapering to top, with thin aciform cornutus in vesica.

FEMALE GENITALIA (Fig. 28). Ductus bursae long, with minute sclerotized plate in proximal part near inflowing of ductus seminalis; corpus bursae oval, with 2 thorn-like signa and with 2 longitudinal granulated plates.

MATERIAL EXAMINED. Primorskii krai: 2♂, 24 km E Yasnoe, 29.VII 1993; 2♂, 1♀, 8 km S Krounovka, 15.VII 1992; 1♂, same locality, 18.VII 1994; 3♂, 1♀, Gornotayozhnoye, 10-15.VII 1982 (E. Belyaev leg.); 1♂, same locality, 7.VII 1985 (S. Sinev leg.); 1♂, same locality, 18.VII 1990; 2♂, Ussuryiskii Nature Reserve, 13.VII 1990; 4♂, 31.VII-2.VIII 1994; 9♂, 2♀ (ex larva), Kedrovaya Pad' Nature Reserve, 10-20.VII 1976; 4♂, same locality, 5.VI 1983; 2♂, 10 km N Zanadvorovka, 5.VIII-2.IX 1984; 5♂, 1♀ (ex larva), same locality, 4-21.VII 1985; 4♂, 8 km E Anisimovka, Litovka Mt., 1150 m, 20.VII 1995; 2♂, Brovnichi, 27,28.VII 1993; 1♂, Ryasanovka, 4.VII 1985; 4♂, 2♀, same locality, 22.VII-2.IX 1986 (E. Belyaev leg.).

DISTRIBUTION. Russian Far East (Khabarovskii krai, Primoskii krai); North East China, Korea, Japan.

BIOLOGY. The moths fly in 2 generations: in end of May – June and then in July – August in various types of broad-leaved forest with oak. The larvae feed on *Quercus mongolica* and *Q. dentata*.

REMARKS. The specimens of *strigulosa* from the continental part of the Russian Far East appear to be presenting by two forms, which are identical with those of *satoi* from Japan as by male genitalia structure so by expanse and wing pattern, indicated by Inoue (1991) for its both generations in Japan. So the latter taxon is treated here as a synonym of *strigulosa*.

***Rhynchopalpus bryophilalis* (Staudinger, 1887)**
Figs. 20, 21

Nola bryophilalis Staudinger, 1887: 181, Pl. X, fig. 5 (Raddefka, Askold Is.).
Roeselia basifascia Inoue, 1958: 235, figs 2, 7 [holotype: ♂, Shibecha, Kushiro, Hokkaido (Japan), 12.YII 1956 (K. Ijima leg.); deposited in the collection of Natural History Museum, London, unstudied], **syn. n.**
Meganola basifascia: Dubatolov, 1991: 186 (Kunashir Is.: Ivanovsky cape).
Meganola bryophilalis basifascia: Inoue, 1991: 71.
Meganola bryophilalis: Tshistjakov et al., 1998: 78; Tshistjakov, 2003: 648, Pl. 371, fig. 1; Pl. 377, figs 3, 4; Tshistjakov, 2006: 223.

MALE GENITALIA (Figs 20, 21). Valva with clear visible constriction in the middle; harpe laminate, with sharp triangle dents on distal margin; aedeagus about 1.5 times shorter then length of valva, gradually tapering to top, with thin aciform cornutus in vesica.

MATERIAL EXAMINED. Primorskii krai: 5♂, Kedrovaya Pad' Nature Reserve, 26.VI, 4-8.VII 1976; 3♂, Ryasanovka, 25-29.VII 1986 (E. Belyaev leg.); 1♂, 3 km SE Andreevka, 1.VIII 1985 (S. Sinev leg.).

DISTRIBUTION. Russian Far East (Khabarovskii krai, Primoskii krai, Southern Kuriles); North East China, Korea, Japan.

BIOLOGY. The moths fly in July – early August in the valley broad-leaved forest. The larvae feed on *Malus* spp. and *Sorbus* spp.

REMARKS. Upon examination of rather large number specimens belonging to this species, I became confident that in Primorskii krai *M. bryophilaris* is represented by two colour forms: the typical one with dark forewings, and the light form, being treated as the subspecies *basifascia* (Inoue, 1991). Thus, *basifascia* should been considered as only a colour form of the *bryophilaris*.

***Evonima mandschuriana* (Oberthür, 1880)**

Erastria mandshuriana Oberthür, 1880: 83, Pl. 2, fig. 9 (Askold Is.)
Nola mandshuriana: Greaser, 1888: 112 (Khabarovsk, Vladivostok, Ussuri).
Mimerastria mandschuriana: Filipjev, 1927: 259 (Tigrovoi).
Evonima mandschuriana: Tshistjakov et al., 1998: 78; Tshistjakov, 2003: 652, Pl. 371, fig. 8; Pl. 377, figs 1, 2; Pl. 377, fig. 6; Tshistjakov, 2006: 223.

MATERIAL EXAMINED. Primorskii krai: 2♂, 32 km NW Chuguevka, 12.VII 1973; 8♂, 5♀, 8 km S Krounovka, 13-15.VII 1992; 1♂, Chernigovka, 30.VI 1999; 1♂, Yaroslavskii, 12.VII 1979; 2♂, Gornotayozhnoye, 13-15.VII 1982 (E. Belyaev, V. Kononenko leg.); 5♂, same locality, 18.VII 1990; 1♂, Kaimanovka, 28.VII 1961 (A. Zvetaev leg., ZMMU); 6♂, 2♀, Ussuryiskii Nature Reserve, 13-18.VII 1990; 5♂, 3♀, Kedrovaya Pad' Nature Reserve, 8.VII-7.VIII 1976; 1♂, same locality, 5.VI 1983; 1♂, Tigrovyi, 23.VII 1975 (V. Kononenko leg.); 7♂, 1♀, Anisimovka, 10-12.VII 1999; 1♂, 8 km E Anisimovka, Litovka Mt., 1150 m, 20.VII 1995; 1♂ (ex

larva), Okenskaya, near Vladivostok, 19.VII 1981; 1♂, same locality, 12.VII 1994; 1♂, Ryasanovka, 4.VII 1985; 2♂, same locality, 25-29.VII 1986 (E. Belyaev leg.).

DISTRIBUTION. Russian Far East (Amurskaya oblast', Khabarovskii krai, Primoskii krai, Sakhalin Is.); North East China, Korea, Japan.

BIOLOGY. The moths fly in July – early August in various types of mixed and broad-leaved forest with oak. The larvae feed on *Quercus mongolica*.

ACKNOWLEDGEMENTS

I am deeply appreciate to Dr. E.A. Belyaev, who provided valuable specimens for this study.

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SHORT COMMUNICATION

P.G. Nemkov. A KEY TO THE DIGGER WASPS OF THE GENUS *MELLINUS* (HYMENOPTERA, CRABRONIDAE, MELLININAE) OF THE RUSSIA. – Far Eastern Entomologist. 2008. N 185: 19-20.

П.Г. Немков. Определительная таблица роющих ос рода *Mellinus* (Hymenoptera, Crabronidae, Mellininae) России // Дальневосточный энтомолог. 2008. N 185. С. 19-20.

Mellinus Fabricius, 1970 is a small digger wasps genus of the monotypical subfamily Mellininae distributed in North and Central America [2, 5] and Eurasia [1, 5]. Thirteen recent and one fossil species of this genus are known, but only two related and very similar species