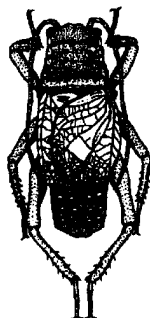


Far Eastern Entomologist



Дальневосточный энтомолог

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

Number 10: 1-18

April 1995

A REVIEW OF THE CLEARWING MOTHS (LEPIDOPTERA, SESIIDAE) OF THE RUSSIAN FAR EAST

O.G. Gorbunov¹⁾ and Yu.A. Tshistjakov²⁾

1) Institute of Evolutionary Morphology and Ecology of Animals of Russian Academy of Sciences, Moscow, 117071, Russia

2) Institute of Biology and Pedology, Vladivostok-22, 690022, Russia

Twenty eight species of the Sesiidae are reviewed. Twelve species (*Paranthrenopsis editha* Btl., *Similipepsis takizawai* Arita et Spatenka, *Oligophlebia oliveri* Gorb. et Eitschb., *Sesia yezoensis* Hamps., *Synanthedon flaviventris* Stg., *S. martjanovi* Shel., *S. multitarsus* Spatenka et Arita, *S. culiciforme* L., *S. tenue* Btl., *S. yanoi* Spatenka et Arita, *Bembecia bestianaeli* Capuse and *Scalarignathia coreacola* Mats.) are recorded for the first time from Russian Far East and *Synanthedon polare* Stg. is newly recorded for Yakutia. The data on the host plants, habitats and general distribution of all observed species are summarized.

KEY WORDS: Sesiidae, faunistics, Russian Far East.

О.Г. Горбунов,¹⁾ Ю.А. Чистяков.²⁾ Обзор семейства стеклянниц (Lepidoptera, Sesiidae) Дальнего Востока России // Дальневосточный энтомолог. 1995. N 10. С. 1-18.

Дан обзор 28 видов семейства Sesiidae. Из них 11 видов (*Paranthre-*

nopsis editha Btl., *Similipepsis takizawai* Arita et Spatenka, *Oligophlebia oliveri* Gorb. et Eitschb., *Sesia yezoensis* Hamps., *Synanthedon flaviventris* Stg., *S. martjanovi* Shel., *S. multitarisus* Spatenka et Arita, *S. culiciforme* L., *S. tenue* Btl., *S. yanoi* Spatenka et Arita, *Bembecia bestianaeli* Capuse и *Scalarignathia coreacola* Mats.) впервые указываются для Дальнего Востока, а *Synanthedon polare* Stg. впервые отмечается для Якутии. Обобщены сведения по биологии и географическому распространению рассматриваемых видов.

1) Институт эволюционной морфологии и экологии животных РАН, Москва, 117071, Россия.

2) Биолого-почвенный институт, Дальневосточное отделение Российской Академии Наук, Владивосток-22, 690022, Россия.

INTRODUCTION

Till now there are not any special work dealing with sesiids fauna of the Russian Far East and few such data are scattered throughout the literature, consisting totally of less than ten small taxonomic and faunistic papers with descriptions of some new taxa or with brief notes on newly recorded species. In accordance with these data 12 species of the clearwing moths could be enumerated with fair certainty from the Far East of Russia. Among them 6 species (*Pennisetia hylaeiformis* Lasp., *P. pectinata* Stg., *Paranthrene tabaniforme* Rott., *Synanthedon scoliaeforme* Brkh. (= *deserta* Stg.), *S. sphaeciforme* Den. et Schiff., *Synanthedon bicingulatum* Stg.) were reported from this region by the beginning of this century (Moltrecht, 1929), one more - *Synanthedon tipuliforme* CLehrck was registered some later (Kurentzov, 1939) and, finally, five others (*Oligophlebia micra* Gorb., *Synanthedon herzi* Spatenka et Gorb., *S. cerskisi* Gorb., *S. ulmicola* Yang et Wang, and *Scalarignathia kaszabi* Capuse) were described or recorded from here quite recently.

In the course of our study ten other species were found to be new for discussed fauna and another one - new for Yakutia. Among them 8 species are registered as new for Russia. Thus, at present 24 species of Sesiidae belonging to three subfamilies, seven tribes and ten genera are known in the region. It should be emphasized here, that species composition of Sesiidae in the Russian Far East still remains far from its complete inventory and we consider the present list as a provisional one. It could be expected to find here some other species being known now from the adjacent territories (such as *Bembecia jacuta* Herz, *Dipchasphecia rhodocnemis* Corb. and *Synanthedon polare* Stg., have been found in Yakutia, or *Synanthedon velox* Fix., which was recorded from Korea and Buryatia), but never registered yet in the region under discussion.

The aim of this paper is to summarize all known up to date literature data and available materials on this family in the scope of Russian Far East fauna. In

addition to 24 cLehrwing moths found to be occurring within Russian Far East, 4 more species mentioned above, are listed and discussed also. The information for each of 28 observed species includes the basic bibliography, data on the types and type localities, host plants and habitats in the local conditions and general distribution as well.

Material examined during this study or cited herein is deposited in the following collections abbreviated in the text as follows:

- BAU - Beijing Agricultural University, Beijing, People's Republic of China;
- BMNH - The Natural History Museum, London, Great Britain;
- DEI - Deutsches Entomologisches Institut, Eberswalde, Germany;
- EMEM - Entomologisches Museum Dr. U. Eitschberger, Marktleuthen, Germany;
- CG - collection of O. Gorbunov, Moscow, Russia;
- HUS - Entomological Institute, Hokkaido University, Sapporo, Japan;
- IBPV - Institute of Biology and Pedology, Far Eastern Branch, Russian Academy of Sciences, Vladivostok, Russia;
- IZPL - Institute of Zoology and Parasitology, Vilnius, Lithuania;
- MNHP - Museum National d'Histoire Naturelle, Paris, France;
- MUT - Zoological Laboratory, Faculty of Agriculture, Meijo University, Nagoya, Japan;
- TMB - Termesztudományi Múzeum, Budapest, Hungary;
- ZISP - Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia;
- ZMHB - Zoologisches Museum der Humboldt-Universität, Berlin, Germany;
- ZMISEAN - Zoological Museum, Institute for Systematics and Ecology of Animals, Siberian Branch, Russian Academy of Sciences, Novosibirsk, Russia;
- ZMKU - Zoological Museum, Kiev State University, Kiev, Ukraine;
- ZMMU - Zoological Museum, Moscow State University, Moscow, Russia.

SUBFAMILY TINTIINAE TRIBE TINTIINI

***Paranthrenopsis editha* (ButLehr, 1878)**

Tinthia editha ButLehr, 1878. Ill. Lepid. Het. Br. Mus., 2: 61, pl. 40, fig. 9. (Lectotype: female, Yokohama, Japan, in BMNH); Bartel, 1912: 413, pl. 52, row f.

Paranthrenopsis harmandi Le Cerf, 1911. Bul. Mus. Nat. Hist. nat. Paris., 17: 302. (Holotype: male, Tokyo, Japan, in MNHP).

Zenodoxus editha: Hampson, 1919: 119; Dalla Torre, Strand, 1925: 181.

Paranthrenopsis editha: Heppner, Duckworth, 1981: 22; Spatenka et al., 1993: 85; Arita, 1994: 69, figs. 4 a, b.

HABITAT: Forest roads, river banks, small glades in various types of mixed and broad-leaved forests, including their secondary associations.

DISTRIBUTION: Russian Far East (Southern Primorye); ? North-East China, Japan.

MATERIAL EXAMINED. Primorskii krai: male, Vinogradovka, 1.VIII 1929 (A. Djakonov, N. Filipjev leg., ZISP); 2 males, Gornotayozhnoye, 3.VIII 1978 (V. Kuznetsov leg., ZISP), 5.VIII 1982 (S. Sinev leg., CG).

TRIBE SIMILIEPSINI

Similiepsis takizawai Arita et Spatenka, 1989

Similiepsis takizawai Arita, Spatenka, 1989. Jap. J. Ent., 57 (1): 61, figs. 1-10. (Holotype: male, Kouma, Honshu, Japan, in MUT); Arita, 1990: 192, figs. 1-6; Spatenka et al., 1993: 86; Arita, 1994: 72, figs. 9 a, b.

HOST PLANT: *Betula platyphylla*, *B. ermanii* (Betulaceae).

HABITAT: Wood glades and road sides in various types of mixed and broad-leaved forests.

DISTRIBUTION: Russian Far East (Southern Primorye) (first record for Russia); Japan.

MATERIAL EXAMINED. Primorskii krai: 3 males, Barabash-Levada, 15, 21.VII - 1.VIII 1989 (P. Ivinskis leg., IZPL); Mt. Oblachnaya, 20-22.VIII 1991 (M. Sato leg., MUT); male, female, 17 km SW Krounovka, 27-29.VII 1990 (S. Moriuti, S. Sugi leg., MUT); male, Ussuriysky Nature Res., 14.VIII 1974 (N. Kurzenko leg., IBPV); 1 male, Gornotayozhnoye, 9.VII 1989 (P. Ivinskis leg., IZPL); 7 males, Kedrovaja Pad', 14 km W Bezverkhovo, 2.VIII 1976 (P. Lehr leg., IBPV), 1-4.VIII 1988 (P. Ivinskis, Svitra leg., IZPL); female, Vladivostok, 3-6.VIII 1990 (S. Sugi leg., MUT). female, Sutchan [Partisansk], Tigrovaya, 5-9.VIII 1926 (N. Kuznetsov leg., ZISP); male, Andreevka, 1.VIII 1990 (Yu. Tshistjakov leg., IBPV).

TRIBE PENNISETIINI

Pennisetia hylaeiformis (Laspeyres, 1801)

Sesia hylaeiformis Laspeyres, 1801. Sesiae Eur., 7: 14. Type locality: Germany, Rogensburg. Type material: missing (Naumann, 1971).

Sphinx apiformis Hubner, 1796 (nom. praeocc., non CLehrck, 1759). Samml. Eur. Schmett. Sphing., 2: 91, n. 17, pl. 8, fig. 48. Type locality: Germany, Swabia. Type material: missing (Naumann, 1971).

Pennisetia anomala Dehne, 1850. Stettin. Ent. Zeit., 11: 28. Type locality: Germany, Dresden. Type material: missing (Naumann, 1971).

Bembecia hylaeiformis: Graeser, 1888: 106 (Nikolaevsk [na Amure]); Staudinger, 1892: 243; Bartel, 1912: 381, pl. 52, row e; Dalla Torre, Strand, 1925: 176; Moltrecht, 1929: 24.

Pennisetia hylaeiformis: Heppner, Duckworth, 1981: 21; Spatenka et al., 1993: 86.

HOST PLANT: *Rubus idaeus*, *Rubus spp.*, including cultivated raspberry (Rosaceae).

HABITAT: The gardens, the old clearings and road sides in various types of forest; penetrates high into the mountains up to dark-coniferous taiga zone.

DISTRIBUTION: North, West, Central and East Europe, Caucasus, South and East Siberia, Russian Far East, Japan.

MATERIAL EXAMINED. Kamchatka: male, Klyuchi, 22.VII 1958 (L. Ivliev leg., IBPV). Primorskii krai: female, Mt. Oblachnaya, 16.VIII.1992 (A. Saito leg., MUT). female, Ussuri m., Chernaya rechka (prope Vladivostok) [Okeanskaya], VI 1932 (A. Moltrecht leg., ZMKU); Sakhalin: 2 males, Central Exp. Sta., Konuma [Juzhno-Sakhalinsk], 12.VII.1930, 31.VII.1933 (IBPV). South Kurils: male, female, Kunashir Is., Kosmodemyansk, fir-abies forest, 31.VIII 1964 (G. Krivolutskaya leg., IBPV).

***Pennisetia pectinata* (Staudinger, 1887)**

Sesia pectinata Staudinger, 1887: 167 (Lectotype: male, Vladivostok, in ZMHB, examined).

Bembecia pectinata: Graeser, 1888: 106 (Vladibostok); Staudinger, 1892: 243 (Askold Is., Sutschan [Partisansk]); Bartel, 1912: 381, pl. 52, row f; Dalla Torre, Strand, 1925: 179; Moltrecht, 1929: 24.

Pennisetia pectinata: Heppner, Duckworth, 1981:21; Spatenka et al., 1993: 86.

HOST PLANT: *Rubus spp.* (Rosaceae).

HABITAT: Glades, meadows, borders of mixed and broad-leaved forests.

DISTRIBUTION: Russian Far East (Southern Primorye, Southern Sakhalin).

MATERIAL EXAMINED. Primorskii krai: male, Baranovskii, Dorr[ies leg.], (Paralectotype Nr. 3, ZMHB); male, Askold [Is.], Dorr[ies leg.], (Paralectotype Nr. 9, ZMHB); 2 males, female, Kedrovaya Pad', 15, 20.VIII 1976 (CG), 4.VIII 1988 (P. Ivinskis leg., IZPL); male, female, 12 km NE Znadvorovka, 12.VIII 1993 (C. Kutzscher leg., DEI); female, 7 km N Znadvorovka, 11.VII 1984 (S. Sinev leg., ZISP); male, Ryasanovka, 14 km SSE Slavyanka, 14.VIII 1987 (Yu. Tshistjakov leg., IBPV). Sakhalin: male, Central Exp. Sta. [Juzhno-Sakhalinsk], VIII 1933 (IBPV); 3 females, Kostromskoye, 13-15.VIII 1978 (P. Lehr, A. Lelej leg., IBPV).

TRIBE PARAGLOSSECIINI

***Oligophlebia micra* (Gorbunov, 1988)**

Paraglosseciamicra Gorbunov, 1988: 47 (Holotype: male, Gornotayozhnoe, 20 km E Ussuriysk, Southern Primorye, Russian Far East, in ZISP).

Oligophlebia micra: Gorbunov, Eitschberger, 1990: 293; Spatenka et al., 1993: 86.

HABITAT: Glades at top of the hills among mixed forest.

DISTRIBUTION: Russian Far East (Southern Primorye).

MATERIAL EXAMINED. Primorskii krai: 4 males, Gornotayozhnoe, 20 km E Ussurijsk, 13.VII 1984 (P. Ivinskis leg., Holotype and Paratypes, ZISP, CG); male, the same locality, Lysaya Gora, 10.VII 1989 (P. Ivinskis leg., IZPL).

***Oligophlebia oliveri* (Gorbunov et Eitschberger, 1990)**

Paraglossecia oliveri Gorbunov, Eitschberger, 1990: 290, figs. 1-5, pl. XV, figs 1-8 (Holotype: male, Kharbin, Mandschuria, [North-East China], in EMEM).

Oligophlebia oliveri: Spatenka et al., 1993: 86.

HABITAT: Small glades and the borders of mixed forests.

DISTRIBUTION: Russian Far East (Southern Primorye) (first record for Russia); North-Eastern China.

MATERIAL EXAMINED. Primorskii krai: female, Odarki River, 28.VII 1911 (Emelyanov leg., IBPV); 2 males, Barabash-Levada, 6, 9.VIII 1989 (S. Seksjaeva leg., IZPL).

**SUBFAMILY PARANTHRENIINAE
TRIBE PARANTHRENINI**

***Paranthrene tabaniforme* (Rottemburg, 1775)**

Sphinx tabaniformis Rottemburg, 1775. Naturforsch, 7: 110. Type locality: Germany, Lansberg on Warthe. Type material: missing (Naumann, 1971).

Sphinx asiliformis [Dennis et SchiffermulLehr], 1775. Ank. syst. Verz. Schmett. Wien, 305. Type locality: Austria, Vienna region. Type material: destroyed (Naumann, 1971).

Sphinx sesia Gmelin, 1789. In Linnaeus's Syst. nat., ed. 13, 1(5): 2387. Type locality: not mentioned. Type material: missing.

Sphinx rhingiaeformis Hubner, 1790. Beitr. Gesch. Schmett., 89. Type locality: Germany, Augsburg (?). Type material: probably lost.

Sesia serratiformis Freyer, 1842. Neue Beitr. Schmett., 4: 130. Type locality: Germany, Hanover. Type material: missing (Naumann, 1971).

Paranthrene tabaniformis: Bartel, 1912: 380, pl. 51, row b; Dalla Tore, Strand, 1925: 164; Kurentzov, 1956: 35; Heppner, Duckworth, 1981: 24; Tshistjakov, 1988: 64, fig. 11; Spatenka et al., 1993: 91; Arita, 1994: 75, figs. 24 a, b.

Paranthrena (!) *tabaniformis*: Moltrecht, 1929: 24.

HOST PLANT: *Populus ssp.*, *Salix ssp.* (Salicaceae).

HABITAT: Various types of forest with host plants, mainly thinned out woods, protective forest-belts and plantings of cultivated poplars.

DISTRIBUTION: North Africa, Europe, Middle East, Caucasus, Middle Asia, Southern Siberia, South of Russian Far East (Amurskaya oblast, Khabarovskii krai, Primorskii krai, Sakhalin), Mongolia, China, Japan, North America.

MATERIAL EXAMINED: Amurskaya oblast: female, Selemdzhinsk, 10.VII 1976 (A. Sviridov leg., ZMMU). Khabarovskii krai: male, 15 km N Obluchye, VII 1993 (V. Sychyov leg., CG); female, 15.VI 1988 (V. Nebaikin leg., IBPV). Primorskii krai: 2 females, Khorol, 9.X.1949 (A. Kurentsov leg., IBPV); male, Ussuriysky Nature Res., 23.VI 1989 (A. Lelej leg., IBPV); male, female, 20 km S Barabash-Levada, 27.VII 1978 (P. Lehr leg., IBPV), 27.VII 1978 (Yu. Tshistjakov leg., IBPV); male, Kamenushka, 10.VIII 1990 (E. Mimonov leg., CG); male, Bogolyubovskoe, 23.VI 1988 (CG). Sakhalin: male, Novoalexandrovsk, II 1988, ex l. (M. Nesterov leg., CG).

SUBFAMILY SESIINAE TRIBE SESIINI

Sesia yezoensis (Hampson, 1919)

Aegeria yezoensis Hampson, 1919. Novit. Zool., 26: 81 (Lectotype: female, Yeso, Japan, in BMNH).

Sphacia asamaensis Hampson, 1919. Novit. Zool., 26: 81 (Holotype: female, Oiwake, Hondo, Japan, in BMNH).

Aegeria yezoensis: Dalla Torre, Strand, 1925: 133; Gaede, 1933: 229.

Sesia yezoensis: Heppner, Duckworth, 1981: 28; Arita et al., 1992: 325, figs. 1-13; Spatenka et al., 1993: 88; Arita, 1994: 72, figs. 13 a, b.

HOST PLANT: *Populus nigra*, *Salix sachalinensis* (Salicaceae).

HABITAT: Various types of mixed and broad-leaved forests, where it occurs in fairly sun-exposed groups of the old poplars.

DISTRIBUTION: Russian Far East (Primorskii krai, Sakhalin Is.) (first record for Russia); Japan.

MATERIAL EXAMINED. Primorskii krai: 9 males, Barabash-Levada, 7.VII 1988 (P. Ivinskis leg., IZPL); 5 males, Medvezhii Kut, 15.VII 1990 (K. Spatenka leg., CG); 2 males, female, Sergeevka, 16-17.VII 1990 (K. Spatenka leg., MUT); male, female, Gornotayozhnoe, 5.VII 1983 (A. Lelej leg., IBPV); 3 males, Kamenushka, 22.VII.1991 (O. Gorbunov leg., CG); 2 males, 2 females, Ussuriysky Nature Res., 1.VIII 1954 (IBPV), 12-21.VII 1990 (S. Sugi leg., MUT); female, Primorskaya, 4.VIII 1976 (P. Lehr leg., IBPV); 30 males, female, Kedrovaya Pad', 27.VIII 1983 Yu. Tshistjakov leg., IBPV); 5.VII-6.VIII

1988 (P. Ivinskis, S. Svitra leg., IZPL); female, Okeanskaya, near Vladivostok, 20.VII 1987 (S. Storozhenko leg., IBPV); male, Anisimovka, 20.VII 1990 (K. Spatenka leg., MUT). Sakhalin Is.: female, Toyohara [Yuzhno-Sakhalinsk], VII.1924 (K. Tamanuki leg., IBPV); male, Novoalexandrovsk, 5.VIII 1975 (M. Nesterov leg., CG).

TRIBE SYNANTHEDONINI

Synanthedon scoliaeforme (Borkhausen, 1789)

Sphinx scoliaeformis Borkhausen, 1789. Naturgesch. eur. Schmett., 2: 173, pl. 418, fig. 3. Type locality: Poland, Stettin. Type material: missing.

Sesia thynniformis Laspeyres, 1801. Sesia Eur.: 21. Type locality: Germany, Darmstadt. Type material: missing.

Sesia emphytiiformis Herrich-Schaffer, 1846. Syst. Bearb. Schmett. Eur., 2: 75. Type locality: Germany. Type material: probably lost.

Sesia deserta Staudinger, 1887: 166, Pl. IX, fig. 6 (Holotype: male, Raddevka, [Amur region, Russian Far East], in ZMHB, examined); Staudinger, 1892: 243.

Synanthedon deserta: Moltrecht, 1929: 25.

Synanthedon danieli Capuse, 1973. Reichenbachia 14(15): 109, pl. 1, figs. A-B. (Holotype: male, 126 km N Ulan-Bator, Mongolia, in TMB).

Synanthedon scoliaeformis: Bartel, 1912: 382; Dalla Torre, Strand, 1925: 43; Heppner, Duckworth, 1981: 33.

Synanthedon scoliaeforme: Spatenka et al., 1993: 95.

Synanthedon spheciformis (non [Denis et SchiffermuLehr], 1775) : Ivliev, 1966: 86 (part).

Synanthedon vespiformis (non Linnaeus, 1761): Sedyh, 1979: 283 (Milkovo, Kamchatka).

HOST PLANT: *Betula* spp. (Betulaceae).

HABITAT: Mixed forests, border of mixed forests.

DISTRIBUTION: Europe, Caucasus, North Kazakhstan, Siberia, Russian Far East (Kamchatka, Amurskaya oblast, Primorskii krai, Sakhalin Is.), Japan (Hokkaido, Honshu).

MATERIAL EXAMINED. Kamchatka: male, Klyuchi, 22.VII 1958 (L.Ivliev leg., IBPV). Amurskaya oblast: female, Selemdzhinsk, 12.VII 1976 (A. Sviridov leg., ZMMU). Primorskii krai: female, Bikin, [18]87, Dorr.[ies] leg., ZMHB); male, Ussuri mer., Sutchan [Partizansk], med. VI (A. Moltrecht leg., ZMKU); female, Khoalaza Mt. [Goletz Mt.], 1200 m, 8.VIII 1949 (A. Kurentzov leg., IBPV); 2 males, Gornotayozhnoe, 10.VI 1989 (M. Omel'ko leg., IZPV); Sakhalin: male, Urozhainoe, 15.VII 1988 (M. Nesterov leg., CG).

***Synanthedon spheciforme* ([Denis et SchiffermulLehr], 1775)**

Sphinx spheciformis [Dennis et SchiffermulLehr], 1775. Ank. syst. Werk. Schmett. Wein.: 306. Type locality: Austria, Vienna. Type material: destroyed.

Synanthedon spheciformis: Bartel, 1912: 382, pl. 51, row c; Dalla Torre, Strand, 1925: 44; Moltrecht, 1929: 25; Kurentzov, 1963: 19; Ivliev, 1966: 86; Sedyh, 1979: 289; Heppner, Duckworth, 1981: 33.

Synanthedon spheciforme: Spatenka et al., 1993: 96.

HOST PLANT: *Alnus spp.*, *Betula spp.* (Betulaceae). Recorded also as a pest of *Salix spp.* from Kamchatka (Kurentzov, 1963; Ivliev, 1966).

HABITAT: Border of mixed forests, flood-land forests.

DISTRIBUTION: Europe, North Kazakhstan, Siberia, Russian Far East (Kamchatka, Amurskaya oblast, Khabarovskii krai, Primorskii krai).

MATERIAL EXAMINED. Kamchatka: female, Shchapino, 25. VII 1960 (A. Kupyanskaya leg., IBPV). Amurskaya oblast: male, Zeja, 5.VII 1978 (S. Kurbatov leg., ZMMU). Khabarovskii krai: male, Pivan (V. Mutin leg., IBPV). Primorskii krai: male, 40 km S Melnichnoe, 31.VII 1986 (A. Lelej leg., IBPV); female, 20 km W Dalnegorsk 28.VI 1971 (M. Kashcheev leg., IBPV); male, Vladivostok, 10.VI 1989 (A. Lelej leg., IBPV).

***Synanthedon bicingulatum* (Staudinger, 1887)**

Sesia bicingulata Staudinger, 1887: 165 (Holotype: male, Vladivostok, in ZMHB, examined); Staudinger, 1892: 242.

Synanthedon bicingulata: Bartel, 1912: 383, fig. 51, row d; Dalla Torre, Strand, 1925: 15; Moltrecht, 1929: 25; Heppner, Duckworth, 1981: 29; Tshistjakov, 1992: 124.

Synanthedon bicingulatum: Spatenka et al., 1993: 93.

Synanthedon myopaeformis (non Borkhausen, 1789): Shtundyuk, Ablakatova, 1969: 71.

Synanthedon hector (non ButLehr, 1878): Tshistjakov, 1988: 62, fig. 9.

HOST PLANT: *Malus spp.*, including cultivated apples (Rosaceae).

HABITAT: Various types of broadleaved and mixed coniferous - broadleaved forests, including their secondary associations. Rather common in the gardens.

DISTRIBUTION. Russian Far East (south of Amurskaya oblast and Khabarovskii krai, Primorskii krai); East China, Korea.

MATERIAL EXAMINED: Amurskaya oblast: male, Zeya, 25.VII 1978 (A. Shatakin leg., ZMMU); male, Kundur, 18.VII 1988 (V. Makarkin leg., IBPV). Khabarovskii krai: 2 females, Komsomolsk-na-Amure, 23.VI, 10.VII 1975 (V. Mutin leg., IBPV); Primorskii krai: 2 males, Barabash-Levada, 21-26.VII 1989 (P. Ivinskis leg., IZPV); female, 25 km SE Chernigovka, 23-24.VII 1990 (S. Sugi leg., MUT). male, 17 km S Krounovka, 27-29.VII 1990 (S. Moriuti leg., MUT); 24 km E Yasnoe, 31.VIII 1993 (Yu. Tshistjakov leg., IBPV); male, Vladivostok, 15.VIII 1980 (A. Lelej leg., IBPV); female, 7 km E Khasan,

27.VIII 1986 (A. Lelej leg., IBPV).

***Synanthedon yanoi* Spatenka et Arita, 1992**

Synanthedon yanoi Spatenka, Arita, 1992: 99, figs. 3, 10. (Holotype: male, Kuro-dake, Kyushu, Japan, in MUT); Spatenka et al., 1993: 97; Arita, 1994: 77, figs 38 a, b.

HABITAT: Flood-lands forests, border of mixed forests.

DISTRIBUTION: Russian Far East (Southern Primorye) (first record for Russia); Japan (Hokkaido, Kyushu).

MATERIAL EXAMINED. Primorskii krai: male, Barabash-Levada, 15-17.VII 1989 (P. Ivinskis leg., IZPV).

***Synanthedon multitarsus* Spatenka et Arita, 1992**

Synanthedon multitarsus Spatenka, Arita, 1992: 96, figs. 2, 9, 12 (Holotype: male, Miwa, Hokkaido, Japan, in MUT); Arita et al., 1993: 239, figs. 1-13; Spatenka et al., 1993: 95; Arita, 1994: 77, fig. 31 a, b.

HOST PLANT: *Salix sachalinensis* (Salicaceae); *Alnus serrulatooides* (Betulaceae).

HABITAT: Border of forests; flood-lands forests.

DISTRIBUTION: Russian Far East (Southern Primorye) (first record for Russia); Japan (Hokkaido, Honshu).

MATERIAL EXAMINED. Primorskii krai: 19 males, Barabash-Levada, 30-31.VII 1989 (P. Ivinskis leg., IZPV, CG).

***Synanthedon herzi* Spatenka et Gorbunov, 1992**

Synanthedon herzi Spatenka, Gorbunov, 1992, Entomofauna, 13 (23): 378, figs. 1-2 (Holotype: male, Novoalexandrovsk, Sakhalin, in ZISP); Spatenka et al., 1993: 94; Arita, 1994: 77, figs. 30 a, b.

Synanthedon formicaeformis (non Esper, 1783): Graeser, 1888: 106 (Vladivostok); Staudinger, 1892: 243; Bartel, 1912: 388 (part.); Moltrecht, 1929: 25; Kurentzov, 1963: 19; Ivliev, 1966: 86; Sedyh, 1979: 289.

HOST PLANT: *Salix spp.* (Salicaceae).

HABITAT: Border of forests; protective forest-belts; flood-lands forests.

DISTRIBUTION: Siberia eastward of Enisej River (Yakutia), Far East of Russia (Magadanskaya oblast, Kamchatka, Amurskaya oblast Primorskii krai, Sakhalin Is.); Mongolia, North China (?), North Japan.

MATERIAL EXAMINED. Yakutia: 2 females, Khantagai, 1.V 1973 (ISEAN). Magadanskaya oblast: female (Paratype), 18 km N Orotukan, 10.VII 1981 (A. Yakimavitchus leg., CG); 2 males, Verkh-Seimchan, 25.VII 1966 (P. Polyakova leg., ISEAN); female, environs of Magadan, 25.VII 1961 (L. Ivliev leg., IBPV). Kamchatka: 2 males, 5 females, Shchapino, 29.VII 1960 (A. Kupyanskaya leg., IBPV); 2 males, Klyuchi, 13.VII 1967 (N. Violovitch leg.,

ISEAN); 3 males, (Paratypes) Kosyrevsk, 10-14.VII 1985 (A. Lvovsky leg., ZISP). Amurskaya oblast: female, Selemdzhinsk, 4.VIII 1976 (E. Veselova leg., ZMMU); male, 8 females, Zeya, 14-19.VII 1978 (A. Shatalkin leg., ZMMU). Primorskii krai: male, Utas-polyana, 16.VII 1961 (Strogonova leg., ISEAN); female, 20 km NW Melnichnoe, 2.VIII 1986 (A. Lelej leg., IBPV); 3 males (one of them - Paratype), female, Vinogradovka, 26-27.VII 1929 (Diakonov, Filipjev leg., ZISP); male, female, Kedrovaya Pad' Nature reserve, 14.VIII 1968 (N. Antropova leg., ISEAN), 28.VII 1976 (P. Lehr leg., IBPV); Sakhalin: male, Centr. Exp. Stant., Horo, 19.VII 1941 (T. Kasai leg., IBPV); 19 males, 5 females (including Holotype and some Paratypes), Novoalexandrovsk, VI 1974 (M. Nesterov leg., CG), ex l., I-III 1987 (M. Nesterov leg., CG, CS), 27.VII 1988 (M. Nesterov leg., CG), ex l., II 1988 (M. Nesterov leg., CG, CS), ex l., II-III 1989 (M. Nesterov leg., ZISP, CG, CS), ex l., I-III 1989 (M. Nesterov leg., CG, CS).

***Synanthedon culiciforme* (Linnaeus, 1758)**

Sphinx culiciformis Linnaeus, 1758. Syst. Nat. ed. 10, 1: 493. Type locality: Sweden, Stockholm. Type material: missing (Naumann, 1971).

Synanthedon culiciformis: Bartel, 1912: 387, pl. 51, row e; Dalla Torre, Strand, 1925: 19; Heppner, Duckworth, 1981: 30.

Synanthedon culiciforme: Spatenka et al., 1993: 94.

HOST PLANT: *Betula* spp., *Alnus* spp. (Betulaceae).

HABITAT: Sun-exposed glades or edges of various types of forest.

DISTRIBUTION: Europe, North Kazakhstan, Siberia, Russian Far East (Amurskaya oblast, Khabarovskii krai, Primorskii krai), North China, North America.

MATERIAL EXAMINED. Amurskaya oblast: female, near Tolbuzino, 19.VII 1929 (D. Prinada leg., IBPV). Khabarovskii krai: female, Komsomolsk-na Amure, 8.VII 1974 (V. Mutin leg., IBPV). Primorskii krai: female, Vinogradovka, 5.VI 1929 (Diakonov, Filipjev leg., ZISP); female, Ussuriysky Nature Reserve, 19.VI 1931 (A. Kurentzov leg., IBPV); female, Okeanskaya, near Vladivostok, 22.VI 1928 (D. Prinada leg., IBPV). male, Sutshan [Partizansk], med. VI. (A. Moltrecht leg., ZMKU).

***Synanthedon velox* (Fixen, 1887)**

Sesia velox Fixen, 1887: 323, pl. 15, fig. 5. (Holotype: male, Pung-Tung, Korea, in ZISP).

Synanthedon velox: Bartel, 1912: 388, pl. 51, row e; Dalla Torre, Strand, 1925: 55; Heppner, Duckworth, 1981: 34; Amsheev, 1982: 37; Spatenka et al., 1993: 96.

HOST PLANT: *Hippophae rhamnoides* (Elaeagnaceae) (Amsheev, 1982).

HABITAT: Plantations of *Hippophae rhamnoides*.

DISTRIBUTION: Transbaikalia (Buryatia), Russian Far East (?); Korea.
MATERIAL EXAMINED. Buryatia: female, Atsula, 8.VII 1966 (Amsheev leg., CG).

***Synanthedon cerskisi* Gorbunov, 1994**

Synanthedon cerskisi Gorbunov. In: Gorbunov et al., 1994): 307, figs. 1-4, pl. XIII b, fig. 1 (Holotype: male, Gusevskii Rudnik, [Russian Far East, Southern Primorye], in ZISP).

DISTRIBUTION: Russian Far East (Primorskii krai).

MATERIAL EXAMINED. Primorskii krai: 13 males (Holotype and Paratypes), Khasanskii Distr., Gusevskii Rudnik, 18-26.VII 1992 (J. Miatleuski, R. Mozuraitis leg., ZISP, CG).

***Synanthedon ulmicola* Yang et Wang, 1989**

Synanthedon ulmicola Yang, Wang, 1989. Zool. Res., 10(2): 136, fig. 4 (Holotype: male, Yinchuan, NE China, in BAU).

Synanthedon ulmicolum: Spatenka et al., 1993: 96; Gorbunov et al., 1994: 308, pl. XIII b, fig. 3.

HOST PLANT: *Ulmus pumila* (Ulmaceae).

HABITAT: Open woods with host plant.

DISTRIBUTION: Russian Far East (Southern Primorye); NE China.

MATERIAL EXAMINED: Primorskii krai: male, Yakovlevka, 26.VII 1926 (Diakonov & Filipiev leg., CG).

***Synanthedon flaviventre* (Staudinger, 1883)**

Sesia flaviventris Staudinger, 1883. Stettin. ent. Ztg., 44: 177 (Lectotype: male, Friedland in Meklenburg, North Germany, in ZMHB).

Synanthedon flaviventris: Bartel, 1912: 384, pl. 51, row d; Dalla Torre, Strand, 1925: 24; Heppner, Duckworth, 1981: 31; Spatenka et al., 1993: 94.

HOST PLANT: *Salix spp.* (Salicaceae).

HABITAT: Growth of the food plants along the river banks, in moorlands, along roads, ditches, etc.

DISTRIBUTION: Europe, North Russia, Southern Siberia, Transbaikalia, Russian Far East (Southern Primorye, first record).

MATERIAL EXAMINED. Primorskii krai: male, Kamenushka, 9.VIII 1983 (A.Antropov leg., ZMMU).

***Synanthedon martjanovi* Sheljuzhko, 1918**

Synanthedon martjanovi Sheljuzhko, 1918. Beitr. syst. Insekt., 1: 104 (Holotype: female, Minussinsk, [South Siberia], in ZMUK).

Synanthedon martjanovi: Dalla Torre, Strand, 1925: 29; Gaede, 1933: 233; Heppner, Duckworth, 1981: 32; Spatenka et al., 1993: 95.

HOST PLANT: *Populus tremula* and, quite probably - *P. davidiana* (Salicaceae).

HABITAT: Border of forest; glades.

DISTRIBUTION: South of European Russia, Southern Siberia, Transbaicalia, Russian Far East (Southern Primorye, first record).

MATERIAL EXAMINED. Chitinskaya oblast: male, Zabaikalsk, 18.VII 1972 (IBPV). Primorskii krai: male, Kamenushka, 22.VII 1981 (Belova leg., IBPV); female, 7 km E Khasan, 27.VIII 1986 (A. Lelej leg., IBPV).

***Synanthedon tenue* (ButLehr, 1878)**

Aegeria tenuis ButLehr, 1878. Ill. Type Spec. Lepid. Heter. Colln Br. Mus., 2: 60 (Lectotype: female, Yokohama, Japan, in BMNH).

Conopia chosensis Matsumura, 1931. 6000 ill. Insect. Jap.: 1013 (Lectotype: female, Seoul, Korea, in HUS).

Synanthedon tenuis: Bartel, 1912: 383, pl. 51, row d; Dalla Torre, Strand, 1925: 48; Heppner, Duckworth, 1981: 34.

Synanthedon tenue: Spatenka et al., 1993: 96; Arita, 1994: 77, figs. 36a,b.

HOST PLANT: *Salix spp.* (Salicaceae). In Japan (Arita, 1994) was found on *Diospiros kaki* (Ebenacea).

HABITAT: Sunny wood-glades in the broad-leaved forests, mainly along the river banks and along the wood borders.

DISTRIBUTION: Russian Far East (Southern Primorye) (first record for Russia); North China, Korea, Japan.

MATERIAL EXAMINED. Primorskii krai: 19 males, Barabash-Levada, 15-26.VII 1989 (P. Ivinskis leg., IZPV).

***Synanthedon tipuliforme* (CLehrck, 1759)**

[Sphinx] tipuliformis CLehrck, 1759. Icon. Insect. rar., pl. 9, fig. 1. Type locality: not mentioned [Europe]. Type material: probably lost.

Sphinx salmachus Linnaeus, 1758. Syst. Nat. ed. 10, 1: 493. Type locality: Europe. Type material: probably lost.

Sphinx ophioniformis Hubner, [1813]. Samml. Eur. Schmett., pl. 27, fig. 127. Type locality: not mentioned [Europe]. Type material: lost.

Synanthedon tipuliformis: Bartel, 1912: 384, pl. 51, row d; Dalla Torre, Strand, 1925: 50; Kurentzov, 1939: 175; Kurentzov, 1941: 38; Shtundyuk, Ablakatova, 1969: 92; Heppner, Duckworth, 1981: 34; Tshistjakov, 1988: 63, fig. 10.

Synanthedon tipuliforme: Spatenka et al., 1993: 96.

HOST PLANT: *Ribes spp.* (Saxifragaceae).

HABITAT: Gardens, border of forest.

DISTRIBUTION: Europe, Caucasus, Middle Asia, Siberia, throughout

Russian Far East (excluding extreme North). Introduced also into North America, Australia, New Zealand and Tasmania.

MATERIAL EXAMINED. Yakutia: male, Jakutsk, 25.VI 1962, Zhelochovtsev leg., ZMMU). Kamchatka: male, Kozyrevsk, 13.VII 1986 (D. Kasparyan leg., ZISP). Khabarovskii krai: female, Khabarovsk, 23.VI 1928 (N. Mevzoe leg., IBPV); 3 females, Komsomolsk-na-Amure, 4-8.VII 1976 (V. Mutin leg., IBPV). Primorskii krai: male, female, Dersu, 14-16.VI 1990 (Yu. Tshistjakov leg., ZMMU); 3 males, 20 km SE Barabash-Levada, 21.VII 1981 (A. Lelej leg., IBPV), 15-18.VII 1989 (P. Ivinskis leg., IZPV); male, Yakovlevka, 23.VIII 1926 (Diakonov, Filipjev leg., ZISP); 3 males, Vozdvizhenka, 25.V 1968 (V. Mikhaltsov leg., IBPV); female, Gornotayozhnoye, 28.VI 1968 (V. Mikhaltsov leg., IBPV); 3 males, Kamenushka, 7-9.VIII 1983 (A. Antropov leg., ZMMU); male, female, De-Friz Penins., 15.VII 1960 (M. Omel'ko leg., IBPV), 1.VI 1961 (M. Omel'ko leg., IBPV); 2 males, 2 females, Amurskii Zaliv, near Vladivostok, ex l., 28.VI-14.VII 1989 (Yu. Tshistjakov leg., IBPV); female, Vladivostok, 18.VIII 1991 (S. Sato leg., MUT); male, Vityaz', 22.VII 1979 (V. Dubatolov leg., ISEAN). Sakhalin: 2 males, Nevelsk, 27.VII 1969 (Loktin leg., IBPV).

***Synanthedon polare* (Staudinger, 1877)**

Sesia polaris Staudinger, 1877. Stettin. ent. Ztg., 38: 175 (Holotype: male, Kuusamo, Finland, in ZMHB).

Sesia aurivillii Lampa, 1883. Ent. Tidskr., 4: 127 Holotype: female, Lulea, Finland, in NRS).

Sesia rufibasalis Bartel, 1906. Int. ent. Z., 19: 190. Type locality: Switzerland, Pontresina. Type material: probably lost.

Synanthedon rufibasalis: Bartel, 1912: 384; Dalla Torre, Strand, 1925: 39.

Synanthedon aurivillii: Bartel, 1912: 384.

Synanthedon polaris: Bartel, 1912: 388; Dalla Torre, Strand, 1925: 35; Heppner, Duckworth, 1981: 32.

Synanthedon polare: Spatenka et al., 1993: 95.

HOST PLANT: *Salix* spp. (Salicaceae).

HABITAT: Meadows or bogs in mountain tundra.

DISTRIBUTION: North Europe, Alps, North Siberia, East Yakutia (first record), Mongolia.

MATERIAL EXAMINED. East Yakutia: male, Suntar-Khayata Mts., 232 km of road Khandyga-Magadan, 28.VI 1988 (Popova leg., ISEAN).

***Bembecia bestianaeli* (Capuse, 1973)**

Dipsosphesia bestianaeli Capuse, 1973. Reichenbachia, 14(15): 121, figs. 6, 8-I (Holotype: male, Chentej aimak, 7 km NO Somon Moron, Mongolia, in TMB).

Bembecia bestianaeli: Heppner, Duckwort, 1981: 39; Spatenka et al., 1993: 97.

HOST PLANT: Unknown for certain, but it may be *Astragalus* or the close genera of Fabaceae.

HABITAT: Glades and meadows in various types of forests, xerothermic waste lands.

DISTRIBUTION: Yakutia, Chitinskaia oblast, Russian Far East (Amurskaya oblast) (first record for Russia); North Mongolia.

MATERIAL EXAMINED. Yakutia: male, Yakutsk, 30.VI 1989 (S. Sazonov leg., CG). Amurskaya oblast: female, Zeya, 17.VII 1978 (S. Murzin leg., ZMMU). Chitinskaia oblast: male, Nizhnii Tsasuchei, 22.VII 1989 (I. Kostjuk leg., CG).

***Bembecia jakuta* (Herz, 1904)**

Sesia jakuta Herz, 1904. Ofvers. Finsk. vetensk.-Soc. Forh., 45(15): 19. Type locality: Yakutia, Ytyk-haja. Type material: probably lost.

Dipsosphesia jakuta: Bartel, 1912: 396; Dalla Torre, Strand, 1925: 65.

Bembecia jakuta: Heppner, Duckworth, 1981: 39; Spatenka et al., 1993: 99.

DISTRIBUTION: Hitherto known from the type locality only.

MATERIAL EXAMINED. No specimens examined.

***Scalarignathia kaszabi* Capuse, 1973**

Scalarignathia kaszabi Capuse, 1973. Reichenbachia, 14(15): 114, fig. 2: A-E, fig. 8: C-D (not E-F [sic!]) (Holotype: male, Archangaj aimak, 8 km W Somon Urdtamir, Mongolia, in TMB).

Scalarignathia kaszabi: Spatenka et al., 1993: 101; Gorbunov, Arita, in press a.

HABITAT: Wide-open semisteppe landscapes with xerophyllous vegetation.

DISTRIBUTION: Mongolia, Transbaikalia, Russian Far East (Amurskaya oblast).

MATERIAL EXAMINED. Chitinskaya oblast: 2 males, Alexandrovskii Zavod, Gazimur River, 16.VII 1977 (Lelej leg., IBPV). Buryatia: male, female, Kyakhta, 29.VII 1977 (Lehr leg., IBPV); Mukhor-Shibir district, 29.VII 1993 (S. Zakharov leg., ISEAN). Amurskaya oblast: 3 males, Korsakovo, 100 km W Svobodnyi, 7.VIII 1959 (Falkovitch leg., CG).

***Scalarignathia coreacola* (Matsumura, 1931)**

Chamanthedon coreacola Matsumura, 1931. 6000 ill. Insect. Jap.: 1012, fig. 1846 (Lectotype: male, Genzan, Korea, in HUS).

Chamanthedon coreacola: Gaede, 1933: 239; Heppner, Duckworth, 1981: 40.

Scalarignathia coreacola: Spatenka et al., 1993: 101. HABITAT: Sunny wood-glades in various types of the forest, mainly thing-out woods with meadows and bushes.

DISTRIBUTION: Russian Far East (Southern Primorye, first record for Russia); Korea.

MATERIAL EXAMINED. Primorskii krai: male, Barabash-Levada, 1.VIII 1989 (P. Ivinskis leg., IZPV); male, Khorol, 30.VIII 1986 (V. Makarkin leg., IBPV); 2 females, Novogeorgievka, 31.VII 1983 (A. Lelej leg., IBPV); female, 10 km S Kievka, 24.VIII 1974 (A. Lelej leg., IBPV).

***Dipchasphecia rhodocnemis* Gorbunov, 1991**

Dipchasphecia rhodocnemis Gorbunov, 1991. Atalanta 22: 160, pl. XXIII, fig. 6. (Holotype: female, Sergelyah, Yakutsk [Siberia, Russia], in GG).

Dipsosphecia rhodocnemis: Spatenka et al., 1993: 104; Gorbunov, 1994: 28.

DISTRIBUTION: Hitherto known from the type locality only.

MATERIAL EXAMINED: female (Holotype), SE Siberia, Yakutsk, Sergelyah, 17.VIII 1925 (N. Moskvina leg., in CG).

ACKNOWLEDGMENTS

We would like to express our cordial thanks to the following colleagues for a loan of specimens for this study: Prof. Dr. Y. Arita (MUT), Dr. V.V. Dubatolov (ISEAN), Dr. A.V. Sviridov and Dr. E.M. Antonova (ZMMU), Dr. A.L. Lvovsky and Dr. I.L. Sukhareva (ZISP), Dr. I. Kostyuk (ZMKU), Dr. W. Mey (ZMHB), Dr. P. Ivinskis (IZPV), Dr. K. Spatenka (Prague, Czechia), Mrs. V. Sychyov, E. Mimonov and S. Sazonov (Moscow, Russia). This investigation has been partly supported by the Russian Academy of Sciences, Biodiversity Project, Programme 0001H No. 117B (O. G.).

REFERENCES

- Amsheev, R.M. 1982. Nasekomye i pozvonochnye zaroslei oblepikhi Buryatii. Novosibirsk: Nauka Publ. 116 pp. (In Russian).
- Arita, Y. 1990. Descriptions of the larva and pupa of *Similipepsis takizawai* Arita & Spatenka (Lepidoptera, Sesiidae). - Nota lepid., 13 (4): 192-197.
- Arita, Y. 1994. The clearwing moths of Japan (Lepidoptera: Sesiidae). - Holarctic lepid., 1: 69-81.
- Arita, Y., Funahashi, K., Fukuzumi, K. 1992. The immature stages of *Sesia yezoensis* (Hampson, 1919) (Lepidoptera, Sesiidae). - Bonn. zool. Beitr., 43 (2): 325-331.

- Arita, Y., Niimi, S., Nakano, H. 1993. Descriptions of the larva and pupa of a clearwing moth *Synanthedon multitarus* Spatenka & Arita (Sesiidae). - *Tyo to Ga*, 43 (4): 239-244.
- Bartel, M. 1912. Aegeriidae. - In Seitz, A.: *Die Gross-Schmetterlinge der Erde*. I. Die Gross-Schmetterlinge des palaearktischen Faunengebietes, 2 (Die palaearktischen Spinner und Schwärmer). Stuttgart: A. Kernen: 375-416, Pls. 50-52.
- Dalla Torre, K.W. von, Strand, E. 1925. Aegeriidae. - In: Strand, E. *Lepidopterorum Catalogus*, 31., Berlin: W. Junk. 202 pp.
- Gaede, M. 1933. Familie: Aegeriidae. - In Seitz, A.: *Die Gross-Schmetterlinge der Erde*, I. Abteilung: Palaearktische Fauna, 2 (Die palaearktischen Spinner und Schwärmer), Supplement. Stuttgart: A. Kernen: 229-239, pl. 16.
- Gorbunov, O.G. 1988. [New species and new genus of the clearing moths (Lepidoptera, Sesiidae) of the subfamily Tinthiinae from Primorskii krai]. - *Nauchn. doklady vysshei shkoly, Biol. nauk.*, N. 7: 45-47 (In Russian).
- Gorbunov, O.G. 1994. Two new species of the genus *Dipchasphecia* Capuse, 1973 (Lepidoptera, Sesiidae) from Central Asia. - *Tinea*, 14 (1): 27-32.
- Gorbunov, O.G., Arita, Y. (In press). Review of the genus *Scalarignathia* Capuse, 1973 (Lepidoptera, Sesiidae) from the Russian Far East. - *Tyo to Ga*, 45 (4).
- Gorbunov, O.G., Buda, V., Mozuraitis, R., Miatleuski, J. 1994. A new species of clearwing moth from the Far East of Russia and its sex attractant. - *Atalanta*, 25 (1/2): 307-311.
- Gorbunov, O.G., Eitschberger, U. 1990. The description of a new species of the genus *Paraglossecia* Gorbunov, 1988, from Northeastern China, with the erection of a new tribe of the subfamily Tinthiinae (Lepidoptera, Sesiidae). - *Atalanta*, 21 (3/4): 289-294.
- Graeser, L. 1888. Beiträge zur Kenntniss der Lepidopteren-Fauna des Amurlandes. - *Berl. ent. Zeicht.*, 32: 33-153.
- Hampson, G.F. 1919. A classification of the Aegeriidae of the Oriental and Ethiopian Regions. - *Nov. Zool.*, 26: 46-119.
- Heppner J.B., Duckworth, W.D. 1981. Classification of the superfamily Sesiioidea (Lepidoptera: Ditrysia). - *Smithsonian Contr. Zool.*, 314: 1-144.
- Ivliev, L.A. 1966. [Main forest pests of Kamchatka and feasible measures of their control]. - In: *Entomofauna lesov Kurilskikh ostrovov, poluostrova Kamchatki i Magadanskoi oblasti*. Moscow-Leningrad: 77-90 (In Russian).
- Kurentzov, A.I. 1939. [Injurious Moths (Macrolepidoptera) of Trees and Shrubs of the Ussuri Territory]. - *Trudy Gornotayozhnoi Stanzii*, 3: 107-208 (In Russian).
- Kurentzov, A.I. 1941. [The problem of development of mountain-taiga districts in Primorskii region and the pest insects]. - *Trudy Gornotayozhnoi Stanzii*, 4: 15-98 (In Russian).

- Kurentzov, A.I. 1956. [Injurious insects of the wood-plantings in the Far East]. - Trudy Dalnevostochnogo Filiala AN, ser. zoolog., 3 (6): 7-54 (In Russian).
- Kurentzov, A.I. 1966. [On zoogeographical peculiarities of the fauna of Kamchatskaya oblast]. - In: Entomofauna lesov Kuril'skikh ostrovov, poluostrova Kamchatki i Magadanskoi oblasti. Moscow-Leningrad: 63-76 (In Russian).
- Moltrecht, A.K. 1929. Ueber die geographische Verbreitung der Macrolepidopteren des Ussuri- und Amur-Gebietes.- Zapiski Vladivostok. Otdel. Russk. Geogr. Ob-va, Vladivostok. 70 P.
- Nauann, C.M. 1971. Untersuchungen zur Systematik und Phylogense der holarktischen Sesiiden (Insecta, Lepidoptera). - Bonn. Zool. Monograph., (Bonn), 1: 1-190.
- Sedyh, K.F. 1979. [Lepidopterous Insects (Lepidoptera, Macrolepidoptera) of the Kamchatka fauna]. - Entomol.Obozr., 58 (2): 288-298 (In Russian).
- Shundyuk A.V., Ablakotova A.A. 1969. Vrediteli i bolesni plodovo-yagodnykh kultur i vinogradnoi losy na Dal'nem Vostoke i bor'ba s nimi. Khabarovsk. 140 pp.
- Spatenka, K., Arita, Y. 1992. New eastern-palaearctic clear-wing moths (Sesiidae, Lepidoptera). - Tyo to Ga, 43(2): 95-106.
- Spatenka, K., Gorbunov, O. 1992. Vier neue palaarktische Glasfluglehr (Sesiidae, Lepidoptera). - Entomofauna, 13(23): 377-396.
- Spatenka, K., Lastuvka, Z., Gorbunov, O., Tosevski, I., Arita, Y. 1993. Die Systematik und Synonymie der palaarktischen Glasfluglehr-Arten (Lepidoptera, Sesiidae). - Nachr. entomol. Ver. Apollo, Frankfurt/Main, N.F., 14 (2): 81-114.
- Staudinger, O. 1887. Neue Arten und Varietaten von Lepidopteren aus dem Amur-Gebiet.- In: Romanoff, N.M. Memoires sur les Lepidopteres, 3: 126-232.
- Staudinger, O. 1892. Die Macrolepidopteren des Amurgebiets. I Theil. Rhopalocera, Sphinges, Bombyces, Noctuae. In: Romanoff, N.M. Memoires sur les Lepidopteres, 6: 83-658, pls 4-14.
- Tschistjakov, Yu.A. 1988. Semeistvo steklyannitsy - Sesiidae. - In: Babochki - vrediteli selskogo i lesnogo khozyaistva Dal'nego Vostoka. Vladivostok: 60-65.
- Tshistjakov, Yu.A. 1992. Sesiidae. - In: Nasekomye Khindanskogo zapovednika. Vladivostok: 124 (In Russian).