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MEGACHILID BEES (HYMENOPTERA: MEGACHILIDAE) OF THE FOREST-STEPPE AND STEPPE ZONES OF THE WEST SIBERIAN PLAIN TO THE EASTWARD OF IRTYSH RIVER

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Summary. An annotated list of 53 species of megachilid bees of the forest-steppe and steppe zones of the West Siberian Plain to the eastwards of Irtysh River is given. All previous data on distribution of Megachilidae in this region are summarized and critically discussed. *Coelioxys echinatus* Förster, 1853, *Megachile pilidens* Alfken, 1924 and *Pseudoanthidium tenellum* (Mocsáry, 1881) are recorded from the Asian part of Russia for the first time. *Megachile melanopyga* Costa, 1863 is new to the fauna of Kazakhstan. New data on distribution of megachilid bees in the different administrative regions of the West Siberian Plain are given also. *Eoanthidium clypeare* (Morawitz, 1874) and *Lithurgus chrysurus* Fonscolombe, 1834 are excluded from the fauna of West Siberia.

Key words: Apoidea, mason bees, leafcutter bees, wool carder bees, fauna, new record, Russia, Kazakhstan.

А. М. Бывальцев, К. А. Белова, Ю. Н. Данилов, В. В. Молодцов, М. Ю. Прощалыкин. Пчелы-мегахилиды (Hymenoptera, Megachilidae) лесостепной и степной зон Западно-Сибирской равнины к востоку от реки Иртыш // Дальневосточный энтомолог. 2018. N 364. С. 10-28.

Резюме. Приведен аннотированный список 53 видов пчел семейства Megachilidae лесостепной и степной зон Западно-Сибирской равнины к востоку от Иртыша. Обобщены и критически проанализированы все имеющиеся литературные сведения о фауне Megachilidae данной территории. *Coelioxys echinatus* Förster, 1853, *Megachile pilidens* Alfken, 1924 и *Pseudoanthidium tenellum* (Mocsáry, 1881) впервые указываются для фауны азиатской части России, *Megachile melanopyga* Costa, 1863 – впервые для фауны Казахстана. Сведения о распространении остальных видов значительно расширены. *Eoanthidium clypeare* (Morawitz, 1874) и *Lithurgus chrysurus* Fonscolombe, 1834 исключены из фауны Западной Сибири.

INTRODUCTION

The Megachilidae are easily recognizable and one of the most diverse families of bees. There are 4105 species and 84 genera in the world (Asher & Pickering, 2018). Megachilidae includes four subfamilies (Fideliinae, Pararhophitinae, Lithurginae, and Megachilinae) and nine tribes (Gonzalez *et al*., 2012). These solitary bees are very important pollinators of natural, urban and agricultural vegetation, especially for Asteraceae, Fabaceae and Lamiaceae (Banaszak & Romasenko, 2001). Seed production in alfalfa owes much of its success to *Megachile rotundata* (Fabricius, 1787) management (Pitts-Singer & Cane, 2011). Several species of the genus *Osmia* are used commercially to pollinate the flowers of fruit trees (Bosch & Kemp, 2002). In most non-cleptoparasitic species, pollen is carried on the ventral surface of the abdomen where the long hairs form a special structure – the scopa. These bees show diverse nesting biologies. They use mud, petals, leaves, resin, soil particles, gravel and plant trichomes and build nests on surfaces of walls, stones and tree branches; they nest inside pre-existing cavities in the ground, in wood, stems, galls and snail shells or can excavate nests in soil and wood (Banaszak & Romasenko, 2001; Michener, 2007). Despite the ecological importance and economic value of megachilid bees, their fauna in Siberia is poorly known (Proshchalykin, 2013a, b).

There are few papers on the bees of West Siberia and many of the available data are doubtful. Fifty-four species are listed for West Siberia in the Annotated Catalogue of the Hymenoptera of Russia (Antropov *et al*., 2017), but only 23 species for the area under consideration here: Novosibirsk Province – 12, Omsk Province – 2; Altai (Altai Territory and the Altai Republic combined) – 19 species. The first records of megachilid bees from the forest-steppe and steppe zones of the West Siberian Plain was published by W.W. Wnukowski, namely 5 species for Altai Territory (Wnukowskij, 1927), 1 species for Omsk Province (Wnukowsky, 1930) and by S.D. Lavroff (1927) – 9 species for Omsk Province. These bees were determined by V.V. Gussakovskij and W.W. Wnukowski. They were not professional melittologists and it is widely known that determinations of many species by Gussakovskij, especially for bees, are erroneous (Pesenko & Astafurova, 2003). The specimens are probably lost. The next paper was published in 1982 and focused on 9 species of bees pollinating alfalfa in Altai Territory (Shumakova *et al*., 1982). The authors noted that determinations were made by the famous Russian melittologists V.V. Popov and D.V. Panfilov and this material is deposited in the Institute of Systematics and Ecology of Animals, Siberian Branch of the Russian Academy of Sciences (ISEA, Novosibirsk). We have found only 12 of the 67 Megachilidae specimens listed by Shumakova *et al*. (1982) in the ISEA collection. There is no information on the labels of these specimens about who made the identification. For many bumblebee specimens from this paper identification was done by the famous Russian colembologist S. Stebaeva, not by Popov or Panfilov (Byvaltsev, 2013). Twenty four (but only 19 is listed) species were recorded in the environs of Novosibirsk (Sarychev & Sarycheva, 1989). According to a note by the authors, the determination of 12 species was verified by famous Russian melittologist Yu.A. Pesenko. There is no such information in the annotation to this publication in the "Annotated Bibliography of Russian and Soviet Publications on the Bees...", although in other cases this had been done (Pesenko & Astafurova, 2003). These specimens are probably lost. The managed population of *Megachile rotundata* (4.5 million cocoons) was imported to Omsk Province from Canada in 1982 (Grebennikov, 1988) and later to Novosibirsk (Grebennikov & Grebennikov, 2000). Thus, the origin of this species in the south of West Siberia is unclear, and they could be indigenous, introductions, or both. Thirteen species were listed for Barnaul by Danilov (2006), but some of these data have been treated as doubtful (Proshchalykin, 2013a).

In total, 40 species names were published for the study area. Trusted data are given in several papers. Three species of *Megachile* are listed by Romankova (1983). Eight species of Anthidiini, two species of *Coelioxys*, one species of *Megachile* and one species of *Osmia* by Proshchalykin (2013a, b). Four species of *Megachile* and one species of *Coelioxys* are listed by Fateryga and Popov (2017). Data in works on *Megachile rotundata* management are also trusted.

In this paper all previous data are summarized and critically discussed. Based on a large collection of new material and the literature, the list of 53 species with data on their distribution by administrative regions of the West Siberian Plain is given.

MATERIAL AND METHODS

The study area extends to the south from 57º N between the Irtysh River, Altay Mountains and Salair Ridge (Fig. 1). This is an area of forest-steppe and steppe landscapes.

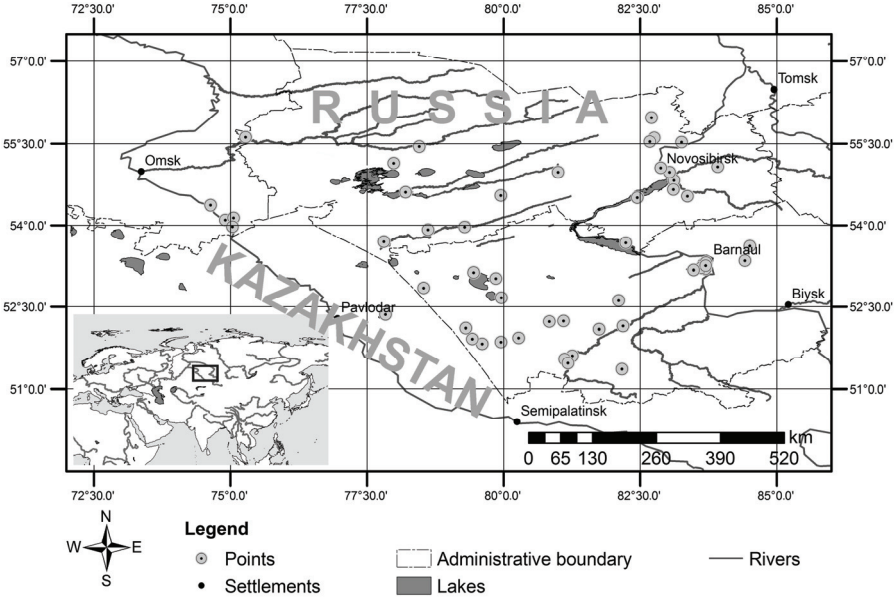

Fig. 1. Map of the study area and location of collecting sites.

In total, studied material includes 739 megachilid specimens from 52 localities collected in 1952–2017. Geographical coordinates and administrative locations of collection sites are as follows. **Russia:** ***Omsk Prov.*****:** Bolshoi Atmas, 54°06.00' N, 74°54.60' E; Krasnyi Oktyabr, 54°08.40' N, 75°03.60' E; Solyanoe, 54°22.20' N, 74°38.40' E; Tatarka, 53°58.64' N, 75°02.33' E; ***Novosibirsk Prov.*****:** Akademgorodok, 54°49.80' N, 83°07.20' E; Berdsk, 54°39.60' N, 83°06.60' E; Boyarka, 55°36.60' N, 82°45.60' E; Chany Lake, 54°36.60' N, 78°12.60' E; Elanka, 55°37.20' N, 75°16.80' E; Evsino, 54°32.10' N, 83°21.99' E; Gornyi, 55°04.80' N, 83°55.20' E; Inder, 54°33.00' N, 79°57.00' E; Karasuk, 53° 42.00' N, 77°48.60' E; Krasnozerskoe, 53°58.20' N, 79°17.40' E; Kuibyshev, 55°27.00' N, 78°27.60' E; Minzelinskoe Lake, 55°31.80' N, 83°15.60' E; Pihtovka, 55° 58.80' N, 82°42.60' E; Razyezd Inya, 54°58.80' N, 83°02.40' E; Sherstobitovo, 54°58.80' N, 81°00.00' E; Suzun, 53°40.80' N, 82°14.40' E;

Tandovo Lake, 55°08.70' N, 77°59.40' E; Tropino, 55°32.40' N, 82°40.80' E; Veselovskoe, 53°55.20' N, 78°37.20' E; Zavyalovo, 54°30.60' N, 82°27.00' E; Zoopark, 55°03.60' N, 82°52.80' E; ***Altai Terr.*:** Belmesevo, 53°12.00' N, 83°41.40' E; Bezrukavka, 51°36.00' N, 81°15.60' E; Borovskoe, 52°37.20' N, 82°06.60' E; Borzovaya Zaimka, 53°16.93' N, 83°39.75' E; Bykovo, 52°09.00' N, 82°11.40' E; Centralnyi, 53°13.20' N, 83°37.20' E; Golubtsovo, 53°37.20' N, 84°30.60' E; Kirova, 53°18.97' N, 83°42.56' E; Klepechiha, 52°05.40' N, 81°45.00' E; Kolyvanskoe Lake, 51°21.60' N, 82°10.20' E; Kuchukskoe Lake, 52°40.20' N, 79°57.60' E; Kulundinskoe Lake I, 53°01.30' N, 79°51.68' E; Kulundinskoe Lake II, 53°08.03' N; 79°27.32' E; Malahovo, 53°21.00' N, 84°25.20' E; Melnikovo, 52°14.40' N, 81°06.00' E; Mihailovskoe, 51°49.20' N, 79°36.60' E; Nikolaevka, 51°54.60' N, 79°25.80' E; Pushkino, 51°32.40' N, 81°07.20' E; Rakity, 51°51.16' N, 79°57.33' E; Severka, 52°06.60' N, 79°18.60' E; Solonovka, 52°13.80' N, 80°50.40' E; Volchikha, 51°55.80' N, 80°16.80' E; Yarovoe, 52°51.00' N, 78°32.40' E; Yuzhnyi, 53°15.60' N, 83°42.00' E; Zelenaya Dubrava, 51°28.16' N, 81°10.90' E; Zimari, 53°10.80' N, 83°28.80' E. **Kazakhstan: *Pavlodar Prov.*:** Maraldy Lake, 52°21.60' N, 77°50.40' E.

Most of this material is deposited in the Novosibirsk State University (Novosibirsk, NSU). In the annotated list below these specimens are listed without any special acronym. Where specimens are deposited in other collections the following acronyms are used: FSCV – Federal Scientific Centre of East Asian Terrestrial Biodiversity, Far Eastern Branch of the Russian Academy Sciences (former Institute of Biology and Soil Science), Vladivostok; ISEA – Institute of Systematic and Ecology of Animals, Siberian Branch of the Russian Academy Sciences, Novosibirsk.

The bees are mostly identified by the first author, with some specimens of Anthidiini by M. Proshchalykin and some of *Coelioxys* by M. Schwarz (Ansfelden, Austria). These specimens are listed with the acronyms MP and MS respectively. The identification keys used were by Osytshnjuk *et al*. (1978), Romankova (1995), Banaszak and Romasenko (2001), Amiet *et al*. (2004), Aguib *et al*. (2010), Proshchalykin (2013a), and Praz (2017). Comparative material from various Palaearctic regions in the reference collection of the Zoological Institute of the Russian Academy of Sciences (St. Petersburg, ZISP) was studied. All previous literature records are cited for each species. In cases where specimens were re-determined, special remarks are provided. The nomenclature is updated following Asher and Pickering (2018) and Müller (2018) for Osmiini. The general system for Megachilidae follows Gonzalez *et al*. (2012). General distributions of species are accepted from Banaszak and Romasenko (2001), Antropov *et al*. (2017), Müller (2018), Asher and Pickering (2018) and not reviewed here. Distribution in West Siberia (excluding of the Altai Republic) is given on Lavroff (1927), Wnukowskij (1927), Wnukowsky (1930), Wnukovsky (1936), Shumakova *et al*. (1982), Kuzmin and Molchanov (1982), Romankova (1983), Sarychev and Sarycheva (1989), Sarycheva and Tarasenko (1989), Konusova and Yanushkin (2000), Yakovleva (2012, 2014), Proschalykin (2013a, b), Levchenko and Tomkovich (2014), Eremeeva and Yakovleva (2016), Fateryga and Popov (2017).

Acronyms are used for the main collectors: AB – A. Byvaltsev, AP – A. Proskuryakova, AS – A. Singatulina, BR – A. Barkalov, BZ – B. Zakharov, DN – D. Novikova, KB – K. Belova, MP – M. Proshchalykin, NB – N. Bazarova, NH – N. Holodina, YD – Yu. Danilov.

The administrative regions are abbreviated as Ku (Kurgan Province), Tm (Tumen Province), Om (Omsk Province), Tk (Tomsk Province), Km (Kemerovo Province), No (Novosibirsk Province), Al (Altai Territory), Kh (Republic of Khakassia), Pa (Pavlodar Province). Data for other West Siberian part of Kazakhstan are still missed. New regional records are indicated with an asterisk (*), doubtful data – with a question mark (?).

LIST OF SPECIES

Tribe Anthidiini Ashmead, 1899

***Anthidiellum strigatum* (Panzer, 1805)**

Anthidium strigatum: Wnukowskij, 1927: 34 (Altai Terr.).

Anthidiellum strigatum: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Proshchalykin, 2013a: 149, 150 (Altai Terr., Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 30.VI 2011, 1 ♀, AB; *Novosibirsk Prov*.: Sherstobitvo, 10.VIII 1992, 1 ♂, BR [ISEA]; Zavyalovo, 19.VII 2011, 1 ♂, AS; Akademgorodok, 23.VI 2017, 2 ♀♀, KB; idem, 3.VII 2017, 2 ♀, 1 ♂, KB; *Altai Terr*.: Yuzhnyi, 5.VII 2006, 1 ♂, YD [ISEA]; idem, 8.VIII 2010, 1 ♂, YD, AB; Kolyvanskoe Lake, 18.VII 2017, 1 ♀, MP [FSCV]; idem, 28.VII 2017, 1 ♀, MP [FSCV]; Volchikha, 26.VII 2017, 1 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Km, No, Al.

***Anthidium florentinum* (Fabricius, 1775)**

Anthidium florentinum: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Sarycheva & Tarasenko, 1989: 655 (Novosibirsk Prov.); Proshchalykin, 2013a: 149, 151 (Altai Terr.; Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Razyezd Inya, 3.VII 2010, 1 ♀, 1 ♂, YD, AB; *Altai Terr*.: Yuzhnyi, 8-9.VIII 2010, 1 ♂, YD, AB.

DISTRIBUTION IN WEST SIBERIA. Km, No, Al.

***Anthidium manicatum* (Linnaeus, 1758)**

Anthidium manicatum: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Proshchalykin, 2013a: 149, 151 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 30-31.VII 2015, 1 ♀, AB; *Novosibirsk Prov*.: Razyezd Inya, 3.VII 2010, 1 ♀, YD, AB; *Altai Terr*.: Kolyvanskoe Lake, 24.VII 2011, 1 ♀, YD, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Km, No, *Al, Kh.

***Anthidium punctatum* Latreille, 1809**

Anthidium punctatum: Proshchalykin, 2013a: 149, 151 (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Krasnyi Oktyabr, 25.VI 2011, 1 ♀, AB; Tatarka, 17.VI 2012, 1 ♀, AP; *Novosibirsk Prov*.: Veselovskoe, 28.VI 2015, 2 ♂, AB; Krasnozerskoe, 1.VII 2015, 1 ♂, AB; *Altai Terr*.: Yuzhnyi, 18.VI 2011, 1 ♂, YD [ISEA].

DISTRIBUTION IN WEST SIBERIA. *Om, Km, *No, Al, Kh.

REMARK. The coloration of the specimens examined differs from that of the nominate taxon and agrees with the description of *Anthidium senile* Eversmann, 1852. The latter is regarded as a junior synonym of *A. punctatum* since Mocsáry (1884), but was also treated as a Siberian subspecies by some authors (Popov, 1948).

***Anthidium septemspinosum* Lepeletier de Saint Fargeau, 1841**

Anthidium septemspinosum: Lavroff, 1927: 96 (Omsk Prov.); Shumakova *et al*., 1982: 165 (Altai Terr.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Danilov, 2006: 56 (Altai Terr.); Proshchalykin, 2013a: 149, 152 (Altai Terr., Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Evsino, 10.VII 2004, 1 ♀, V. Dubatolov [ISEA, MP det.]; Razyezd Inya, 3.VII 2010, 1 ♀, YD, AB; Akademgorodok, 21.VIII 2010, 1 ♀, AB; Zavyalovo, 19.VII 2011, 3 ♂, AS; Karasuk, 1.VIII 2011, 2 ♀, 1 ♂, NB; Veselovskoe, 27.VI 2015,1 ♀, AB; *Altai Terr*.: Pushkino, 31.VII 1952, 1 ♀ [ISEA, MP det.]; idem, 27.VII 1953, 1 ♀ [ISEA, MP det.]; Golubtsovo, 18.VII 1953, 1 ♀ [ISEA]; Zelenaya Dubrava, 20.VII 1953, 1 ♀ [ISEA, MP det.]; Zimari, 30.VII 2005, 1 ♀, YD [ISEA, MP det.]; idem, 2.VII 2006, 1 ♂, YD [ISEA, MP det.]; Yuzhnyi, 4-13.VII 2006, 1 ♀, 1 ♂, YD [ISEA, MP det.]; idem, 3.VIII 2010, 1 ♀, 1 ♂, MP [FSCV, MP det.]; idem, 8.VIII 2010, 1 ♂, YD; idem, 8-9.VIII 2010, 1 ♀, 3 ♂, YD, AB; Severka, 30.VII 2011, 1 ♂, AB, 1 ♂, DN, 2 ♂, YD; Solonovka, 19.VII 2015, 1 ♀, AB; Volchikha, 20.VII 2015, 3 ♀, AB; 26.VII 2017, 1 ♀, MP [FSCV]; Kolyvanskoe Lake, 18.VII 2017, 4 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. Ku, Om, Km, No, Al, Kh.

***Bathanthidium sibiricum* (Eversmann, 1852)**

Bathanthidium sibiricum: Proshchalykin, 2013a: 149, 153 (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Altai Terr*.: Yuzhnyi, 18.VI 2011, 1 ♀, YD [ISEA, MP det.].

DISTRIBUTION IN WEST SIBERIA. Km, Al.

***Icteranthidium laterale* (Latreille, 1809)**

Icteranthidium laterale: Shumakova *et al*., 1982: 165 (Altai Terr.); Danilov, 2006: 56 (Altai Terr.) Proshchalykin, 2013a: 149, 154 (Altai Terr., Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 30.VII 2015, 7 ♀, 4 ♂, AB; idem, 31.VII 2015, 10 ♀, 19 ♂, AB; *Novosibirsk Prov*.: Karasuk, 17.VII 2007, 1 ♂, YD [ISEA, MP det.]; Evsino, 29.VI 2012, 1 ♂, AB; idem, 22.VI 2017, 1 ♀, KB; *Altai Terr*.: Bykovo, 1.VII 1928, 1 ♀, Tankov [ISEA, MP det.]; Zelenaya Dubrava, 9.VII 1952, 1 ♂ [ISEA MP det.]; Yuzhnyi, 29.VII 2001, 1 ♂, YD [ISEA, MP det.], idem, 3.VII 2010, 2 ♀, 4♂, MP [FSCV, MP det.]; Belmesevo, 24.VII 2007, 2 ♂, YD [ISEA, MP det.]; Klepechiha, 23.VII 2011, 1 ♂, AB; Solonovka, 29.VII 2011, 1 ♂, AB; idem, 19-20.VII 2015, 1 ♀, AB; Mihailovskoe, 30.VII 2011, 1 ♂, AB; Kuchukskoe Lake, 20-21.VII 2017, 3 ♀, 4 ♂, MP [FSCV]; Kulundinskoe Lake I, 23-24.VII 2017, 7 ♀, 7 ♂, MP [FSCV]; Volchikha, 26.VII 2017, 1 ♀, 1 ♂, MP [FSCV]; Kolyvanskoe Lake, 27.VII 2017, 1 ♂, MP [FSCV]. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 26-28.VII 2015, 8 ♀, 12 ♂, AB.

DISTRIBUTION IN WEST SIBERIA. *Om, No, Al, *Pa.

***Pseudoanthidium tenellum* (Mocsáry, 1881)**

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Evsino, 6.VII 2017, 1 ♂, KB.

DISTRIBUTION IN WEST SIBERIA. *No. This is a first record from the territory to the eastward of the Urals.

REMARK. *Pseudoanthidium tenellum* is a member of the "*lituratum*" species complex. The reliable characters for delimitation of this species from others were given in Aguib *et al*. (2010), but we have been unable to use them for females, because of their complexity and the lack of material for comparison. Our female specimens could be *P. tenellum*, *P. nanum* (Mocsáry, 1881) or one of three species described from the Urals which have not been revised properly: *P. floripetum* (Eversmann, 1852), *P. reptans* (Eversmann, 1852), and *P. eversmanni* (Radoszkowski, 1886) (see Proshchalykin *et al*., 2017). Thus females are not listed here.

***Stelis punctulatissima* (Kirby, 1802)**
Stelis punctulatissima: Proshchalykin, 2013a: 149, 154 (Novosibirsk Prov., Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Akademgorodok, 5.VIII 2010, 1 ♀, MP [FSCV, MP det.]; *Altai Terr*.: Yuzhnyi, 4.VII 2006, 1 ♂, YD [ISEA, MP det.]; idem, 3.VIII 2010, 1 ♂, MP [FSCV, MP det.].
DISTRIBUTION IN WEST SIBERIA. Km, No, Al.

***Trachusa byssina* (Panzer, 1798)**
Trachusa byssina: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Razyezd Inya, 3.VII 2010, 3 ♂, YD, AB; Akademgorodok, 8.VII 2011, 1 ♀, AS; *Altai Terr*.: Yuzhnyi, 8-9.VIII 2010, 4 ♂, YD, AB; Solonovka, 21.VII 2015, 1 ♀, AB.
DISTRIBUTION IN WEST SIBERIA. Tk, Km, No, *Al, Kh.

Tribe Dioxyini Cockerell, 1902

***Aglaoapis tridentata* (Nylander, 1848)**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 30.VI 2011, 1 ♀, AB.
DISTRIBUTION IN WEST SIBERIA. *Om, Km, Kh.

Tribe Lithurgini Newman, 1834

***Lithurgus cornutus* (Fabricius, 1787)**
Lithurgus fuscipennis: Lavroff, 1927: 95 (Omsk Prov.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).
Lithurgus cornutus: Shumakova *et al*., 1982: 165 (Altai Terr.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Evsino, 29.VI 2012, 1 ♀, 1 ♂, AB; *Altai Terr*.: Golubtsovo, 3.VII 1953, 1 ♂ [ISEA]; Borzovaya Zaimka, 5.VII 2006, 1 ♀, YD [ISEA]; Yuzhnyi, 13.VII 2006, 1 ♀, 1 ♂, YD [ISEA]; idem, 8.VIII 2010, 1 ♀, YD; 8-9.VIII 2010, 3 ♀, YD, AB; Solonovka, 29.VII 2011, 1 ♀, AB, 1 ♂, YD; Severka, 30.VII 2011, 1 ♀, AB, 1 ♀, 2 ♂, YD, 2 ♀, DN.
DISTRIBUTION IN WEST SIBERIA. Ku, Om, Tk, Km, No, Al.

Tribe Megachilini Latreille, 1802

***Coelioxys afer* Lepeletier de Saint Fargeau, 1841**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov.*: Bolshoi Atmas, 30.VII 2015, 1 ♂, AB (MS det.); *Altai Terr.:* Kuchukskoe Lake, 26.VI 2016, 1 ♀, AB; idem, 20-21.VII 2017, 1 ♀, MP [FSCV]; Volchikha, 26.VII 2017, 1 ♀, MP [FSCV]. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 26-27.VII 2015, 1 ♀, AB.
DISTRIBUTION IN WEST SIBERIA. *Om, Km, *Al, *Pa.

***Coelioxys conoideus* (Illiger, 1806)**
Coelioxys conoidea: Lavroff, 1927: 95 (Omsk Prov.); Wnukowskij, 1927: 34 (Altai Terr.) ; Proshchalykin, 2013b: 141 (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 30.VI 2011, 1 ♀, AB; Bolshoi Atmas, 31.VII 2015, 1 ♀, 1 ♂, AB; *Altai Terr*.: Kirova, 4.VII 2006, 2 ♀, YD [ISEA]; Yuzhnyi, 5.VII 2006, 1 ♀, YD [ISEA]; idem, 13.VII 2006, 1 ♂, YD [ISEA]; idem, 3.VIII 2010, 1 ♂, MP [FSCV, MP det.]; Severka, 30.VII 2011, 1 ♀, AB; Volchikha, 20.VII 2015, 1 ♀, AB; Kuchukskoe Lake, 22.VII 2017, 1 ♀, MP [FSCV]; *Novosibirsk Prov*.: Karasuk, 1.VIII 2011, 1 ♀, 1 ♂, DN. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 26-28.VII 2015, 3 ♀, 2♂, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, Om, Km, *No, Al, *Pa.

***Coelioxys echinatus* Förster, 1853**

SPECIMENS EXAMINED. **Russia.** *Altai Terr*.: Yuzhnyi, 5.VII 2006, 1 ♂, YD [ISEA, MS det.].

DISTRIBUTION IN WEST SIBERIA. *Al. This is a first record from the territory to the eastward of the Urals.

***Coelioxys elongatus* Lepeletier de Saint Fargeau, 1841**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 17.VI 2012, 1 ♀, AB; *Novosibirsk Prov*.: Tandovo Lake, 20.VIII 1997, 1 ♀, BR [ISEA].

DISTRIBUTION IN WEST SIBERIA. *Om, Tk, Km, *No.

***Coelioxys emarginatus* Förster, 1853**
Coelioxys emarginatus: Fateryga & Popov, 2017: 87 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Karasuk, 12.VIII 1988, 1 ♂, G. Zolotarenko [ISEA, MS det.]; idem, 30.VI 2015, 1 ♂, KB; idem, 3.VII 2015, 1 ♂, AB; Suzun, 14-15.VII 2015, 1 ♀, AB; *Altai Terr*.: Kirova, 4.VII 2006, 1 ♀, YD [ISEA]; Klepechiha, 23.VII 2011, 1 ♂, AB [MS det.].

DISTRIBUTION IN WEST SIBERIA. Km, No, *Al.

***Coelioxys inermis* (Kirby, 1802)**
Coelioxys inermis: Proshchalykin, 2013b: 141 (Omsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Boyarka, 14.VII 1987, 3 ♀, BZ [ISEA]; Karasuk, 3.VI 1982, 2 ♂, BR [ISEA]; Akademgorodok, 3.VII 2017, 1 ♂, KB; *Altai Terr*.: Yuzhnyi, 13.VII 2006, 1 ♂, YD [ISEA]; Kolyvanskoe Lake, 28.VII 2017, 1 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. Tm, Ku, Om, Tk, Km, *No, *Al.

***Coelioxys mandibularis* Nylander, 1848**
Coelioxys mandibularis: Danilov, 2006: 56 (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Boyarka, 10.VII 1987, 2 ♀, BZ [ISEA]; Inder, 12.VIII 1992, 1 ♀, BR [ISEA]; *Altai Terr*.: Kuchukskoe Lake, 20-21.VII 2017, 1 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. Ku, Km, *No, Al, Kh.

***Coelioxys rufescens* Lepeletier de Saint Fargeau et Audinet-Serville, 1825**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 17.VI 2012, 1 ♀, AB; *Novosibirsk Prov*.: Tropino, 25.VI 1982, 1 ♀, N. Kolomiets [ISEA]; Pihtovka, 6.VII 1987, 1 ♀, BZ

[ISEA]; idem, 16.VII 1987, 1 ♀, BZ [ISEA]; Boyarka, 8.VII 1987, 1 ♀, BZ [ISEA]; idem, 9.VII 1987, 1 ♀, BZ [ISEA]; idem, 14.VII 1987, 1 ♀, BZ [ISEA]; idem, 15.VII 1987, 1 ♀, BZ [ISEA]; *Altai Terr*.: Yuzhnyi, 18.VI 2011, 1 ♂, YD.

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Tk, Km, *No, *Al, Kh.

***Megachile alpicola* Alfken, 1924**

Megachile alpicola: Fateryga & Popov, 2017: 87 (Novosibirsk Prov.).

SPECIMENS EXAMINED. No specimens examined.

DISTRIBUTION IN WEST SIBERIA. Km, No.

***Megachile analis* Nylander, 1852**

Megachile analis: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov.*: Berdsk, 15.VI 2011, 2 ♂, AB; Veselovskoe, 28.VI 2015, 3 ♀, AB; *Altai Terr*.: Malahovo, 20.VII 1984, 1 ♂, N. Gulyashova [ISEA]; Centralnyi, 5.VII 2006, 1 ♂, YD [ISEA]; Yuzhnyi, 9.VIII 2010, 1 ♀, YD, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, Km, No, *Al.

***Megachile apicalis* Spinola, 1808**

Megachile apicalis: Wnukowskij, 1927: 34 (Altai Terr.).

SPECIMENS EXAMINED. No specimens examined.

DISTRIBUTION IN WEST SIBERIA. Ku, ?Al.

REMARK. The species is known from the environs of Kamen-na-Obi (Altai Terr.) based on one specimen listed without its sex (Wnukowskij, 1927). It is not possible to locate this specimen. The species is widely distributed, so there is no reason to exclude it from the fauna of West Siberia, but verification of its presence in Altai Terr. is needed.

***Megachile bombycina* Radoszkowski, 1874**

Megachile bombycina: Lavroff, 1927: 95 (Omsk Prov.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Proshchalykin, 2013b: 142 (Novosibirsk Prov.).

Megachile centuncularis: Shumakova *et al*., 1982: 166, part (Altai Terr.), misidentification.

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 29.VI 2011, 1 ♀, AS; idem, 31.VII 2015, 1 ♀, AB; Tatarka, 13.VI 2012, 1 ♂, KB, 2 ♂, AP; idem, 17.VI 2012, 1 ♂, AB, 1 ♂, AP; *Novosibirsk Prov*.: Akademgorodok, 21.VIII 2010, 1 ♀, AB; idem, 23.VI 2017, 1 ♀, KB; idem, 3.VII 2017, 1 ♂, KB; Zavyalovo, 19.VII 2011, 2 ♀, AS; idem, 22.VII 2011, 1 ♂, AS; Veselovskoe, 27.VI 2015, 1 ♀, AB; Krasnozerskoe, 1.VII 2015, 1 ♀, AB; *Altai Terr*.: Golubtsovo, 18.VII 1953, 1 ♀, [ISEA]; Yuzhnyi, 4.VII 2006, 1 ♀, YD [ISEA]; idem, 8-9.VIII 2010, 1 ♀, YD, AB; Kuchukskoe Lake, 26.VI 2016, 3 ♀, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, Om, Tk, Km, No, *Al, Kh.

REMARK. There are two specimens of *Megachile centuncularis* listed without their sex in Shumakova *et al*. (1982). Only one of them (a female) collected near Golubtsovo (Altai Terr.) was found in the ISEA collection and belongs to *M. bombycina*.

***Megachile centuncularis* (Linnaeus, 1758)**

Megachile centuncularis: Wnukowsky, 1930: 184 (Omsk Prov.); Shumakova *et al*., 1982: 166, part ? (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 24.VI 2011, 4 ♀, AB, 1 ♀, KB, 6 ♀, NH, 1 ♀, AP, 1 ♀, AS; idem, 26.VI 2011, 6 ♀, KB, 1 ♀, AP; idem, 27.VI 2011,

1 ♀, AP, 1 ♀, KB; idem, 28.VI 2011, 2 ♀, AB, 1 ♀, AS, 1 ♀, DN, NB; idem, 14.VI 2012, 1 ♀, AP; idem, 15.VI 2012, 1 ♀, 1 ♂, AB, 1 ♂, AP; idem, 16.VI 2012, 1 ♀, KB, 1 ♂, AP; idem, 31.VII 2015, 2 ♀, AB; Krasnyi Oktyabr, 25.VI 2011, 1 ♀, AP; Tatarka, 13.VI 2012, 1 ♀, AB; idem, 17.VI 2012, 1 ♂, KB; *Novosibirsk Prov*.: Chany Lake, 18.VI 1988, 1 ♂, Yu. Kharitonov [ISEA]; Karasuk, 1.VIII 2011, 1 ♀, DN; Krasnozerskoe, 13-14.VI 2016, 1 ♂, KB; idem, 15-16.VI 2016, 1 ♂, KB; Akademgorodok, 3.VII 2017, 1 ♂, KB; Evsino, 6.VII 2017, 1 ♂, KB; *Altai Terr*.: Kuchukskoe Lake, 26.VI 2016, 1 ♀, AB; idem, 28.VI 2016, 3 ♀, AB; Kolyvanskoe Lake, 18.VII 2017, 4 ♀♀, MP [FSCV]; Volchikha, 26.VII 2017, 1 ♂, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. Ku, Om, *No, Al.

REMARK. It is possible that all of the data for this species in Shumakova *et al*. (1982) are based on a misidentification. See also *Megachile bombycina*.

***Megachile circumcincta* (Kirby, 1802)**

Megachile circumcincta: Shumakova *et al*., 1982: 166 (Altai Terr., part ?); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. No specimens examined.

DISTRIBUTION IN WEST SIBERIA. Ku, Tk, Km, ?No, ?Al.

REMARK. There are two specimens of *Megachile circumcincta* listed without their sex in Shumakova *et al*. (1982). Only one of them (a female) collected near Golubtsovo (Altai Terr.) was found in the ISEA collection and belongs to *M. ligniseca* (Kirby, 1802). It is possible that all of the data for this species in Shumakova *et al*. (1982) are based on a misidentification. The data in Sarychev and Sarycheva (1989) are not confirmed from preserved specimens, so these data are doubtful too. However, *M. circumcincta* is a trans-holarctic species, so there is no reason to exclude it from the fauna of Novosibirsk Prov. and Altai Terr., although verification of its presence is needed.

***Megachile deceptoria* Pérez, 1890**

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Karasuk, 15.VII 2007, 1 ♂, YD [ISEA]; *Altai Terr*.: Kulundinskoe Lake I, 23.VII 2017, 1 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. *No, *Al. This is the first record from West Siberia.

***Megachile ericetorum* Lepeletier de Saint Fargeau, 1841**

Megachile ericetorum: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Akademgorodok, 24.VI 2015, 1 ♂, YD.

DISTRIBUTION IN WEST SIBERIA. Ku, No.

***Megachile farinosa* Smith, 1853**

Megachile derasa: Shumakova *et al*., 1982: 166 (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Altai Terr*.: Bezrukavka, 23.VIII 1952, 1 ♀ [ISEA].

DISTRIBUTION IN WEST SIBERIA. ?Al.

REMARK. There are two specimens of *Megachile derasa* Gerstaecker, 1869 (currently a junior synonym of *M. farinosa*) listed without its sex in Shumakova *et al*. (1982). Only one of them (a female) collected near Bezrukavka (Altai Terr.) was found in the ISEA collection. We examined this specimen and agreed with the previous determination. The documented range of this species is Egypt, Greece, Cyprus, Turkey, Iraq and Iran (Asher & Pickering, 2018).

Thus, the observation of this species so far to the east is a very surprising. Because the data in Shumakova *et al*. (1982) raise a lot of questions, *M. derasa* is not included in a recent list of Russian Aculeata (Antropov *et al*., 2017). However, there are no reasons to exclude this species from the fauna of West Siberia, so the record is treated as needing verification.

***Megachile fulvimana* Eversmann, 1852**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 15.VI 2012, 1 ♂, AP; *Altai Terr*.: Nikolaevka, 11.VI 2008, 1 ♀, YD [ISEA]; Yarovoe, 30.VI 2011, 1 ♀, YD; *Novosibirsk Prov*.: Karasuk, 1.VII 2015, 2 ♂, KB.

DISTRIBUTION IN WEST SIBERIA. *Om, *No, *AK. This is a first record from West Siberia.

***Megachile genalis* Morawitz, 1880**

Megachile genalis: Romankova, 1983: 145 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 16.VI 2012, 1 ♂, KB; Tatarka, 17.VI 2012, 2 ♂, AP; *Novosibirsk Prov*.: Akademgorodok, 8.VII 2011, 1 ♂, AS; idem, 28.VII 2011, 1 ♂, AS; Zoopark, 29.VII 2013, 1 ♂, YD; Kuibyshev, 2.VIII 2015, 2 ♀, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Km, No.

***Megachile lagopoda* (Linnaeus, 1761)**

Megachile lagopoda: Wnukowskij, 1927: 33 (Altai Terr.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Romankova, 1983: 145 (Altai Terr.); Fateryga & Popov 2017: 88 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 30.VII 2015, 5 ♀, AB; idem, 31.VII 2015, 5 ♀, 1 ♂, AB; *Novosibirsk Prov*.: Inder, 13.VIII 1992, 1 ♀, BR [ISEA]; Karasuk, 31.VIII 2007, 1 ♀, YD [ISEA]; idem, 1.VIII 2011, 1 ♀, AB, 1 ♀, DN; idem, 11.VII 2015, 1 ♀, KB; Evsino, 29.VI 2012, 6 ♀, 4 ♂, AB; Krasnozerskoe, 1.VII 2015, 1 ♀, AB; Suzun, 14.VII 2015, 1 ♂, AB; Zavyalovo, 15.VII 2011, 2 ♀, AS; idem, 19.VII 2011, 1 ♀, AS; *Altai Terr*.: Yuzhnyi, 8-9.VIII 2010, 1 ♀, YD [ISEA]; idem, 9.VIII 2011, 1 ♀, YD [ISEA]; Borovskoe, 22.VII 2011, 1 ♂, AB, 2 ♂, YD; Kolyvanskoe Lake, 25.VII 2011, 10 ♀, 1 ♀, YD; idem, 18.VII 2017, 1 ♀, MP [FSCV]; idem, 27.VII 2017, 1 ♀, MP [FSCV]; idem, 28.VII 2017, 1 ♀, 2 ♂, MP [FSCV]; Kuchukskoe Lake, 28.VI 2016, 1 ♀, 1 ♂, AB; Kulundinskoe Lake I, 23.VII 2017, 4 ♀♀, MP [FSCV]; idem, 24.VII 2017, 2 ♀, 5 ♂, MP [FSCV]; Volchikha, 26.VII 2017, 1 ♀, MP [FSCV]. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 27.VII 2015, 4 ♀♀, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Km, No, Al, Kh, *Pa.

***Megachile lapponica* Thomson, 1872**

Megachile lapponica: Romankova, 1983: 145 (Omsk Prov.); Fateryga & Popov, 2017: 88 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 17.VI 2012, 1 ♂, KB; *Novosibirsk Prov*.: Pihtovka, 16.VII 1989, 1 ♂ [ISEA]; Minzelinskoe Lake, 24.VI 1991, 1 ♀, N. Barkalova [ISEA]; Akademgorodok, 24.VI 2015, 1 ♂, YD; idem, 18.VII 2015, 1 ♀, YD; *Altai Terr*.: Kirova, 28.VI 2007, 1 ♂, YD [ISEA].

DISTRIBUTION IN WEST SIBERIA. Tm, Om, Tk, Km, No, *Al.

***Megachile leachella* Curtis, 1828**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 30.VII 2015, 1 ♀, AB; *Novosibirsk Prov*.: Karasuk, 30.VI 2015, 5 ♀, KB; idem, 1.VII 2015, 6 ♀♀, KB; idem, 4.VII 2015, 2 ♀, AB; *Altai Terr*.: Yuzhnyi, 18.VI 2011, 1 ♀, YD; Melnikovo, 19.VII 2015, 1 ♀, AB; Volchikha, 20.VII 2015, 1 ♀, 1 ♂, AB; Yarovoe, 23.VII 2015, 1 ♂, AB; Kuchukskoe Lake, 26.VI 2016, 1 ♀, 4 ♂, AB; idem, 27.VI 2016, 1 ♀, AB; idem, 22.VII 2017, 1 ♀, MP [FSCV]. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 28.VII 2015, 1 ♀, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Km, *No, *Al, *Pa.

***Megachile ligniseca* (Kirby, 1802)**

Megachile ligniseca: Wnukowskij, 1927: 34 (Altai Terr.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

Megachile circumcincta: Shumakova *et al*., 1982: 166, part (Altai Terr.), misidentification.

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 13.VI 2012, 1 ♀, 1 ♂, AP; idem, 17.VI 2012, 1 ♂, AB, 1 ♀, KB; Krasnyi Oktyabr, 14.VI 2012, 1 ♀, AP; *Novosibirsk Prov*.: Boyarka, 15.VI 1987, 1 ♂, BZ [ISEA]; Tandovo Lake, 20.VIII 1997, 1 ♀, BR [ISEA]; Elanka, VI 2009, 1 ♀, Alsinakov [ISEA]; Yuzhnyi, 8.VIII 2010, 1 ♀, YD, AB; idem, 8-9.VIII 2010, 5 ♀, YD, AB; idem, 9.VIII 2010, 3 ♀, 1 ♂, YD, AB; Akademgorodok, 2.VIII 2010, 1 ♀, 2 ♂, AB; idem, 21.VIII 2010, 6 ♀, AB; idem, 24.VII 2011, 3 ♀, KB; idem, 23.VI 2017, 1 ♀, KB; idem, 3.VII 2017, 1 ♀, KB; Zavyalovo, 17.VII 2011, 1 ♀, AS; idem, 19.VII 2011, 2 ♀, AS; idem, 22.VII 2011, 2 ♀, AS; idem, 28.VII 2011, 2 ♀, AS; Evsino, 29.VI 2012, 2 ♂, AB; idem, 3.VIII 2016, 1 ♀, KB; idem, 5.VI 2017, 1 ♀, KB; idem, 22.VI 2017, 2 ♀, KB; idem, 6.VII 2017, 3 ♀, 2 ♂, KB; Zoopark, 29.VII 2013, 3 ♀, 2 ♂, YD [ISEA]; Karasuk, 10-20.VI 2014, 1 ♂, O. Kosterin [ISEA]; Kuibyshev, 2.VIII 2015, 7 ♀, AB; *Altai Terr*.: Golubtsovo, 18.VII 1953, 1 ♀ [ISEA]; Kolyvanskoe Lake, 24.VII 2011, 1 ♀, AB; idem, 18.VII 2017, 1 ♀, MP [FSCV]; Volchikha, 26.VII 2017, 1 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Tk, Km, No, Al.

REMARK. See also *Megachile circumcincta*.

***Megachile maritima* (Kirby, 1802)**

Megachile maritima: Lavroff, 1927: 95 (Omsk Prov.); Shumakova *et al*., 1982: 166 (Altai Terr.); Fateryga & Popov, 2017: 88 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 25.VI 2011, 1 ♀, AP; idem, 30.VI 2011, 1 ♂, AB, 2 ♀, AP; Bolshoi Atmas, 26.VI 2011, 1 ♀, NH; idem, 28.VI 2011, 3 ♀, AB, 2 ♀, NH, 2 ♀, KB, 3 ♀, AP, 1 ♀, AS; idem; 29.VI 2011, 2 ♀, AB, 2 ♀, AS; idem, 30.VI 2011, 1 ♀, AB; idem, 16.VI 2012, 1 ♂, AB, 1 ♀, KB; idem, 17.VI 2012, 1 ♀, 1 ♂, AB, 1 ♀, 2 ♂, AP; idem, 18.VI 2012, 1 ♂, AB; idem, 30.VII 2015, 1 ♀, AB; idem, 31.VII 2015, 4 ♀, AB; idem, 30-31.VII 2015, 1 ♀, AB; *Novosibirsk Prov*.: Pushkino, 31.VIII 1952, 1 ♀ [ISEA]; Veselovskoe, 27.VI 2015, 1 ♀, AB; idem, 28.VI 2015, 2 ♀, AB; Karasuk, 27.VI 2016, 2 ♀, KB; idem, 9.VII 2016, 1 ♀, KB; idem, 11.VII 2016, 1♀, KB; *Altai Terr*.: Zelenaya Dubrava, 12.VII 1952, 1 ♀ [ISEA]; idem, 15.VII 1953, 1 ♂ [ISEA]; Kirova, 4.VII 2006, 1 ♀, 1 ♂, YD [ISEA]; Volchikha, 29.VI 2011, 1 ♀, NB; idem, 26.VII 2017, 1 ♀, MP [FSCV]; Solonovka, 29.VII 2011, 1 ♀, AB; Yarovoe, 30.VII 2011, 1 ♀, NB; Kolyvanskoe Lake, 16.VII 2015, 2 ♀, AB; Kuchukskoe Lake, 26.VI 2016, 1 ♀, 1 ♂, AB; idem, 27.VI 2016, 1 ♀, AB; Kulundinskoe Lake I, 23.VII 2017, 2 ♀, MP [FSCV]; Rakity, 25.VII 2017, 3 ♂, MP [FSCV]. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 27-28.VII 2015, 8 ♀, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, Om, No, Al, *Pa.

***Megachile melanopyga* Costa, 1863**

SPECIMENS EXAMINED. **Russia.** *Altai Terr*.: Severka, 30.VII 2011, 1 ♂, YD. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 27-28.VII 2015, 2 ♂, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, Km, *Al, *Pa.

***Megachile nigriventris* Schenck, 1870**

Megachile nigriventris: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Gornyi, 11.VI 2015, 1 ♂, AB.

DISTRIBUTION IN WEST SIBERIA. Tm, No.

REMARK. Possibly, *Megachile maacki* Radoszkowski, 1874 (knowing from Tk, Km) represents an Eastern Palaearctic geographic form of *M. nigriventris* (Praz, 2017).

***Megachile pilidens* Alfken, 1924**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 30-31.VII 2015, 1 ♀, AB; *Altai Terr*.: Mihailovskoe, 11.VII 2008, 1 ♀, YD; Yarovoe, 30.VII 2011, 1 ♀, YD; Kulundinskoe Lake I, 23.VII 2017, 2 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. *Om, *Al. This is a first record from the territory to the east of the Urals.

***Megachile rotundata* (Fabricius, 1787)**

Megachile rotundata: Lavroff, 1927: 95 (Omsk Prov.); Grebennikov, 1988: 229 (Omsk Prov.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Grebennikov & Grebennikov, 2000: 61–63 (Omsk Prov., Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Solyanoe, 22-24.VI 1989, 1 ♀, 1♂, Vasilenko [ISEA]; Tatarka, 17.VI 2012, 1 ♂, AB; *Novosibirsk Prov*.: Karasuk, 1.VII 2015, 1 ♀, KB; *Altai Terr*.: Belmesevo, 28.VII 2009, 1 ♀, YD [ISEA]; Volchikha, 20.VII 2015, 1 ♂, AB.

DISTRIBUTION IN WEST SIBERIA. Ku, Om, Tk, Km, No, *Al.

***Megachile versicolor* Smith, 1844**

Megachile versicolor: Shumakova *et al*., 1982: 166 (Altai Terr.); Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 28.VI 2011, 1 ♀, AS; idem, 29.VI 2011, 1 ♀, AB; idem, 12.VI 2012, 1 ♀, KB, 1 ♀, AP; idem, 15.VI 2012, 2 ♀, KB, 3 ♀, AP; idem, 16.VI 2012, 3 ♀, KB, 3 ♀, AP; Tatarka, 13.VI 2012, 1 ♀, AB, 2 ♀, 1 ♂, KB; idem, 17.VI 2012, 1 ♀, 1 ♂, AB, 2 ♀, KB, 1 ♀, 1 ♂, AP; Krasnyi Oktyabr, 14.VI 2012, 1 ♀, KB; *Novosibirsk Prov*.: Karasuk, 27.VI 2015, 2 ♀, KB; idem, 3.VII 2015, 1 ♀, KB; idem, 15.VIII 2015, 1 ♀, KB; idem, 18.VIII 2015, 1 ♀, KB; Veselovskoe, 10-11.VI 2016, 1 ♀, KB; Krasnozerskoe, 15-16.VI 2016, 1 ♀, KB; Evsino, 6.VII 2017, 1 ♀, 1 ♂, KB; *Altai Terr*.: Kuchukskoe Lake, 26.VI 2016, 2 ♀, AB; idem, 20-21.VII 2017, 2 ♀, MP [FSCV]; Kolyvanskoe Lake, 28.VII 2017, 1 ♂, MP [FSCV]. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 26-27.VII 2015, 1 ♂, AB.

DISTRIBUTION IN WEST SIBERIA. Tm, Ku, *Om, Km, No, Al, *Pa.

***Megachile willughbiella* (Kirby, 1802)**

Megachile willoughbiella (sic!): Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 28.VI 2011, 1 ♀, AB, 1 ♀, KB; Tatarka, 30.VI 2011, 1 ♀, NH; *Novosibirsk Prov*.: Minzelinskoe, 24.VI 1991, 1 ♂, BR [ISEA]; Akademgorodok, 9.VIII 2009, 1 ♀, AB; idem, 21.VIII 2010, 1 ♂, AB; idem, 8.VII 2011, 1 ♀, AS; Zavyalovo, 19.VII 2011, 1 ♀, AS; idem, 28.VII 2011, 1 ♀, AS; Zoopark, 29.VII 2013, 1 ♂, YD [ISEA]; Gornyi, 11.VI 2015, 1 ♂, AB; *Altai Terr*.: Yuzhnyi, 5.VII 2006, 1 ♀, YD [ISEA]; idem, 18.VI 2011, 1 ♀, YD; Kirova, 28.VI 2007, 1 ♂, YD [ISEA]; Kolyvanskoe Lake, 24.VII 2011, 1 ♀, YD; Severka, 30.VII 2011, 1 ♀, AB.

DISTRIBUTION IN WEST SIBERIA. Tm, *Om, Km, No, Al.

Tribe Osmiini Newman, 1834

***Chelostoma rapunculi* (Lepeletier de Saint-Fargeau, 1841)**
Chelostoma proximum: Danilov, 2006: 56 (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 12.VI 2012, 1 ♀, AP; idem,14-17.VI 2012, 1 ♂, YD; *Novosibirsk Prov*.: Evsino, 4.VI 2016, 1 ♂, KB; idem, 5.VI 2017, 1 ♂, KB; Akademgorodok, 23.VI 2017, 2 ♂♂, KB; *Altai Terr*.: Yuzhnyi, 18.VI 2011, 2 ♀, 2 ♂, YD.

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Tk, Km, *No, Al, Kh.

REMARK. Proshchalykin (2013b) listed this species for Biysk (Altai Terr.), although the specimen originated from the Altai Republic. The [Biysk] on the specimen label refers to Biysk Uezd, an administrative unit in the Tomsk Guberniya of the Russian Empire.

***Heriades truncorum* (Linnaeus, 1758)**
Heriades truncorum: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. No specimens examined.

DISTRIBUTION IN WEST SIBERIA. Ku, ?No.

REMARK. The species is listed for the Novosibirsk environs (Sarychev & Sarycheva, 1989). It is not possible to locate this material. *Heriades truncorum* is a trans-palaearctic species, so there is no reason to exclude it from the fauna of Novosibirsk Prov., but verification of the record is needed.

***Hoplitis acuticornis* (Dufour et Perris, 1840)**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 17.VI 2012, 1 ♂, AP; *Novosibirsk Prov*.: Chany Lake, 12.VI 1988, 1 ♂ [ISEA]; idem, 13.VI 1988, 1 ♀ [ISEA]; Akademgorodok, 14.VI 2017, 1 ♀, KB; *Altai Terr*.: Yuzhnyi, 24.VI 2001, 1 ♂, YD [ISEA].

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Tk, Km, *No, *Al.

***Hoplitis claviventris* (Thomson, 1872)**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 30.VI 2011, 1 ♀, AB; idem, 16.VI 2012, 1 ♀, AB; *Novosibirsk Prov*.: Akademgorodok, 14.VI 2017, 1 ♂, KB; Chany Lake, 13.VI 1988, 2 ♀ [ISEA]; idem, 20.VI 1988, 1 ♀ [ISEA].

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Km, *No.

***Hoplitis fulva* (Eversmann, 1852)**

SPECIMENS EXAMINED. **Kazakhstan.** *Pavlodar Prov*.: Maraldy Lake, 26-27.VII 2015, 1 ♀, AB.

DISTRIBUTION IN WEST SIBERIA. *Pa.

***Hoplitis leucomelana* (Kirby, 1802)**

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Bolshoi Atmas, 13.VI 2012, 1 ♂, KB; idem, 14.VI 2012, 1 ♂, KB; idem, 16.VI 2012, 2 ♀, AP; idem, 14-17.VI 2012, 1 ♀, YD; Tatarka, 17.VI 2012, 1 ♀, AB; *Novosibirsk Prov*.: Karasuk, 12.VII 2015, 1 ♀, KB; Evsino, 4.VI 2016, 1 ♀, KB; Krasnozerskoe, 13-14.VI 2016, 1 ♀, KB; Akademgorodok, 14.VI 2017, 1 ♀, KB; *Altai Terr*.: Kolyvanskoe Lake, 24.VII 2011, 1 ♂, AB.

DISTRIBUTION IN WEST SIBERIA. *Om, Tk, Km, *No, *Al, Kh.

***Hoplitis tridentata* (Dufour et Perris, 1840)**

Hoplitis tridentatum (sic!): Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Krasnyi Oktyabr, 25.VI 2011, 1 ♀, AB; Bolshoi Atmas, 12.VI 2012, 1 ♀, KB, 1 ♂, AP; idem, 14-17.VI 2012, 1 ♀, YD; *Novosibirsk Prov*.: Evsino, 5.VI 2017, 1 ♀, KB; *Altai Terr*.: Yuzhnyi, 8-9.VIII 2010, 1 ♀, YD, AB; idem, 24.VI 2011, 1 ♀, 1 ♂, YD.

DISTRIBUTION IN WEST SIBERIA. Ku, *Om, Tk, Km, No, *Al.

***Hoplitis tuberculata* (Nylander, 1848)**

Osmia tuberculata: Lavroff, 1927: 96 (Omsk Prov.).

SPECIMENS EXAMINED. **Russia.** *Omsk Prov*.: Tatarka, 17.VI 2011, 1 ♀, AP; *Novosibirsk Prov*.: Minzelinskoe Lake, 29.V 1997, 1 ♀, BR [ISEA]; Veselovskoe, 26.VI 2016, 1 ♀, KB.

DISTRIBUTION IN WEST SIBERIA. Tm, Ku, Om, Tk, Km, *No.

***Osmia bicolor* (Schrank, 1781)**

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Minzelinskoe Lake, 17.V 1998, 1 ♀, BR [ISEA].

DISTRIBUTION IN WEST SIBERIA. Ku, Tk, Km, *No.

***Osmia spinulosa* (Kirby, 1802)**

Osmia spinulosa: Proshchalykin, 2013b: 140 (Altai Terr.).

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Akademgorodok, 3.VII 2017, 1 ♀, KB; *Altai Terr*.: Kolyvanskoe Lake, 18.VII 2017, 1 ♀, MP [FSCV].

DISTRIBUTION IN WEST SIBERIA. Tk, Km, *No, Al, Kh.

***Osmia pilicornis* Smith, 1846**

SPECIMENS EXAMINED. **Russia.** *Novosibirsk Prov*.: Zoopark, 8.VI 2013, 2 ♀, BR [ISEA]; Akademgorodok, 12.V 2017, 8 ♀, KB; idem, 1.VI 2017, idem, 2 ♀♀, KB; idem, 14.VI 2017, 1 ♀, KB; Gornyi, 17.VI 2017, 1 ♀, YD.

DISTRIBUTION IN WEST SIBERIA. Ku, Km, *No.

SPECIES EXCLUDED FROM THE FAUNA OF WEST SIBERIA

***Eoanthidium clypeare* (Morawitz, 1874)**

Dianthidium clypeare: Sarychev & Sarycheva, 1989: 161 (Novosibirsk Prov.); Danilov, 2006: 56 (Altai Terr.).

REMARK. The species is listed for Novosibirsk (Sarychev & Sarycheva, 1989) and Barnaul (Danilov, 2006). It is not possible to locate these specimens. These localities are very far to the east from the known borders of the species distribution: Greece, Turkey, Lebanon, Israel, Syria, Jordan, Dagestan Republic (Russia) (Asher & Pickering, 2018). Verification of the record is needed.

***Lithurgus chrysurus* Fonscolombe, 1834**
Lithurgus chrysurus: Lavroff, 1927: 95 (Omsk Prov.).

REMARK. Lavroff (1927) listed this species for the Omsk environs without data on specimens but noted that observations were made mainly in August. It is possible that most of his *Lithurgus* specimens were males with faded pubescence, which can cause them to be misidentified as *L. chrysurus*. Males of these species are easily distinguished by the shape of sternum 6 – widely rounded apically in *L. cornutus* and narrowed apically, nearly triangular in *L. chrysurus*. Although the observation of Lavroff may be based on misidentification, the occurrence of *L. chrysurus* in the West Siberian steppes is possible because it was listed for the Central Asian part of the former USSR (Banaszak & Romasenko, 2001), although verification of its presence in West Siberia is needed.

DISCUSSION

There are 53 species in the current list. Four widely distributed species are known only from literature records: *Heriades truncorum*, *Megachile alpicola*, *M. apicalis* and *M. circumcincta*. Among these species the preserved specimens are known only for *Megachile alpicola*, although the other three species are widely distributed, so that they are not excluded from the regional or/and West Siberian fauna, and are listed here as in need of confirmation. One species *Megachile farinosa* is known based on just single old specimen and this locality is very far to the east from the known borders of the species distribution, so it is listed here as in need of confirmation also. Three species, namely *Coelioxys echinata*, *Megachile pilidens* and *Pseudoanthidium tenellum* are known from the Asian part of Russia for the first time. One species, *Megachile melanopyga* is a new to the fauna of Kazakhstan. The records of *Hoplitis fulva* from near Pavlodar and *Megachile deceptoria* in Altai Territory and Novosibirsk Province partially fill the West Siberian gaps in the ranges of these species. Two species *Eoanthidium clypeare* and *Lithurgus chrysurus* are excluded from the fauna of West Siberia.

The largest regional list in the study area is from Novosibirsk Province – 44 species, 18 of these are newly recorded. Thirty eight species (19 new) are recorded for Altai Territory and 31 species (21 new) – for Omsk Province. Only 9 species are known for the Pavlodar Province, but all of them are newly recorded for this region.

The most significant data on the Megachilidae fauna were published for Kemerovo Province – 49 species (Yakovleva, 2012, 2014; Eremeeva & Yakovleva, 2016), Kurgan Province – 42 (Kuzmin & Molchanov, 1983) and 23 species were recorded for Tomsk Province (Wnukovsky, 1936; Romankova, 1983, Konusova & Yanushkin, 2000). Unfortunately all of these data were published without information on the specimens or else there are problems with the identifications. Thus some of these data have been ignored (Proshchalykin, 2013a; Antropov *et al*., 2017). There are little known about the Megachilidae fauna of Tumen Province – 9 species (Levchenko & Tomkovich, 2014) and Khakassia Republic – 13 species (Proshchalykin, 2013a, b). Fortunately these data are supported by specimens and by the reliability of the authors. Our list will not be complete. If the diversity and distribution of *Megachile*, *Coelioxys*, *Lithurgus* and Anthidiini are relatively well studied, the data for other taxa are still incomplete. Analysis of faunistic data from neighboring regions (listed above)

suggests that the presence of additional species is likely: *Coelioxys alatus* Förster, 1853, *C. aurolimbatus* Förster, 1853, *C. brevis* Eversmann, 1852, *C. quadridentatus* (Linnaeus, 1758), *Hoplitis adunca* (Panzer, 1798), *H. jakovlevi* (Radoszkowski, 1874), *H. laevifrons* (Morawitz, 1872), *H. mitis* (Nylander, 1852), *H. nitidula* (Morawitz, 1877), *H. papaveris* (Latreille, 1799), *H. robusta* (Nylander, 1848), *Osmia aurulenta* (Panzer, 1799), *O. bidentata* Morawitz, 1876, *O. leaiana* (Kirby, 1802), *O. nigriventris* (Zetterstedt, 1838), *O. parietina* Curtis, 1828, *O. uncinata* Gerstäcker, 1869, *Stelis minima* Schenck, 1861, *S. minuta* Lepeletier de Saint Fargeau et Audinet-Serville, 1825, *S. ornatula* (Klug, 1807), and *S. simillima* Morawitz, 1876.

Consequently, further faunistic research with critical revision of previous data from the whole West Siberian region is needed.

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