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NEW DATA ON BEES OF THE GENUS *ANDRENA* FABRICIUS (HYMENOPTERA: ANDRENIDAE) FROM TYVA REPUBLIC, RUSSIA

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Summary. Data on 19 species of the bee genus *Andrena* Fabricius (Andrenidae) collected in Tyva Republic of Russia are presented. Of them, seven species, namely *Andrena bimaculata* (Kirby, 1802), *A. falsifica* Perkins, 1915, *A. gallica* Schmiedeknecht, 1883, *A. ishiharai* Hirashima, 1953, *A. nippon* Tadauchi et Hirashima, 1983, *A. nitida* (Müller, 1776), and *A. simillima* Smith, 1851 are recorded for the fauna of this region for the first time. An updated checklist of the 27 species of *Andrena* so far known from Tyva Republic is provided.

Key words: Apoidea, Apiformes, fauna, list of species, new records, Siberia.

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Резюме. Приведены данные о 19 видах пчел рода *Andrena* Fabricius (Andrenidae), собранных в Республике Тыва, Россия. Из них 7 видов впервые указываются для фауны данного региона: *Andrena bimaculata* (Kirby, 1802), *A. falsifica* Perkins, 1915, *A. gallica* Schmiedeknecht, 1883, *A. ishiharai* Hirashima, 1953, *A. nippon* Tadauchi et Hirashima, 1983, *A. nitida* (Müller, 1776) и *A. simillima* Smith, 1851. Приведен обновленный список пчел-андрен фауны Тывы, включающий 27 видов.

INTRODUCTION

Andrena Fabricius, 1775 is the one of the largest bee genus, it numbering about 1500 species worldwide and about 950 among them are known from the Palaearctic region (Gusenleitner & Schwarz, 2002). Genus is distributed throughout the Holarctic region, south in the Western Hemisphere to Panama, in Africa through the East African highlands and south to the Cape of Good Hope, and in Asia to the mountains of southern India and of Malaysia (Michener, 2007).

Currently 225 species of *Andrena* are known from Russia (Proshchalykin *et al.*, 2017), but the fauna of this genus in Siberia is particularly understudied. The present paper is a part of the ongoing research of *Andrena* (Proshchalykin, 2010; Sidorov *et al.*, 2017; Sidorov & Proshchalykin, 2017a, b) of Siberia, and in particular of Tyva Republic. So far, only three

Andrena species have been recorded from Tyva Republic by Osytshnjuk *et al.* (2005, 2008). After the publication of Proshchalykin *et al.* (2017), the number of known species of this genus from Tyva increased to 20.

Based on a comprehensive study of specimens held in various collections, we report additional records of 19 species, with seven species recorded from Tyva Republic for the first time, resulting in a total number of 27 *Andrena* species known from this region.

MATERIAL AND METHODS

This paper is based on a study of 367 specimens of *Andrena* from collections of Scientific Center of the East Asia Terrestrial Biodiversity, Vladivostok [FCBV], Kemerovo State University [KSU], Zoological Museum of Moscow State University [ZMMU], Institution of Systematics and Ecology of Animals, Novosibirsk [SZMN] and Zoological Institute RAS, Saint Petersburg [ZISP]. All specimens were identified by first author.

For detailed synonymy of *Andrena* species see Gusenleitner and Schwarz (2002), the general taxonomy and distribution of species follows Proshchalykin *et al.* (2017).

We have used the following abbreviations for collectors: AB – A.V. Barkalov, AL – A.S. Lelej, DL – D.V. Logunov; DS – D.A. Sidorov, LZ – L.V. Zimina, MP – M.Yu. Proshchalykin, SB – S.A. Belokobylskij, SL – S.L. Luzyanin, VL – V.M. Loktionov. New distributional records are noted with an asterisk (*).

LIST OF SPECIES

Andrena (Andrena) ishiharai Hirashima, 1953

MATERIAL. **Russia:** Tyva Rep., Chadan, Teve-Khaya, 30.VII–6.VIII 1971, 5♀, 3♂, LZ [ZMMU]; 10 km NE of Balgazyn, 22.VII 2009, 2♂, SB [ZISP]; 12 km SEE of Erzin, 23.VII 2018, 2♀, 1♂, SL, DS [KSU].

DISTRIBUTION. Russia (Eastern Siberia: *Tyva Rep., Buryatia; Far East). – Korean Peninsula, Japan.

Andrena (Cnemidandrena) rufoclypeata Alfken, 1936

MATERIAL. **Russia:** Tyva Rep., 15 km W of Turan, Belye Lakes, 2.VIII 2009, 2♂, SB [ZISP].

PUBLISHED RECORDS. Proshchalykin *et al.*, 2017: 265.

DISTRIBUTION. Russia (Western Siberia: Altai Rep.; Eastern Siberia: Tyva Rep.). – Mongolia, China.

Andrena (Cnemidandrena) simillima Smith, 1851

MATERIAL. **Russia:** Tyva Rep., Khol'-Ooju River, 3.VIII 1960, 1♀, I. Stebaev [SZMN]; 13 km SW of Samagaltay, Dytyg-Khem River, 8-11.VII 2013, 1♀, MP, VL [FCBV]; 12 km SEE of Erzin, 23.VII 2018, 2♀, SL, DS [KSU]; 5 km E of Khandagaity, 29.VII 2018, 1♀, SL, DS [KSU].

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Tomsk Prov., Kemerovo Prov., Altai Terr., Altai Rep.; Eastern Siberia: Khakassia, *Tyva Rep., Buryatia, Yakutia). – Europe, Azerbaijan, Iran, Mongolia.

Andrena (Euandrena) orientaliella Osytshnjuk, 1986

MATERIAL. **Russia:** Tyva Rep., Turan, 5.VI 1975, 1♂, D. Kasparyan [ZISP]; 25 km W of Erzin, Ongalaan Ridge, 28.V–1.VI 1989, 1♀, DL [SZMN].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 177; Proshchalykin *et al.*, 2017: 266.

DISTRIBUTION. Russia (Eastern Siberia: Tyva Rep., Irkutsk Prov., Buryatia, Yakutia, Zabaikalsky Terr.; Far East). – Mongolia.

***Andrena (Micrandrena) falsifica* Perkins, 1915**

MATERIAL. **Russia:** Tyva Rep., Turan, 4-7.VI 1975, 1♀, D. Kasparyan [ZISP]; 25 km W of Erzin, Ongalaan Ridge, 28.V–1.VI 1989, 4♀, DL, V. Zinchenko [SZMN].

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Kemerovo Prov.; Eastern Siberia: *Tyva Rep., Irkutsk Prov.). – Europe, Caucasus.

***Andrena (Melandrena) cineraria* (Linnaeus, 1758)**

MATERIAL. **Russia:** Tyva Rep., Khol'-Ooju River, 25.VII 1960, 1♀, I. Stebaev [SZMN]; Piy-Khem district, Ust'-Uyuk, 21.V 1989, 1♂, DL [SZMN]; 25 km W of Erzin, Ongalaan Ridge, 28.V–1.VI 1989, 1♀, DL [SZMN]; Kaa-Khem district, upper reach of Kopto River, 51°57'N 95°30'E, 1-4.VII 2010, 1♀, A. Erst [SZMN]; 25 km SE of Erzin, Tes-Khem River, 5.VII 2013, 3♀, 22♂, MP, VL [FCBV]; idem, 14-15.VII 2014, 5♀, AL, MP, VL [FCBV]; 12 km SW of Samagaltay, Dytyg-Khem river, 11.VII 2013, 19♀, 14♂, MP, VL [FCBV]; idem, 17-19.VII 2014, 36♀, 3♂, AL, MP, VL [FCBV]; Ubsu-Nur Lake, 7.VII 2013, 1♀, MP, VL [FCBV]; Vicinity of Shuurmak, Shuurmak River, 11-12.VII 2013, 2♀, MP, VL [FCBV]; 16 km N of Boyarovka, 15.VII 2013, 1♀, MP, VL [FCBV]; 25 km NW of Erzin, Dus-Khol Lake, 13.VII 2014, 44♀, 2♂, MP, VL [FCBV]; 31 km SEE of Erzin, Erzin River, 16-18.VII 2014, 24♀, 1♂, AL, MP, VL [FCBV]; 6 km SE of Bai-Khaak, Sosnovka, 20-21.VII 2014, 4♀, AL, MP, VL [FCBV]; 12 km SEE of Erzin, 23.VII 2018, 15♀, SL, DS [KSU]; 5 km E of Khandagaity, 30.VII 2018, 5♀, SL, DS [KSU]; 11 km SW of Teeli, 1.VIII 2018, 1♀, SL, DS [KSU].

PUBLISHED RECORDS. Osytsnjuk *et al.*, 2008: 217; Sidorov & Proshchalykin, 2017: 175; Proshchalykin *et al.*, 2017: 268.

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Omsk Prov., Tomsk Prov., Novosibirsk Prov., Kemerovo Prov., Altai Terr.; Eastern Siberia: Khakassia, Tyva Rep., Irkutsk Prov., Buryatia, Yakutia, Zabaikalsky Terr.; Far East). – Europe, Northern Africa, Caucasus, Turkey, Israel, Iran, Afghanistan, Pakistan, Turkmenistan, Kazakhstan, Mongolia, China, Korea.

***Andrena (Melandrena) comta* Eversmann, 1852**

MATERIAL. **Russia:** Tyva Rep., 10 km upstream Chaa-Khol' River, 9.VII 1962, 1♀ [SZMN]; Chadan, Teve-Khaya, 26.VII–6.VIII 1971, 3♀, 14♂, LZ [ZMMU]; 7 km SE of Buren-Khem, 21.VII 2018, 1♂, SL, DS [KSU]; 11 km SW of Teeli, 1.VIII 2018, 2♀, SL, DS [KSU].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 175; Proshchalykin *et al.*, 2017: 268.

DISTRIBUTION. Russia (European part, Ural, Western Siberia: Novosibirsk Prov., Kemerovo Prov., Altai Terr.; Eastern Siberia: Khakassia, Tyva Rep., Irkutsk Prov., Buryatia, Zabaikalsky Terr.; Far East). – Europe, Kazakhstan, Mongolia, China, Japan.

***Andrena (Melandrena) gallica* Schmiedeknecht, 1883**

MATERIAL. Russia: Tyva Rep., 10 km upstream Chaa-Khol' River, 9.VII 1962, 1♀ [SZMN]; 11 km SW of Teeli, 1.VIII 2018, 12♀, SL, DS [KSU].

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Omsk Prov., Kemerovo Prov., Altai Terr.; Eastern Siberia: Khakassia, *Tyva Rep., Irkutsk Prov., Buryatia). – Europe, Caucasus, Turkey, Kazakhstan.

Andrena (Melandrena) nitida (Müller, 1776)

MATERIAL. **Russia:** Tyva Rep., 12 km E of Kaa-Khem, foot of Apedek Mt., 16-17.V 2010, 1♀, Yu. Danilov, A. Erst [SZMN].

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Tomsk Prov., Kemerovo Prov.; Eastern Siberia: *Tyva Rep.). – Europe, Northern Africa, Caucasus, Turkey, Iran, Central Asia, Kazakhstan.

Andrena (Melandrena) thoracica (Fabricius, 1775)

MATERIAL. **Russia:** Tyva Rep., 5-7 km W of Kyzyl, 27.V 1990, 1♀, DL [SZMN].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 177; Proshchalykin *et al.*, 2017: 269.

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Omsk Prov., Tomsk Prov., Novosibirsk Prov., Kemerovo Prov., Altai Terr.; Eastern Siberia: Khakassia, Tyva Rep., Irkutsk Prov., Buryatia, Zabaikalsky Terr.; Far East). – Europe, Northern Africa, Caucasus, Turkey, Israel, Jordan, Lebanon, Iran, Afghanistan, Turkmenistan, Tajikistan, Uzbekistan, Mongolia, China, Korean Peninsula.

Andrena (Notandrena) nitidiuscula Schenck, 1853

MATERIAL. **Russia:** Tyva Rep., Chadan, Teve-Khaya, 6.VIII 1971, 1♂, LZ [ZMMU].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 176; Proshchalykin *et al.*, 2017: 271.

DISTRIBUTION. Russia (European part, Western Siberia: Tomsk Prov., Kemerovo Prov.; Eastern Siberia: Tyva Rep., Irkutsk Prov., Buryatia, Zabaikalsky Terr.; Far East). – Europe, Northern Africa, Caucasus, Turkey, Syria, Israel, Iran, Mongolia, China, Japan.

Andrena (Oreomelissa) coitana (Kirby, 1802)

MATERIAL. **Russia:** Tyva Rep., Todzhinskiy district, upper reach of Izyg-Sug River, Tchoigan, 20.VII 1988, 1♂, V. Zinchenko [SZMN].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 175; Proshchalykin *et al.*, 2017: 271.

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Tomsk Prov., Kemerovo Prov., Altai Terr.; Eastern Siberia: Khakassia, Tyva Rep., Irkutsk Prov., Buryatia, Yakutia, Zabaikalsky Terr.; Far East). – Europe, Caucasus, Turkey, Kyrgyzstan, Kazakhstan, China, Korean Peninsula, Japan.

Andrena (Plastandrena) bimaculata (Kirby, 1802)

MATERIAL. **Russia:** Tyva Rep., 12 km E of Kaa-Khem, foot of Apedek Mt., 16-17.V 2010, 1♀, Yu. Danilov, A. Erst [SZMN].

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Omsk Prov., Tomsk Prov., Kemerovo Prov.; Eastern Siberia: *Tyva Rep., Krasnoyarsk Terr., Irkutsk Prov., Buryatia). – Europe, Northern Africa, Georgia, Turkey, Syria, Israel, Iraq, Iran, Afghanistan, Central Asia, Kazakhstan, Mongolia.

Andrena (Plastandrena) dzynnanica Popov, 1949

MATERIAL. **Russia:** Tyva Rep., 12 km SEE of Erzin, 23.VII 2018, 16♀, SL, DS [KSU].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 175; Proshchalykin *et al.*, 2017: 272.

DISTRIBUTION. Russia (Eastern Siberia: Tyva Rep., Irkutsk Prov., Buryatia, Zabaikalsky Terr.; Far East). – Mongolia, China.

Andrena (Plastandrena) pilipes Fabricius, 1781

MATERIAL. **Russia:** Tyva Rep., Chadan, Teve-Khaya, 6.VIII 1971, 1♀, LZ [ZMMU]; 9 km SW of Shambalyg, 22.VII 2018, 1♀, SL, DS [KSU]; 12 km SEE of Erzin, 23.VII 2018, 1♀, SL, DS [KSU]; 5 km E of Khandagaity, 29-30.VII 2018, 4♀, 2♂, SL, DS [KSU]; 11 km SW of Teeli, 1.VIII 2018, 2♀, SL, DS [KSU].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 177; Proshchalykin *et al.*, 2017: 272.

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Novosibirsk Prov., Kemerovo Prov., Altai Terr., Altai Rep.; Eastern Siberia: Khakassia, Tyva Rep., Irkutsk Prov., Buryatia, Zabaikalsky Terr.; Far East). – Europe, Northern Africa, Caucasus, Turkey, Syria, Israel, Iran, Afghanistan, Pakistan, Central Asia, Kazakhstan, Mongolia, China, India.

Andrena (Plastandrena) tibialis (Kirby, 1802)

MATERIAL. **Russia:** Tyva Rep., 11 km W of Ust'-Elegest, 27.VII 2018, 1♀, SL, DS [KSU].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 178; Proshchalykin *et al.*, 2017: 272.

DISTRIBUTION. Russia (European part, Urals, Western Siberia: Omsk Prov., Tomsk Prov., Novosibirsk Prov., Kemerovo Prov., Altai Terr.; Eastern Siberia: Khakassia, Tyva Rep., Krasnoyarsk Terr., Irkutsk Prov., Buryatia; Far East). – Europe, Caucasus, Turkey, Iran, Kyrgyzstan, Kazakhstan, China.

Andrena (Simandrena) nippon Tadauchi et Hirashima, 1983

MATERIAL. **Russia:** Tyva Rep., 11 km SW of Teeli, 1.VIII 2018, 1♀, SL, DS [KSU].

DISTRIBUTION. Russia (Western Siberia: Tomsk Prov., Kemerovo Prov.; Eastern Siberia: Khakassia, *Tyva Rep., Buryatia, Zabaikalsky Terr.; Far East). – China, Korean Peninsula, Japan.

Andrena (Tarsandrena) angarensis Cockerell, 1929

MATERIAL. **Russia:** Tyva Rep., Khol'-Oju River, 25.VII 1960, 1♀, I. Stebaev [SZMN]; 13-15 km N of Khandagaity, Chan-Dag River, 25.VII 1993, 1♂, AB [SZMN]; Middle reach of Sug-Aksy River, 51°40'N 90°45'E, 26.VI 2004, 2♂, AB [SZMN]; 9 km SW of Shambalyg, 22.VII 2018, 1♀, SL, DS [KSU]; 4,5 km SW of Khovu-Aksy, 28.VII 2018, 1♀, SL, DS [KSU]; 11 km SW of Teeli, 1.VIII 2018, 20♀, 1♂, SL, DS [KSU].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 174; Proshchalykin *et al.*, 2017: 274.

DISTRIBUTION. Russia (Western Siberia: Tomsk Prov., Kemerovo Prov., Altai Rep.; Eastern Siberia: Khakassia, Tyva Rep., Irkutsk Prov., Buryatia, Zabaikalsky Terr.; Far East). – Kyrgyzstan, Mongolia.

Andrena (Tarsandrena) ehnerbergi Morawitz, 1888

MATERIAL. **Russia:** Tyva Rep., Middle reach of Sug-Aksy River, 51°40'N 90°45'E, 26.VI 2004, 1♂, AB [SZMN]; 9 km SW of Shambalyg, 22.VII 2018, 7♀, SL, DS [KSU];

4,5 km SW of Khovu-Aksy, 28.VII 2018, 6♀, SL, DS [KSU]; 5 km E of Khandagaity, 29-30.VII 2018, 20♀, SL, DS [KSU]; 11 km SW of Teeli, 1.VIII 2018, 5♀, SL, DS [KSU].

PUBLISHED RECORDS. Sidorov & Proshchalykin, 2017: 175; Proshchalykin *et al.*, 2017: 274.

DISTRIBUTION. Russia (Ural, Western Siberia: Omsk Prov., Kemerovo Prov., Altai Terr., Altai Rep.; Eastern Siberia: Khakassia, Tyva Rep., Krasnoyarsk Terr., Irkutsk Prov., Buryatia, Zabaikalsky Terr.; Far East). – Mongolia, China.

Table 1. List of *Andrena* bees of Tyva Republic

| N | Species | Reference data | | | |
|----|----------------------------------------------|----------------|----|-----|----|
| | | I | II | III | IV |
| 1 | <i>A. angarensis</i> Cockerell, 1929 | | • | • | • |
| 2 | <i>A. bicolor</i> Fabricius, 1775 | | • | • | |
| 3 | <i>A. bimaculata</i> (Kirby, 1802) | | | | • |
| 4 | <i>A. cineraria</i> (Linnaeus, 1758) | • | | • | • |
| 5 | <i>A. coitana</i> (Kirby, 1802) | | • | • | • |
| 6 | <i>A. comta</i> Eversmann, 1852 | | • | • | • |
| 7 | <i>A. dzynmanica</i> Popov, 1949 | | • | • | • |
| 8 | <i>A. ehnerbergi</i> Morawitz, 1888 | | • | • | • |
| 9 | <i>A. falsifica</i> Perkins, 1915 | | | | • |
| 10 | <i>A. fucata</i> Smith, 1847 | | • | • | |
| 11 | <i>A. gallica</i> Schmiedeknecht, 1883 | | | | • |
| 12 | <i>A. haemorrhoea</i> (Fabricius, 1781) | | • | • | |
| 13 | <i>A. ishiharai</i> Hirashima, 1953 | | | | • |
| 14 | <i>A. labialis</i> (Kirby, 1802) | | • | • | |
| 15 | <i>A. nippon</i> Tadauchi et Hirashima, 1983 | | | | • |
| 16 | <i>A. nitida</i> (Müller, 1776) | | | | • |
| 17 | <i>A. nitidiuscula</i> Schenck, 1853 | | • | • | • |
| 18 | <i>A. orientaliella</i> Osytshnjuk, 1986 | | • | • | • |
| 19 | <i>A. pilipes</i> Fabricius, 1781 | | • | • | • |
| 20 | <i>A. ranunculorum</i> Morawitz, 1877 | | • | • | |
| 21 | <i>A. rosae</i> Panzer, 1801 | | • | • | |
| 22 | <i>A. rufoclypeata</i> Alfken, 1936 | • | | • | • |
| 23 | <i>A. senex</i> Eversmann, 1852 | • | | • | |
| 24 | <i>A. simillima</i> Smith, 1851 | | | | • |
| 25 | <i>A. tarsata</i> Nylander, 1848 | | • | • | |
| 26 | <i>A. thoracica</i> (Fabricius, 1775) | | • | • | • |
| 27 | <i>A. tibialis</i> (Kirby, 1802) | | • | • | • |
| | Total: | 3 | 17 | 20 | 19 |

References data source: I – Osytshnjuk *et al.*, 2005, 2008; II – Sidorov & Proshchalykin, 2017b; III – Proshchalykin *et al.*, 2017; IV – current data.

DISCUSSION

In total, 27 species of *Andrena* are recorded from Tyva Republic (Table 1). This is distinctly less in comparison with the adjacent faunas of Buryatia (48 species), Irkutsk Province (43), Altai (41), and Khakassia (32) but more than understudied faunas of Krasnoyarsk Territory (16), Omsk (14), and Tyumen Provinces (3) (Proshchalykin *et al.*, 2017). The number of

Tuvinian *Andrena* species is supposed to be at least twice higher than known so far. Probably several species that are known from neighboring Mongolia, China or other Siberian regions of Russia also occur in Tyva Republic, such as *Andrena argentata* Smith, 1844, *A. clarkella* (Kirby, 1802), *A. combinata* (Christ, 1791), *A. fulvida* Schenck, 1853, *A. lapponica* Zetterstedt, 1838, *A. maukensis* Matsumura, 1911, *A. praecox* (Scopoli, 1763), *A. sibirica* Morawitz, 1888, *A. subopaca* Nylander, 1848, *A. transbaicalica* Popov, 1949.

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