

Bees of the Tribe Anthidiini (Hymenoptera, Megachilidae) of Nakhchivan Autonomous Republic of Azerbaijan

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Abstract—Data on 34 species of anthidiine bees collected in Nakhchivan Autonomous Republic of Azerbaijan are reported. Sixteen species are new to Azerbaijan as a whole, and six other species are new to Nakhchivan Autonomous Republic. A total of 46 species of Anthidiini are currently known from Azerbaijan, 41 of them are known from Nakhchivan Autonomous Republic. This is distinctly less in comparison with the adjacent faunas of Turkey (93 species) and Iran (75) but more than the understudied faunas of Georgia (16) and Armenia (17). It is assumed that the number of Anthidiini species in Azerbaijan may be at least by one-third larger than the figure given herein. Two new synonymies are proposed: *Anthidium gussakovskiji* Mavromoustakis, 1939 = *A. akanthurum* Nadimi et Talebi, 2014, **syn. n.**, and *A. wuestneii* Mocsáry, 1887 = *A. bischoffi dzhachrumicum* Popov, 1967, **syn. n.** *Anthidium punctatum* Latreille, 1809 is also reported for the first time from Georgia and *A. wuestneii* is reported for the first time from Armenia.

Keywords: Apoidea, megachilid bees, distribution, new records, taxonomy, Caucasus

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The tribe Anthidiini (Hymenoptera, Megachilidae), comprising about 900 described species (Ascher and Pickering, 2020), is widely distributed on all the continents except Australia, where only one genus is native, and the Caribbean and Antarctica, where it is absent (Michener, 2007; Litman et al., 2016). These bees are usually distinguished from other megachilids by their dark cuticle and striking yellow, white, or red integumental markings. The tribe contains three biological groups of bees: resin bees, making their nest cells with resin, sometimes mixed with, or cementing together pebbles, soil particles, pieces of leaves, chaff, or plant trichomes (*Trachusa*-group, *Dianthidium*-group, and part of *Anthodioctes*-group); wool carder bees, making their nest cells with plant trichomes or other fibers alone (*Anthidium*-group), and cuckoo bees, laying their eggs

into nest cells of other bees (part of *Anthodioctes*-group and *Stelis*-group) (Michener, 2007; Litman et al., 2016).

Knowledge of anthidiine bees of Azerbaijan and particularly Nakhchivan Autonomous Republic is very scarce. Ascher and Pickering (2020) report 23 species in this tribe from Azerbaijan; only two of them are reported from Nakhchivan Autonomous Republic. Maharramov et al. (2014) listed 14 species from only Nakhchivan Autonomous Republic. The data on a few additional species, disregarded by these authors, can be found in Warncke (1980, 1992). At least 10 taxa of Anthidiini were described from Azerbaijan and four of them are currently treated as valid species (Warncke, 1980, 1992; Aliyev et al., 2018; Ascher and Pickering, 2020). An extensive study of the bee and wasp fauna of Nakhchivan Autonomous Republic of Azerbaijan has been recently

started (Fateryga et al., 2019a; Mokrousov et al., 2019; Proshchalykin et al., 2019; Maharramov et al., 2020; Proshchalykin and Maharramov, 2020). The present contribution, dealing with the megachilid tribe Anthidiini, is a part of this series of papers.

MATERIALS AND METHODS

The material for the present study was collected mainly in July, 2018 and June, 2019 by M.Yu. Proshchalykin, Kh.A. Aliyev, and M.M. Maharramov in various localities of Nakhchivan Autonomous Republic of Azerbaijan. This material is deposited mainly in the collection of the Federal Scientific Center of the East Asia Terrestrial Biodiversity of the Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia (FSCV). Some specimens were sent to the collection of A.V. Fateryga, Feodosiya, Russia (CAFK) and the collection of the Muséum d'Histoire Naturelle de la Ville de Neuchâtel, Switzerland (MHNN). Some additional specimens were examined in the collection of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (ZISP) and the collection of the Institute of Zoology of the National Academy of Sciences of Azerbaijan, Baku, Azerbaijan (IZAB). A total of 160 specimens of anthidiine bees collected in the studied region were examined. The bees were identified mainly by comparison of the newly collected material with the relevant material stored in the ZISP. Some old (Warncke, 1980) and recently published keys (Kasperek, 2015, 2017, 2019) were also used. Identification of some specimens was confirmed by J.R. Litman (Neuchâtel, Switzerland).

The taxonomy of Anthidiini generally follows that of Michener (2007), Litman et al. (2016), and Ascher and Pickering (2020). Data on the distribution of species in this paper are based upon publications of Warncke (1980, 1992), Kuhlmann et al. (2015), Proshchalykin and Fateryga (2017), and Ascher and Pickering (2020), taking into account additional data from Popov (1967a), Kasperek (2015, 2017, 2018, 2019, 2020), Kirkitadze and Japoshvili (2015), Fateryga et al. (2019b), Byvaltsev and Proshchalykin (2019), and Varnava et al. (2020). New country records are marked with an asterisk (*). The abbreviations of the collectors' names are as follows: Kh.A.—Kh.A. Aliyev; M.M.—M.M. Maharramov; M.P.—M.Yu. Proshchalykin.

LIST OF SPECIES

Afranthidium (Mesanthidium) carduele (Morawitz, 1876)

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Bichenek (39°31'N, 45°46'E), 2000 m, 23.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, Ayrintj (39°25'N, 45°35'E), 1240 m, 25.VII.2018, 1 ♀ (M.P., Kh.A., M.M.) [CAFK]; Julfa, Daridagh (38°59'N, 45°40'E), 900 m, 16.VI.2019, 1 ♂; 20.VI.2019, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad, Nurgut (39°13'N, 45°53'E), 1900 m, 29.VII.2018, 2 ♂ (M.P., Kh.A., M.M.) [CAFK, FSCV].

Distribution. Southern and Eastern Europe, North Africa, Armenia, Azerbaijan (new to Nakhchivan AR), Turkey, Syria, Israel, Iran, Turkmenistan, Kyrgyzstan, Tajikistan, Afghanistan.

Afranthidium (Mesanthidium) pusillum (Morawitz, 1894)

Material. Azerbaijan. *Nakhchivan AR*: Ordubad, Nurgut (39°13'N, 45°53'E), 1900 m, 29.VII.2018, 1 ♀ (M.P., Kh.A., M.M.) [CAFK].

Distribution. North Africa, Armenia, *Azerbaijan, Turkey, Syria, Lebanon, Israel, Iran, Turkmenistan.

Anthidiellum (Anthidiellum) brevisculum (Mavromoustakis, 1949)

Material. Azerbaijan. *Nakhchivan AR*: Sharur, Akhura (39°33'N, 45°13'E), 1640 m, 13.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Kangarli, Garabaglar (39°25'N, 45°13'E), 1270 m, 13.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [CAFK].

Distribution. Western, Southern, and Eastern Europe, North Africa, *Azerbaijan, Turkey, Cyprus, Lebanon, Israel, Iran.

Anthidiellum (Anthidiellum) strigatum (Panzer, 1805)

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Zarnatun (39°31'N, 45°46'E), 1550 m, 18.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, Shakhbuzkend (39°23'N, 45°32'E), 1140 m, 30.VII.2018, 2 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, 5 km N of Dize (39°03'N,

45°45'E), 965 m, 20.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad (Arax [= Aras]), 1892, 2 ♂ (Reitter) [ZISP]; Ordubad, Bilav, 5.IX.2012, 1 ♂ (Kh.A.) [IZAB].

Distribution. Western, Northern, Southern, and Eastern Europe, North Africa, Russia (European part, Urals, Siberia, Far East), Georgia, Azerbaijan, Turkey, Cyprus, Syria, Lebanon, Israel, Iraq, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, Korean Peninsula.

Remarks. The examined specimens fit the characteristics of the subspecies *A. strigatum luteum* Friese, 1897.

Anthidium (Anthidium) cingulatum Latreille, 1809

Material. Azerbaijan. *Nakhchivan AR*: Julfa, Milakh (39°15'N, 45°43'E), 1430 m, 27.VII.2018, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad (Arax [= Aras]), 1892, 1 ♀, 1 ♂ (Reitter) [ZISP].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals), Georgia, Azerbaijan, Turkey, Cyprus, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, China, India.

Anthidium (Anthidium) dalmaticum Mocsáry, 1884

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Gizil Gishlag (39°28'N, 45°35'E), 1460 m, 19.VI.2019, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [CAFK].

Distribution. Southern Europe, *Azerbaijan, Turkey, Lebanon, Israel, Iran, Afghanistan.

Remarks. According to Mavromoustakis (1955), the examined specimens correspond to the characteristics of the subspecies *A. dalmaticum syriacum* Pérez, 1911 due to the extensive yellow pattern (Fig. 1). Ascher and Pickering (2020) treated this taxon as a distinct species *A. syriacum*, which is questionable since its known differences from *A. dalmaticum* s. str. are restricted to the coloration and punctuation, i.e., the characters which are usually variable geographically.

Anthidium (Anthidium) diadema Latreille, 1809

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, 4 km SE of Kechili (39°20'N, 45°45'E), 2300 m, 21.VII.2018, 2 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part), Georgia, Azerbaijan, Turkey, Cyprus, Israel, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, ?China.

Anthidium (Anthidium) florentinum (Fabricius, 1775)

Material. Azerbaijan. *Nakhchivan AR*: Babek, Sirab (39°18'N, 45°32'E), 1235 m, 7.VI.2018, 2 ♀ (M.M.) [IZAB]; Babek, 3 km NE of Sirab (39°18'N, 45°32'E), 1250 m, 18.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [FSCV]; *Nakhchivan* (39°13'N, 45°24'E), 905 m, 9.VI.2018, 2 ♂ (M.M.) [IZAB]; Julfa, Milakh (39°15'N, 45°43'E), 1430 m, 15.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Gulistan (38°58'N, 45°36'E), 740 m, 26.VII.2018, 1 ♀ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals, Siberia, Far East), Georgia, Armenia, Azerbaijan, Turkey, Cyprus, Syria, Lebanon, Israel, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, Afghanistan, Pakistan, China.

Anthidium (Anthidium) gussakovskiji

Mavromoustakis, 1939

Anthidium gussakovskiji Mavromoustakis, 1939 : 378–381, fig. 1, ♀, ♂; type locality: “Kondara Valley” [Tajikistan].

Anthidium neosyriacum Mavromoustakis, 1956 : 219–221, ♀; type locality: “Sednaia (on Antilebano)” [Syria].

Anthidium gussakovskiji neosyriacum: Warncke, 1980 : 193.

Anthidium akanthurum Nadimi et Talebi in Nadimi et al., 2014 : 414, ♀, figs 1–14; type locality: “Iran, Tehran Province, Tehran, Tehran-Qom express way, 70 kilometres south of Tehran (N = 35°07' E = 50°57', 1110 m);” holotype, ♀, in the collection of the Department of Entomology, Tarbiat Modares University, Tehran, Iran; syn. n.

Material. Azerbaijan. *Nakhchivan AR*: Julfa, 5 km N of Dize (39°03'N, 45°45'E), 965 m, 20.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [CAFK].



Fig. 1. *Anthidium dalmaticum* Mocsáry, 1884, Azerbaijan (Nakhchivan AR), dorsal habitus: (1) female, (2) male.

Distribution. *Azerbaijan, Turkey, Syria, Israel, Jordan, Iran, Tajikistan.

Remarks. The examined specimen (Fig. 2) perfectly fits the original description, including the features of male sternum 6 and male terga 6 and 7 depicted in fig. 1 in Mavromoustakis (1939). On the other hand, the male from Azerbaijan also well corresponds to the description of *Anthidium akanthurum* Nadimi et Talebi, 2014, which was based on females only, in the presence of a spine on the fore coxa, basal tubercles on the labrum, the coloration and the habitus (figs 1–14 in Nadimi et al., 2014). Description of female *A. gussakovskiji* by Mavromoustakis (1939) also well corresponds to the description of *A. akanthurum*. Therefore, a new synonymy is proposed here. According to Warncke (1980), all the material outside Tajikistan should be assigned to the subspecies *A. gussakovskiji neosyriacum* Mavromoustakis, 1956.

Anthidium (Anthidium) loti Perris, 1852

Material. **Azerbaijan.** *Nakhchivan AR:* Sharur, Akhura (39°33'N, 45°13'E), 1640 m, 13.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, Shakhbuzkend (39°23'N, 45°32'E), 1140 m, 22.VII.2018, 1 ♂;

30.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Babek, 3 km NE of Sirab (39°18'N, 45°32'E), 1250 m, 18.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Milakh (39°15'N, 45°43'E), 1430 m, 27.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Gazanchi (39°13'N, 45°41'E), 1300 m, 26–27.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, Russia (European part, Urals), Azerbaijan, Turkey, Cyprus, Syria, Lebanon, Israel, Iran, Kazakhstan, Turkmenistan.

Anthidium (Anthidium) punctatum Latreille, 1809

Material. **Georgia.** *Kakheti:* Lagodekhi, 1 ♀ (Młokosiewicz) [ZISP]. **Azerbaijan.** *Nakhchivan AR:* Sharur, Akhura (39°33'N, 45°13'E), 1640 m, 13.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [CAFK]; Kangarli, Garabaglar (39°25'N, 45°13'E), 1270 m, 13.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, Bichenek (39°31'N, 45°46'E), 2000 m, 23.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, 4 km SE of Kechili (39°20'N, 45°45'E), 2300 m, 21.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad (Arax [= Aras]), 1892, 3 ♀, 1 ♂ (Reitter) [ZISP].

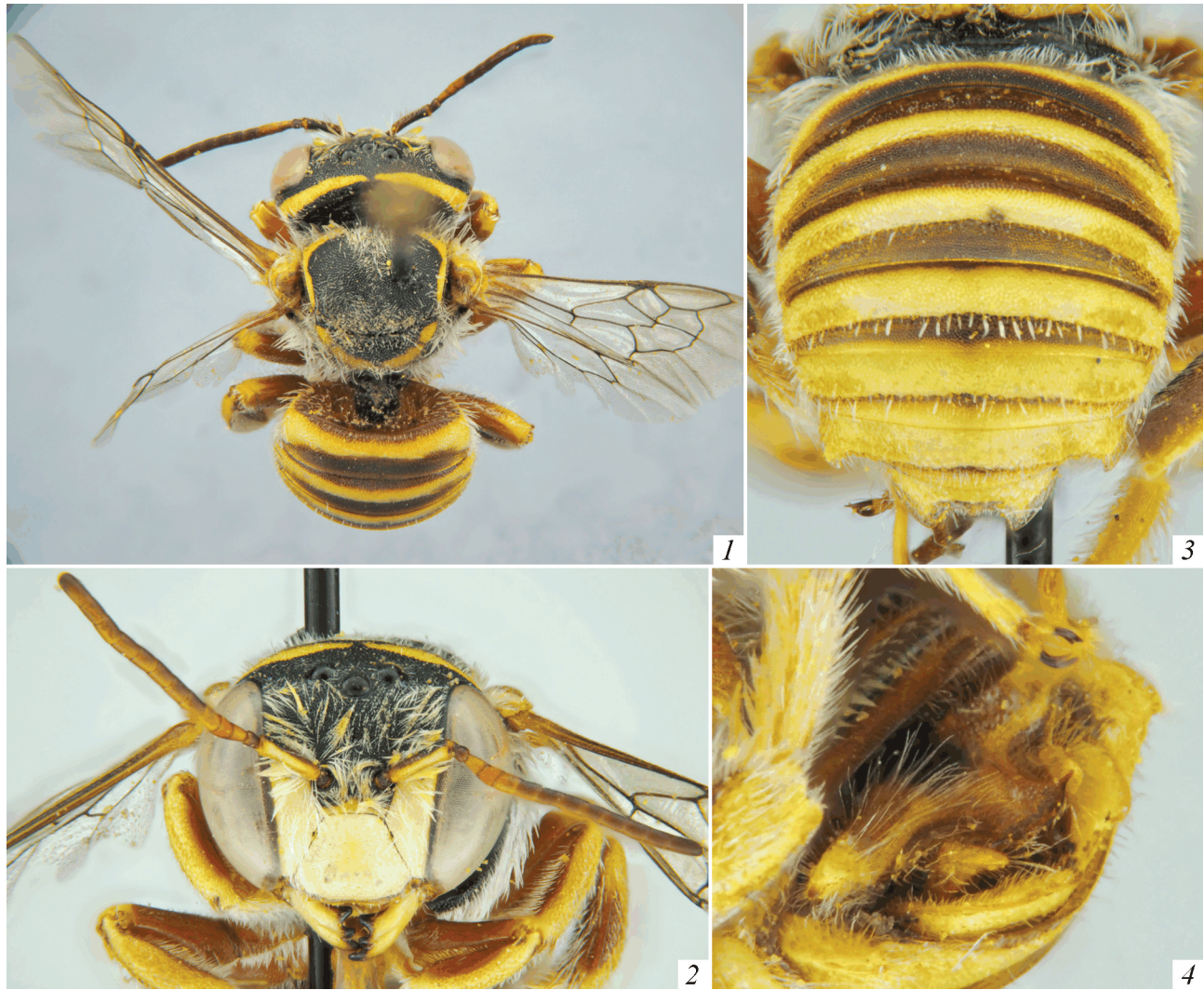


Fig. 2. *Anthidium gussakovskiji* Mavromoustakis, 1939, Azerbaijan (Nakhchivan AR), male: (1) dorsal habitus, (2) head, front view; (3) metasoma dorsally; (4) apex of metasoma lateroventrally.

Distribution. Western, Northern, Southern, and Eastern Europe, North Africa, Russia (European part, Urals, Siberia, Far East), *Georgia, Armenia, Azerbaijan (new to Nakhchivan AR), Turkey, Syria, Israel, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, Mongolia, China.

Remarks. Specimens from Azerbaijan correspond to *A. kohli* Friese, 1897, described from “Araxesthal” [the Aras River valley, probably within Armenia] (Friese, 1897), which is currently treated as a synonym of *A. punctatum* (Warncke, 1980; Ascher and Pickering, 2020). *Anthidium punctatum* (s. str.) is extremely variable geographically but always has black scutum and female clypeus and face (Popov, 1948) while *A. kohli*

has whitish yellow pattern on the scutum laterally and completely whitish yellow female clypeus with whitish yellow area between the clypeus and eye (Friese, 1898). Although Warncke (1980) has synonymized *A. kohli* with *A. punctatum*, he did not take these differences into account since all the females of *A. punctatum* had a black clypeus according to his identification key. In addition to the coloration, *A. kohli* differs from *A. punctatum* in a smaller size. Therefore, further revision of the *A. punctatum*-complex is needed. In our opinion, *A. kohli* may merit the status of at least a subspecies of *A. punctatum*. At the same time, *A. kohli* var. *nigritulum* Friese, 1917, described from Murut [currently Üçbulaq, Goygol Distr. of Azerbaijan], probably belongs to typ-

ical *A. punctatum*, judging by its black scutum (Friese, 1917). The examined specimen from Georgia has characters somewhat intermediate between those in *A. punctatum* (s. str.) and *A. kohli*: the clypeus is black but some whitish yellow spots are present between the clypeus and the eye and on the scutum laterally.

***Anthidium (Anthidium) spiniventre* Friese, 1899**

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Shakhbuzkend (39°23'N, 45°32'E), 1140 m, 22.VII.2018, 2 ♂ (M.P., Kh.A., M.M.) [FSCV]; Babek, Sirab, 22.VI.2012, 1 ♀ (Kh.A.) [IZAB]; Babek, 3 km NE of Sirab (39°18'N, 45°32'E), 1250 m, 21.VI.2019, 3 ♀ (M.P., Kh.A., M.M.) [FSCV]; Babek, Goynuk (39°18'N, 45°40'E), 1680 m, 12.VI.2019, 2 ♀, 2 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Daridagh (38°59'N, 45°40'E), 900 m, 16.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad (Arax [= Aras]), 1892, 1 ♀ (Reitter) [ZISP].

Distribution. Southern Europe, Russia (European part), Azerbaijan (new to Nakhchivan AR), Turkey, Syria, Lebanon, Israel, Jordan, Iran, Uzbekistan, Turkmenistan.

Remarks. The examined specimens (males) correspond to the characteristics of the subspecies *A. spiniventre melanopygum* Friese, 1917.

***Anthidium (Anthidium) taeniatum* Latreille, 1809**

Material. Azerbaijan. *Nakhchivan AR*: Sharur, Akhura (39°33'N, 45°13'E), 1640 m, 13.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, Shakhbuzkend (39°23'N, 45°32'E), 1140 m, 30.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [CAFK]; Julfa, Gulistan (38°58'N, 45°36'E), 740 m, 16.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, *Azerbaijan, Turkey, Israel, Iran, Turkmenistan.

***Anthidium (Gulanthidium) rotundum* Warncke, 1980**

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Zarnatun (39°31'N, 45°46'E), 1550 m, 24–25.VII.2018, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [CAFK], 3 ♀, 6 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Gazanchi (39°13'N, 45°41'E), 1300 m, 26–27.VII.2018, 1 ♀, 2 ♂ (M.P.,

Kh.A., M.M.) [FSCV]; Ordubad, Aghdara (39°06'N, 45°54'E), 2000 m, 28.VII.2018, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Southern Europe, *Azerbaijan, Turkey, Syria, Lebanon, Iran.

***Anthidium (Proanthidium) oblongatum* (Illiger, 1806)**

Material. Azerbaijan. *Nakhchivan AR*: Ordubad, Nurgut (39°13'N, 45°53'E), 1900 m, 29.VII.2018, 1 ♀ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals, Eastern Siberia), Georgia, Azerbaijan, Turkey, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, Afghanistan, North America (introduced).

***Anthidium (Proanthidium) wuestneii* Mocsáry, 1887**

Anthidium wuestneii Mocsáry, 1887 : 29, ♀; type locality: “Syria.”

Anthidium wuestneii hellenicum Mavromoustakis, 1960 : 293–297, figs 1, 2, ♀, ♂; type locality: “Empona” [Greece: Rhodes].

Anthidium bischoffi dzhachrumicum Popov, 1967b : 199–200, ♀, ♂; type locality: “25 km SE of Dzhachrum” [Iran]; lectotype (Warncke, 1980 : 201): “25 km SE of Dzhachrum, Iran, D. Steinberg. 16.VII.[1]955 [ZISP] (Fig. 3); syn. n.

Material. Armenia. *Kotayk Prov.*: Jrvezh, 18.IX.1959, 1 ♂ (V.A. Richter) [ZISP]. **Azerbaijan.** *Nakhchivan AR*: Julfa, Milakh (39°15'N, 45°43'E), 1430 m, 27.VII.2018, 3 ♀, 4 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Gazanchi (39°13'N, 45°41'E), 1300 m, 26–27.VII.2018, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [CAFK], 4 ♀, 8 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, 5 km N of Dize (39°03'N, 45°45'E), 965 m, 20.VI.2019, 3 ♀, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Southern Europe, *Armenia, Azerbaijan, Turkey, Syria, Lebanon, Iran.

Remarks. *Anthidium bischoffi dzhachrumicum* was hitherto treated as a synonym of *A. (Anthidium) bischoffi* Mavromoustakis, 1954 (s. str.) (= *A. waltlii* sensu



Fig. 3. *Anthidium bischoffi dzhachrumicum* Popov, 1967, male: (1) lectotype, dorsal habitus; (2) paralectotype, apex of metasoma dorsally; (3) lectotype, labels. Photos by Yu.V. Astafurova.

Warncke, 1980) (Ascher and Pickering, 2020). *Anthidium wuestneii* differs from *A. bischoffi* in many characters but the most remarkable one is the structure of male tergum 7: almost parallel-sided in *A. wuestneii*, so that the lateral edges of the spines are continuous with those of the anterior portion of the tergum (Fig. 4, 2, 4), or with the spines inset from the lateral margin in *A. bischoffi* (Fig. 4, 6). As it is usual for many anthidiines, *A. wuestneii* has variable coloration. Specimens from Greece (Fig. 4, 1, 2) are dark while the specimens from the Caucasus (Fig. 4, 3, 4) have a color pattern somewhat resembling that of *A. bischoffi* (Fig. 4, 5, 6). The lectotype and five paralectotypes of *A. bischoffi dzhachrumicum* (a total of 2 ♀ and 4 ♂) from Iran have a color pattern similar to that in the Caucasian specimens but the black color is replaced by the brown one (Fig. 3, 1). Other diagnostic features including the structure of male tergum 7 (Fig. 3, 2), however, perfectly fit the characteristic of *A. wuestneii* but not *A. bischoffi*. Therefore, a new synonymy is proposed here.

Icteranthidium cimbiciforme (Smith, 1854)

Material. **Azerbaijan.** *Nakhchivan AR*: Shakhbuz, Zarnatun (39°31'N, 45°46'E), 1550 m, 24–25.VII.2018, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [CAFK], 6 ♀, 6 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Southern Europe, Azerbaijan (new to Nakhchivan AR), Turkey, Syria, Lebanon, Israel, Iran.

Icteranthidium croceum (Morawitz, 1877)

Material. **Azerbaijan.** *Nakhchivan AR*: Julfa, Daridagh (38°59'N, 45°40'E), 900 m, 16.VI.2019, 2 ♀ (M.P., Kh.A., M.M.) [CAFK, FSCV].

Distribution. Azerbaijan, Turkey, Kazakhstan.

Icteranthidium grohmanni (Spinola, 1838)

Material. **Azerbaijan.** *Nakhchivan AR*: Shakhbuz, Ayrinj (39°25'N, 45°35'E), 1240 m, 25.VII.2018, 2 ♀ (M.P., Kh.A., M.M.) [FSCV]; Ordubad, Nurgut

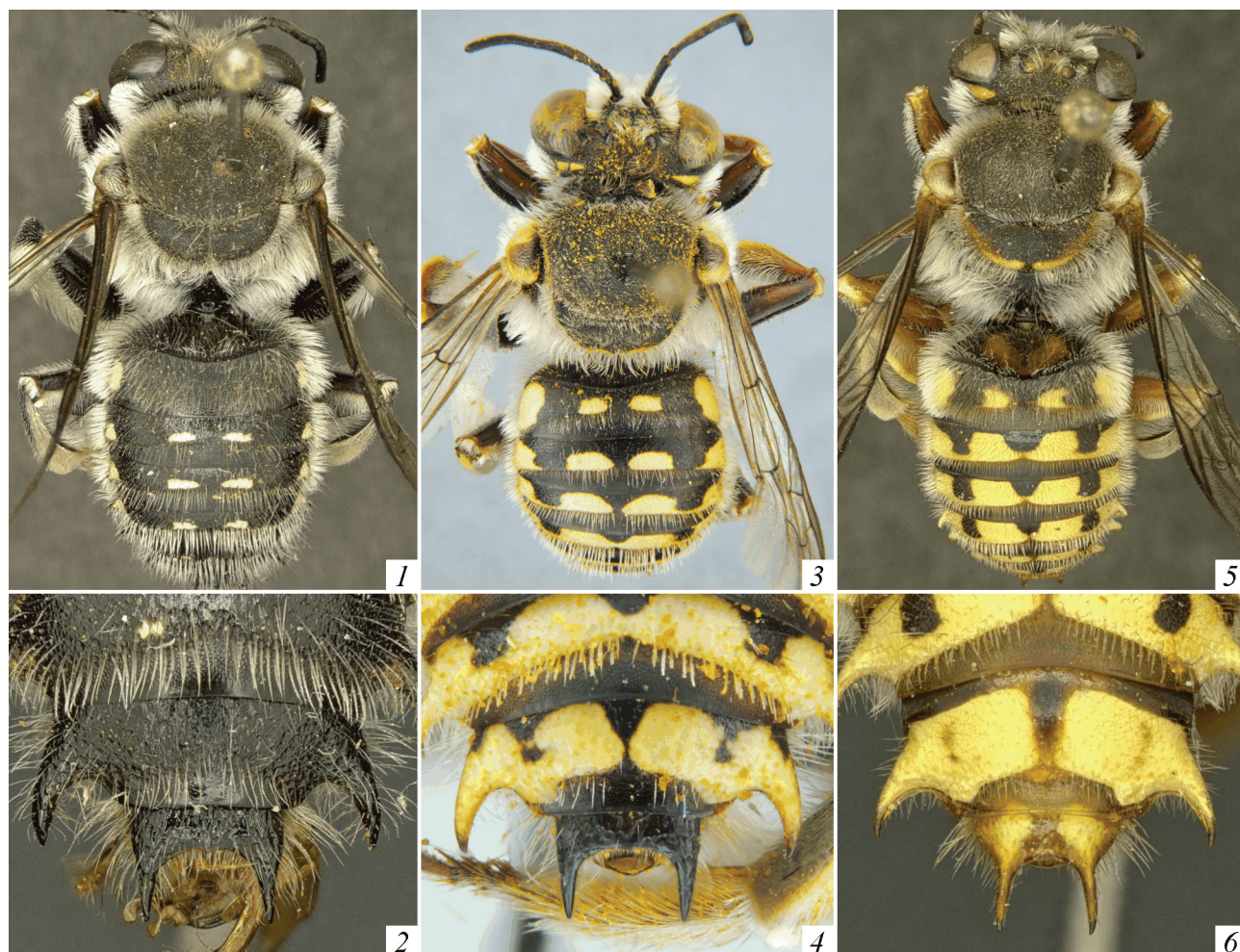


Fig. 4. *Anthidium wuestneii* Mocsáry, 1887 (1–4) and *A. bischoffi* Mavromoustakis, 1954 (5, 6), males: (1, 2) Greece; (3, 4) Azerbaijan (Nakhchivan AR); (5, 6) Oman. (1, 3, 5) dorsal habitus; (2, 4, 6) apex of metasoma dorsally. Photos 1, 2, 5, 6 by J.R. Litman.

(39°13'N, 45°53'E), 1900 m, 29.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part), Armenia, Azerbaijan, Turkey, Cyprus, Syria, Lebanon, Israel, Iran, Kyrgyzstan, ?China.

Icteranthidium limbiferum (Morawitz, 1875)

Material. Azerbaijan. Nakhchivan AR: Julfa, Daridagh (38°59'N, 45°40'E), 900 m, 16.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [FSCV].

Distribution. *Azerbaijan, Turkey, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, Afghanistan, Pakistan, China.

Icteranthidium urfanum (Warncke, 1980)

Material. Azerbaijan. Nakhchivan AR: Shakhbuz, Zarnatun (39°31'N, 45°46'E), 1550 m, 24–25.VII.2018, 1 ♀ (M.P., Kh.A., M.M.) [CAFK].

Distribution. *Azerbaijan, Turkey, Iran.

Remarks. The examined specimen perfectly fits the original description (Warncke, 1980), although this species is little known and therefore we illustrate it here (Fig. 5).

Pseudoanthidium (Exanthidium) eximium
(Giraud, 1863)

Material. Azerbaijan. Nakhchivan AR: Sharur, Akhura (39°33'N, 45°13'E), 1640 m, 13.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [CAFK].



Fig. 5. *Icteranthidium urfanum* (Warncke, 1980), Azerbaijan (Nakhchivan AR), female: (1) lateral habitus; (2) head, front view; (3) head dorsally; (4) metasoma dorsally.

Distribution. ?Western, Southern, and ?Eastern Europe, Armenia, *Azerbaijan, Turkey, Iran.

Pseudoanthidium (Pseudoanthidium) nanum
(Mocsáry, 1881)

Material. Azerbaijan. Nakhchivan AR: Shakhbuz, Bichenek (39°31'N, 45°46'E), 2000 m, 23.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad, Nurgut (39°13'N, 45°53'E), 1900 m, 29.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [MHNN].

Distribution. Western, Southern, and Eastern Europe, Russia (European part, Urals), *Azerbaijan, North America (introduced).

Remarks. Previous reports on the distribution of this species in Western and Southern Asia (e.g., in Turkey,

Israel, Iran, and Pakistan (Proshchalykin and Fateryga, 2017)) were erroneous and based on misidentifications of other closely related species (Litman et al., in prep.).

Pseudoanthidium (Pseudoanthidium) tenellum
(Mocsáry, 1881)

Material. Azerbaijan. Nakhchivan AR: Julfa, Milakh (39°15'N, 45°43'E), 1430 m, 15.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [MHNN].

Distribution. Western and Eastern Europe, Russia (European part, Western Siberia), *Azerbaijan, Tajikistan.

Remarks. This species is much broader distributed than it was known up to date, although previous reports on its presence in North Africa (e.g., by Proshchalykin

and Fateryga (2017)) were erroneous (Litman et al., in prep.).

Pseudoanthidium (Royanthidium) melanurum
(Klug, 1832)

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Batabat (39°31'N, 45°47'E), 2100 m, 24.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Bayahmad (39°15'N, 45°52'E), 2180 m, 27.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad, Nurgut (39°13'N, 45°53'E), 1900 m, 29.VII.2018, 2 ♂ (M.P., Kh.A., M.M.) [FSCV]; Ordubad, Aghdara (39°06'N, 45°54'E), 2000 m, 28.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part), Georgia, Azerbaijan, Turkey, Syria, Lebanon, Israel, Iran.

Pseudoanthidium (Royanthidium) reticulatum
(Mocsáry, 1884)

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Zarnatun (39°31'N, 45°46'E), 1550 m, 24–25.VII.2018, 2 ♂ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, 4 km SE of Kechili (39°20'N, 45°45'E), 2300 m, 21.VII.2018, 1 ♀ (M.P., Kh.A., M.M.) [FSCV]; Julfa, Milakh (39°15'N, 45°43'E), 1430 m, 27.VII.2018, 1 ♀ (M.P., Kh.A., M.M.) [FSCV]; Ordubad, Aghdara (39°06'N, 45°54'E), 2000 m, 28.VII.2018, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part), Azerbaijan (new to Nakhchivan AR), Turkey, Lebanon, Israel, Iran.

Rhodanthidium (Asianthidium) aculeatum
(Klug, 1832)

Material. Azerbaijan. *Nakhchivan AR*: Sharur, Akhura (39°33'N, 45°13'E), 1640 m, 13.VI.2019, 3 ♂ (M.P., Kh.A., M.M.) [FSCV]; Shakhbuz, Gizil Gishlag (39°28'N, 45°35'E), 1460 m, 19.VI.2019, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [CAFK].

Distribution. *Azerbaijan, Turkey, Syria, Lebanon, Iran.

Rhodanthidium (Asianthidium) caturigense
(Giraud, 1863)

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, 4 km SE of Kechili (39°20'N, 45°45'E), 2300 m,

21.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [CAFK]; Ordubad, Nurgut (39°13'N, 45°53'E), 1900 m, 29.VII.2018, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, Georgia, *Azerbaijan, Turkey, Lebanon, Israel, Iran.

Remarks. In their characters, the examined specimens correspond to the subspecies *Rh. caturigense ducale* (Morawitz, 1876). Ascher and Pickering (2020) treated this taxon as a distinct species, *Rh. ducale*. The taxonomy of *Rh. caturigense* s. l. requires further study; it is possible that it does consist of several closely related species (Kasperek, 2019).

Rhodanthidium (Rhodanthidium) septemdentatum
(Latreille, 1809)

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz, Zarnatun (39°31'N, 45°46'E), 1550 m, 18.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [FSCV]; Babek, Goynuk (39°18'N, 45°40'E), 1680 m, 12.VI.2019, 1 ♀, 1 ♂ (M.P., Kh.A., M.M.) [CAFK], 1 ♀, 2 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, ?North Africa, Azerbaijan, Turkey, Cyprus, Lebanon, Israel, Iran.

Remarks. The examined specimens correspond to the subspecies *Rh. septemdentatum faciale* (Friese, 1917).

***Stelis (Stelis) scutellaris* Morawitz, 1893**

Material. Azerbaijan. *Nakhchivan AR*: Nakhchivan (39°13'N, 45°24'E), 905 m, 24.VI.2016, 1 ♀ (M.M.) [IZAB]; 30.VI.2016, 1 ♀ (M.M.) [CAFK]; 17–18.VI.2019, 1 ♀ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Eastern Europe, Russia (European part), Armenia, Azerbaijan (new to Nakhchivan AR), Turkey, Iran, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, Pakistan, Mongolia, China.

***Stelis (Stelis) simillima* Morawitz, 1876**

Material. Azerbaijan. *Nakhchivan AR*: Babek, Gahab (39°15'N, 45°31'E), 1045 m, 12.VI.2019, 1 ♂ (M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals,

Table 1. List of the bees of the tribe Anthidiini in Nakhchivan Autonomous Republic of Azerbaijan

No.	Species	Reference			
		Warncke (1980, 1992)	Maharramov et al. (2014)	Ascher and Pickering (2020)	present study
1	<i>Afranthidium (Mesanthidium) carduele</i> (Morawitz, 1876)				+
2	<i>A. (M.) pusillum</i> (Morawitz, 1894)				+
3	<i>Anthidiellum (Anthidiellum) brevisculum</i> (Mavromoustakis, 1949)				+
4	<i>A. (A.) strigatum</i> (Panzer, 1805)	+	+		+
5	<i>Anthidium (Anthidium) cingulatum</i> Latreille, 1809		+		+
6	<i>A. (A.) dalmaticum</i> Mocsáry, 1884				+
7	<i>A. (A.) diadema</i> Latreille, 1809		+		+
8	<i>A. (A.) florentinum</i> (Fabricius, 1775)		+		+
9	<i>A. (A.) gussakovskiji</i> Mavromoustakis, 1939				+
10	<i>A. (A.) loti</i> Perris, 1852		+		+
11	<i>A. (A.) manicatum</i> (Linnaeus, 1758)	+	+		
12	<i>A. (A.) punctatum</i> Latreille, 1809				+
13	<i>A. (A.) spiniventre</i> Friese, 1899				+
14	<i>A. (A.) taeniatum</i> Latreille, 1809				+
15	<i>A. (Gulanthidium) rotundum</i> Warncke, 1980				+
16	<i>A. (Proanthidium) oblongatum</i> (Illiger, 1806)		+		+
17	<i>A. (P.) wuestneii</i> Mocsáry, 1887	+			+
18	<i>Eoanthidium (Eoanthidium) clypeare</i> (Morawitz, 1874)		+		
19	<i>Icteranthidium aequabile</i> (Morawitz, 1896)	+		+	
20	<i>I. cimbiciforme</i> (Smith, 1854)				+
21	<i>I. croceum</i> (Morawitz, 1877)		+		+
22	<i>I. grohmanni</i> (Spinola, 1838)	+			+
23	<i>I. limbiferum</i> (Morawitz, 1875)				+
24	<i>I. urfanum</i> (Warncke, 1980)				+
25	<i>Pseudoanthidium (Exanthidium) eximium</i> (Giraud, 1863)				+
26	<i>P. (Pseudoanthidium) nanum</i> (Mocsáry, 1881)				+
27	<i>P. (P.) tenellum</i> (Mocsáry, 1881)				+
28	<i>P. (Royanthidium) melanurum</i> (Klug, 1832)		+		+
29	<i>P. (R.) reticulatum</i> (Mocsáry, 1884)				+
30	<i>Rhodanthidium (Asianthidium) aculeatum</i> (Klug, 1832)				+
31	<i>Rh. (A.) caturigense</i> (Giraud, 1863)				+
32	<i>Rh. (Rhodanthidium) septemdentatum</i> (Latreille, 1809)	+	+		+
33	<i>Stelis (Protostelis) signata</i> (Latreille, 1809)	+			

Table 1. (Contd.)

No.	Species	Reference			
		Warncke (1980, 1992)	Maharramov et al. (2014)	Ascher and Pickering (2020)	present study
34	<i>S. (Pseudostelis) minuta</i> Lepeletier de Saint-Fargeau et Audinet-Serville, 1825	+			
35	<i>S. (Stelis) odontopyga</i> Noskiewicz, 1926		+		
36	<i>S. (S.) scutellaris</i> Morawitz, 1893				+
37	<i>S. (S.) simillima</i> Morawitz, 1876	+			+
38	<i>Trachusa (Archianthidium) pubescens</i> (Morawitz, 1872) s. l.				+
39	<i>T. (Paraanthidium) anatolica</i> Kasperek, 2020			+	
40	<i>T. (P.) heinzi</i> Dubitzky, 2007				+
41	<i>T. (Trachusa) byssina</i> (Panzer, 1798)				+
Total number		9	12*	2	34

* The actual number of Anthidiini from Maharramov et al. (2014) was 14 but two species were obviously misidentified (see text).

Western Siberia), ?Armenia, Azerbaijan, Turkey, Syria,
?Lebanon, Israel, Iran, Turkmenistan.

Trachusa (Archianthidium) pubescens
(Morawitz, 1872) s. l.

Material. Azerbaijan. *Nakhchivan AR*: Babek, Payiz
(39°26'N, 45°22'E), 1225 m, 11.VI.2019, 1 ♀ (M.P.,
Kh.A., M.M.) [FSCV].

Distribution. Southern Europe, Russia (European
part), *Azerbaijan, Turkey, Iran, Turkmenistan.

Remarks. Kasperek (2018) subdivided *T. pubescens*
into five microspecies which cannot be distinguished
from each other without males. The distribution listed
above (besides the present record from Azerbaijan) cor-
responds to *T. pubescens* s. str.; the whole species com-
plex is also present in Eastern Europe, Georgia, Armenia,
Syria, Lebanon, Israel, and Jordan (Kirkidze and
Japoshvili, 2015; Kasperek, 2018; Ascher and Pick-
ering, 2020).

***Trachusa (Paraanthidium) heinzi* Dubitzky, 2007**

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz,
Gizil Gishlag (39°28'N, 45°35'E), 1460 m, 19.VI.2019,
1 ♂ (M.P., Kh.A., M.M.) [CAFK].

Distribution. *Azerbaijan, Turkey, Iran.

Remarks. The report of *Trachusa interrupta* (Fabri-
cius, 1781) by Maharramov et al. (2014) may refer to
either this taxon or *T. anatolica* Kasperek, 2020, another
member of the *T. interrupta*-complex known from
Nakhchivan Autonomous Republic (Ascher and Pick-
ering, 2020).

***Trachusa (Trachusa) byssina* (Panzer, 1798)**

Material. Azerbaijan. *Nakhchivan AR*: Shakhbuz,
Bichenek (39°31'N, 45°46'E), 2000 m, 14.VI.2019, 1 ♂
(M.P., Kh.A., M.M.) [FSCV].

Distribution. Western, Northern, Southern, and
Eastern Europe, Russia (European part, Urals, Siberia,
Far East), Georgia, Armenia, *Azerbaijan, Turkey, ?Ka-
zakhstan, Mongolia.

DISCUSSION

Nineteen species of anthidiine bees were previously
known from Nakhchivan Autonomous Republic of
Azerbaijan (Table 1). We did not include in their number
two species listed by Maharramov et al. (2014): *Stelis*
(*Stelis*) *iugae* Noskiewicz, 1962 and *Trachusa inter-*
rupta. The first one is restricted in distribution to Eastern
Europe and European part of Turkey (Warncke, 1992;
Ascher and Pickering, 2020). The occurrence of this
species in Azerbaijan is hardly possible and its report by
Maharramov et al. (2014) was almost obviously based

on a misidentification of some other species of *Stelis*. *Trachusa interrupta* (s. str.) is also distributed far from Azerbaijan (Kasperek, 2020). The report of this species by Maharramov et al. (2014) obviously refers to some of the two other microspecies of the *T. interrupta*-complex (see above).

Our results more than twice enlarge the number of anthidiine species in Nakhchivan Autonomous Republic (41 species). Only 12 species, which are listed in the present contribution, were previously reported from the studied region. Sixteen species from our list are new to Azerbaijan as a whole, and six other species are new to Nakhchivan Autonomous Republic. At the same time, we did not collect seven species reported by previous researchers (see table 1). It is remarkable that only five species of anthidiine bees, known from Azerbaijan in the literature, were not recorded in Nakhchivan Autonomous Republic: *Anthidium* (*Proanthidium*) *trispinosum* Friese, 1917, *A. (P.) undulatum* Dours, 1873, *A. (P.) venustum* Morawitz, 1877, *Stelis* (*Stelidomorpha*) *nasuta* (Latreille, 1809), and *S. (Stelis) phaeoptera* (Kirby, 1802) (Warncke, 1980, 1992; Ascher and Pickering, 2020). Thus, a total of 46 species of Anthidiini are currently known from Azerbaijan. This is distinctly less in comparison with the faunas of adjacent Turkey (93 species) and Iran (75) but more than in the understudied faunas of Georgia (16) and Armenia (17) (according to the data from Ascher and Pickering, 2020 and taking into account the present contribution). The real number of Anthidiini species in Azerbaijan may be at least by one-third larger.

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COMPLIANCE WITH ETHICAL STANDARDS

The authors declare that they have no conflict of interest. All applicable international, national, and institutional guidelines for the care and use of animals were followed. All procedures performed in studies involving animals were in accordance with the ethical standards of the institution or practice at which the studies were conducted.

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