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MEGACHILID BEES (HYMENOPTERA: MEGACHILIDAE) OF THE NAKHCHIVAN AUTONOMOUS REPUBLIC OF AZERBAIJAN: TRIBES LITHURGINI, DIOXYINI, AND MEGACHILINI

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Summary. The data on 38 species of megachilid bees in the tribes Lithurgini, Dioxyini, and Megachilini collected in the Nakhchivan Autonomous Republic of Azerbaijan mainly in 2018–2020 are given. Seventeen species are new to Azerbaijan, four other species are new to the Nakhchivan Autonomous Republic and as a result of the present investigation the fauna of Azerbaijan currently numbers 160 species of the family Megachilidae. A mosaic gynandromorph of *Megachile albisecta* (Klug, 1817) is also described.

Key words: Apoidea, Apiformes, distribution, new records, gynandromorph, Caucasus.

М. М. Магеррамов, А. В. Фатерыга, М. Ю. Прощалыкин. Пчелы-мегахилиды (Hymenoptera: Megachilidae) Нахичеванской Автономной Республики Азербайджана: трибы Lithurgini, Dioxyini и Megachilini // Дальневосточный энтомолог. 2021. N 428. С. 12-24.

Резюме. Приводятся данные о 38 видах пчел-мегахилид триб Lithurgini, Dioxyini и Megachilini, собранных в Нахичеванской Автономной Республике Азербайджана преимущественно в 2018–2020 гг. Впервые для Азербайджана приводится 17 видов, еще 4 вида являются новыми для Нахичеванской Автономной Республики. В результате исследования фауна Азербайджана в настоящее время насчитывает 160 видов семейства Megachilidae. Также описан мозаичный гинандроморф *Megachile albisecta* (Klug, 1817).

INTRODUCTION

An extensive study of the megachilid bee fauna of Nakhchivan Autonomous Republic of Azerbaijan has been recently started. Papers were published on the tribes Osmiini (Proshchalykin *et al*., 2019; Proshchalykin & Maharramov, 2020) and Anthidiini (Fateryga *et al*., 2020).

The results increased the number of species in both tribes known from Azerbaijan more than twice: from 29 to 68 in Osmiini and from 19 to 46 in Anthidiini. The remaining tribes Lithurgini, Dioxyini, and Megachilini are especially poor known from Azerbaijan. Only 19 species in these tribes are listed for this country in the "Discover Life" database (Ascher & Pickering, 2021). Maharramov *et al.* (2014) also reported 23 species of Lithurgini, Dioxyini, and Megachilini from only Nakhchivan AR. A dozen of them are not listed by Ascher & Pickering (2021). At the same time, the latter source reports eight species which were not listed by Maharramov *et al.* (2014) and one of them, *Coelioxys* (*Allocoelioxys*) *castaneus* Morawitz, 1886, is reported from Nakhchivan AR due to its description from Julfa (Morawitz, 1886). Thus, 31 species are known from Azerbaijan and 24 from Nakhchivan AR by the combining data of these two sources (Maharramov *et al.*, 2014 and Ascher & Pickering, 2021). The purpose of the present investigation is to report new records of megachilid bees in the tribes Lithurgini, Dioxyini, and Megachilini collected in Nakhchivan AR of Azerbaijan.

MATERIAL AND METHODS

The material for the present study was collected mainly in 2018–2020 and deposited mostly 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]. Additional specimens were examined in the collection of the Institute of Zoology of the National Academy of Sciences of Azerbaijan, Baku, Azerbaijan [IZAB]; one specimen was found in the collection of the Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia [ZISP].

Geographical coordinates and administrative locations of the collection sites are as follows: **Azerbaijan:** *Nakhchivan Autonomous Republic*: **1** – Babek, 3 km NE Sirab, 39°18′N 45°32′E, 1250 m; **2** – Babek, Gahab, 39°15′N 45°31′E, 1045 m; **3** – Babek, Goynuk, 39°18′N 45°40′E, 1680 m; **4** – Babek, Nakhchivanchay, 39°14′N 45°26′E, 900 m; **5** – Babek, Payiz, 39°26′N 45°22′E, 1225 m; **6** – Babek, Shikhmakhmud, 39°15′N 45°25′E, 940 m; **7** – Babek, Sirab, 39°18′N 45°31′E, 1090 m; **8** – Babek, Yukhari Buzgov, 39°31′N 45°22′E, 1720 m; **9** – Julfa, 5 km N Dize, 39°03′N 45°45′E, 965 m; **10** – Julfa, 9 km N Julfa, 39°02′N 45°36′E, 900 m; **11** – Julfa, Ashabi Kahf, 39°11′N 45°31′E, 920 m; **12** – Julfa, Bayahmad, 39°15′N 45°52′E, 2180 m; **13** – Julfa, Daridagh, 38°59′N 45°40′E, 900 m; **14** – Julfa, Gazanchi, 39°13′N 45°41′E, 1300 m; **15** – Julfa, Goydara, 39°09′N 45°40′E, 1150 m; **16** – Julfa, Gulistan, 38°58′N 45°36′E, 740 m; **17** – Julfa, Milakh, 39°15′N 45°43′E, 1430 m; **18** – Kangarli, Chalkhangala, 39°25′N 45°13′E, 1445 m; **19** – Kangarli, Garabaglar, 39°25′N 45°13′E, 1270 m; **20** – Nakhchivan, 39°13′N 45°24′E, 905 m; **21** – Ordubad, 38°54′N 46°01′E, 855 m; **22** – Ordubad, Aghdara, 39°06′N 45°54′E, 2000 m; **23** – Ordubad, Behrud, 39°04′N 45°52′E, 1360 m; **24** – Ordubad, Bilav, 39°04′N 45°51′E, 1300 m; **25** – Ordubad, Bist, 39°08′N 45°53′E, 1500 m; **26** – Ordubad, Nurgut, 39°13′N 45°53′E, 1900 m; **27** – Sharur–Sadarak road, 39°38′N 44°52′E, 800 m; **28** – Shakhbuz, 4 km SE Kechili, 39°20′N 45°45′E, 2300 m; **29** – Shakhbuz, Ayrinj, 39°25′N 45°35′E, 1240 m; **30** – Shakhbuz, Batabat, 39°31′N 45°47′E, 2100 m; **31** – Shakhbuz, Bichenek, 39°31′N 45°46′E, 2000 m; **32** – Shakhbuz, Gizil Gishlag, 39°28′N 45°35′E, 1460 m; **33** – Shakhbuz, Gomur, 39°27′N 45°44′E, 1790 m; **34** – Shakhbuz, Kechili, 39°22′N 45°43′E, 1800 m; **35** – Shakhbuz, Kolani, 39°28′N 45°43′E, 1300 m; **36** – Shakhbuz, Kulus, 39°22′N 45°36′E, 1360 m; **37** – Shakhbuz, Salasuz, 39°20′N 45°45′E, 1125 m; **38** – Shakhbuz, Shakhbuzkend, 39°23′N 45°32′E, 1140 m; **39** – Shakhbuz, Zarnatun, 39°31′N 45°46′E, 1550 m; **40** – Sharur, Akhura, 39°33′N 45°13′E, 1640 m.

The taxonomy of Megachilidae follows that of Michener (2007), da Rocha Filho & Packer (2016), Praz (2017), and Ascher & Pickering (2021). The bees were identified mainly by comparison of the newly collected material with the relevant material stored in the ZISP. Identification of some specimens was confirmed by C.J. Praz (Neuchâtel, Switzerland). A total of 556 specimens of Lithurgini, Dioxyini, and Megachilini collected in the studied region were examined. Among them, 24 specimens of five species were left unidentified. They belonged to the genus *Megachile* Latreille, 1802 (three species in the subgenus *Anodonteutricharaea* Tkalců, 1993 and one in the subgenus *Eutricharaea* Thomson, 1872) and *Coelioxys* Latreille, 1809 (one species in an uncertain subgenus).

Data on the distribution of species in this paper are based upon Proshchalykin & Fateryga (2017) and Ascher & Pickering (2021), taking into account some additional data from Popov (1967), Byvaltsev *et al*. (2018), Maharramov *et al*. (2014), Fateryga *et al*. (2019), Fateryga & Proshchalykin (2020), Levchenko (2020), Varnava *et al*. (2020), and Zakikhani *et al.* (2021). Previous records of each species from Nakhchivan AR in the literature are indicated. New distributional records are marked with an asterisk (*). The abbreviations of the collectors' names are as follows: KA – Kh.A. Aliyev, MM – M.M. Maharramov, and MP – M.Yu. Proshchalykin.

LIST OF SPECIES

Tribe Lithurgini

***Lithurgus chrysurus* Fonscolombe, 1834**

Lithurgus chrysurus: Maharramov *et al*., 2014: 145.

MATERIAL EXAMINED. **2** – 12.VI 2019, 3 ♂, MP, KA, MM; **12** – 27.VII 2018, 7 ♀, MP, KA, MM; **14** – 26-27.VII 2018, 1 ♀, MP, KA, MM; **15** – 26.VII 2018, 6 ♀, MP, KA, MM; **16** – 26.VII 2018, 4 ♀, MP, KA, MM; **17** – 27.VII 2018, 3 ♀, MP, KA, MM; **18** – 25.VI 2020, 1 ♂, MM [FSCV]; **20** – 19.VII 2016, 2 ♂, MM [IZAB], 2.VII 2019, 12 ♀, 7 ♂, MM; **22** – 28.VII 2018, 8 ♀, 1 ♂, MP, KA, MM; **23** – 7.VIII 2020, 2 ♀, 1 ♂, MM; **26** – 29.VII 2018, 5 ♀, 2 ♂, MP, KA, MM [FSCV]; **27** – 10.VII 2008, 2 ♀, MM [IZAB]; **29** – 25.VII 2018, 1 ♀, MP, KA, MM; **31** – 23.VII 2018, 2 ♂, MP, KA, MM, 3.VII 2019, 4 ♂, MM; **34** – 7.VII 2019, 2 ♂, MM; **35** – 24.VII 2018, 1 ♀, MP, KA, MM [FSCV]; **36** – 3.VII 2016, 1 ♀, MM [IZAB]; **38** – 22.VII 2018, 1 ♀, MP, KA, MM; **39** – 24-25.VII 2018, 49 ♀, MP, KA, MM; **40** – 13.VI 2019, 1 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals), Georgia, Azerbaijan, Turkey, Cyprus, Syria, Lebanon, Israel, Iran, Tajikistan, Uzbekistan, Kyrgyzstan, North America (introduced).

***Lithurgus cornutus* (Fabricius, 1787)**

Lithurgus cornutus: Maharramov *et al*., 2014: 145.

MATERIAL EXAMINED. **2** – 12.VI 2019, 6 ♀, 18 ♂, MP, KA, MM; **14** – 26-27.VII 2018, 1 ♀, MP, KA, MM; **16** – 26.VII 2018, 6 ♀, MP, KA, MM; **17** – 27.VII 2018, 4 ♀, MP, KA, MM, 15.VI 2019, 1 ♂, MP, KA, MM [FSCV]; **20** – 5.VII 2006, 1 ♂, MM [IZAB], 2.VII 2019, 1 ♀, MM; **23** – 7.VIII 2020, 5 ♀, 2 ♂, MM [FSCV]; **24** – 22.V 2019, 1 ♀, MM [IZAB]; **26** – 29.VII 2018, 6 ♀, MP, KA, MM; **29** – 25.VII 2018, 1 ♀, MP, KA, MM; **39** – 24-25.VII 2018, 1 ♀, MP, KA, MM; **40** – 13.VI 2019, 2 ♀, 3 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals, Siberia), Georgia, Armenia, Azerbaijan, Turkey, Israel, Iran, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China.

Tribe Dioxyini

***Metadioxys formosus* (Morawitz, 1875)**

MATERIAL EXAMINED. **18** – 25.VI 2020, 1 ♀, MM [CAFK], 2 ♀, MM [FSCV].

DISTRIBUTION. North Africa, *Azerbaijan, Turkey, Israel, Iran, Tajikistan, Uzbekistan.

Tribe Megachilini

***Coelioxys* (*Allocoelioxys*) *acanthura* (Illiger, 1806)**

MATERIAL EXAMINED. **29** – 25.VII 2018, 1 ♀, MP, KA, MM [FSCV].

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

***Coelioxys* (*Allocoelioxys*) *afer* Lepeletier de Saint-Fargeau, 1841**

MATERIAL EXAMINED. **6** – 20.VII 2018, 1 ♂, MP, KA, MM; **20** – 17-18.VI 2019, 1 ♂, MP, KA, MM; **31** – 23.VII 2018, 1 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Europe, Africa, Russia (European part, Siberia, Far East), Georgia, Armenia, *Azerbaijan, Turkey, Cyprus, Israel, Saudi Arabia, Oman, United Arab Emirates, Iraq, Iran, Pakistan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China, India, Indonesia.

***Coelioxys* (*Allocoelioxys*) *echinatus* Förster, 1853**

Coelioxys echinata: Maharramov *et al*., 2014: 146.

MATERIAL EXAMINED. **20** – 26.VI 2019, 1 ♀, 1 ♂, MM, 5.VI 2020, 1 ♂, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Western Siberia), Azerbaijan, Turkey, Cyprus, Israel, Iraq, Iran, Afghanistan, China.

***Coelioxys* (*Allocoelioxys*) *haemorrhoa* Förster, 1853**

MATERIAL EXAMINED. **1** – 18.VI 2019, 2 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part), *Azerbaijan, Turkey, Cyprus, Israel, Iran, Pakistan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China, Korean Peninsula, India.

***Coelioxys* (*Rozeniana*) *aurolimbatus* Förster, 1853**

MATERIAL EXAMINED. **38** – 22.VII 2018, 2 ♂, MP, KA, MM, 30.VII 2018, 1 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Northern, Southern, and Eastern Europe, North Africa, Russia (European part, Urals), Georgia, Armenia, *Azerbaijan, Turkey, Lebanon, Iran, Afghanistan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, Mongolia, China.

***Megachile* (*Chalicodoma*) *albocristata* Smith, 1853**

MATERIAL EXAMINED. **18** – 25.VI 2020, 1 ♀, MM [FSCV]; **40** – 13.VI 2019, 1 ♀, 1 ♂, MP, KA, MM [CAFK].

DISTRIBUTION. Western and Southern Europe, Russia (European part), Georgia, *Azerbaijan, Turkey, Iran.

REMARKS. Females of this species are remarkably polymorphic in the color of the pilosity: typical form has tufts of whitish setae on each lateral side of the propodeum and on the terga 1–3, while some populations (e. g., from Dagestan) have also a tuft of whitish setae on the mesepisternum and complete bands of whitish setae on the terga 1–5 (Fateryga & Proshchalykin, 2020). The examined female specimens from Nakhchivan AR differ from the typical form of *M. albocristata* (e. g., from the Crimea) by an even darker pilosity: they are almost completely black. In addition, both females and the male examined have smaller body size in comparison with the material from both the Crimea and Dagestan.

***Megachile* (*Chalicodoma*) *albonotata* Radoszkowski, 1886**

MATERIAL EXAMINED. **1** – 10.VI 2019, 1 ♀, MP, KA, MM, 12.VI 2019, 1 ♀, MP, KA, MM; **3** – 12.VI 2019, 1 ♂, MP, KA, MM; **22** – 17.VI 2019, 1 ♀, MP, KA, MM; **40** – 13.VI 2019, 2 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Southern Europe, Russia (European part), Armenia, *Azerbaijan, Turkey, Israel, Iran, Turkmenistan.

***Megachile* (*Chalicodoma*) *montenegrensis* Dours, 1873**

Megachile ponticum: Maharramov *et al*., 2014: 146 (for the synonymy see Ascher & Pickering, 2021).

MATERIAL EXAMINED. **1** – 2-6.VI 2019, 1 ♀, MM [CAFK].

DISTRIBUTION. Southern and Eastern Europe, North Africa, Armenia, Azerbaijan, Turkey, Syria, Israel, Iran, Afghanistan, Tajikistan, Uzbekistan.

***Megachile* (*Chalicodoma*) *parietina* (Geoffroy, 1785)**

Megachile parietina: Maharramov *et al*., 2014: 146.

MATERIAL EXAMINED. **21** – 11.VII 1933, 1 ♀, Znoyko [ZISP].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part), Georgia, Azerbaijan, Turkey, Syria, Jordan, Israel, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan.

***Megachile* (*Chalicodoma*) *pyrenaica* (Lepeletier de Saint-Fargeau, 1841)**

Megachile pyrenaica: Maharramov *et al*., 2014: 146.

MATERIAL EXAMINED. **18** – 17.VI 2020, 2 ♀, 1 ♂, MM; **22** – 13.VI 2019, 1 ♀, MP, KA, MM [FSCV], 17.VI 2019, 1 ♀, 1 ♂, MP, KA, MM [CAFK], 17.VI 2019, 1 ♀, MP, KA, MM; **30** – 10.VII 2019, 1 ♀, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Armenia, Azerbaijan, Turkey, Israel, Tajikistan, Kazakhstan.

***Megachile* (*Creightonella*) *albisecta* (Klug, 1817)**

Figs 1–3

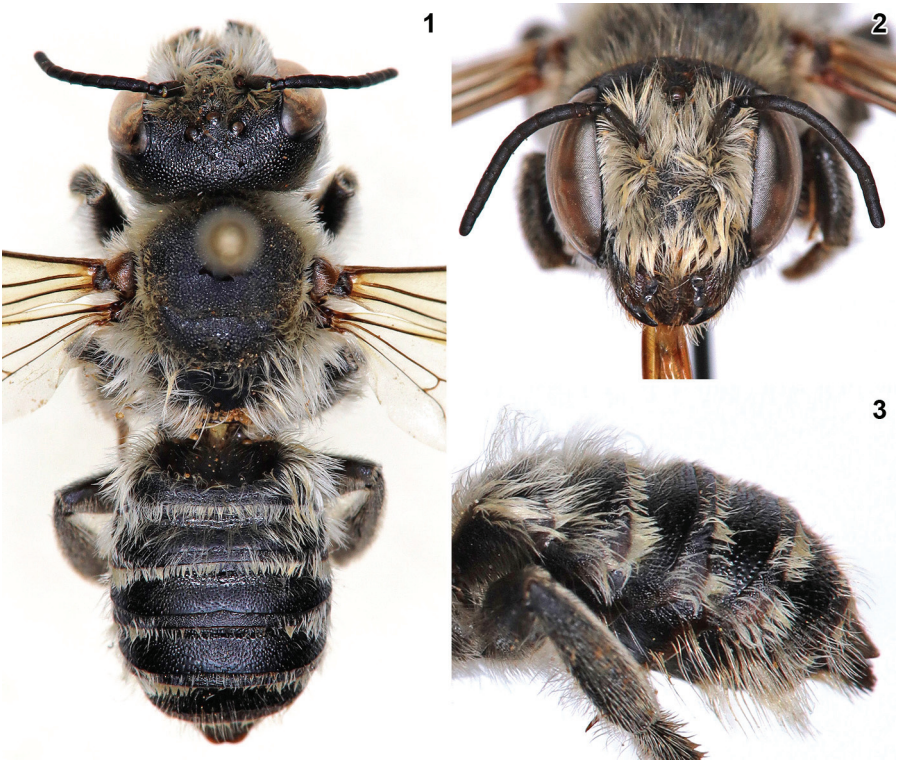
Megachile albisecta: Maharramov *et al*., 2014: 146.

MATERIAL EXAMINED. **2** – 12.VI 2019, 1 ♂, MP, KA, MM [FSCV]; **7** – 25.VII 2016, 1 ♀, MM [IZAB]; **12** – 27.VII 2018, 1 ♂, MP, KA, MM; **13** – 20.VI 2019, 1 ♀, MP, KA, MM; **14** – 26-27.VII 2018, 1 ♀, MP, KA, MM; **16** – 26.VII 2018, 1 ♀, MP, KA, MM; **17** –

27.VII 2018, 1 ♀, 2 ♂, MP, KA, MM; **18** – 25.VI 2020, 7 ♀, 1 ♂, MM [FSCV], 1 gynandromorph, MM [CAFK]; **22** – 28.VII 2018, 3 ♂, MP, KA, MM; **26** – 29.VII 2018, 1 ♂, MP, KA, MM; **29** – 25.VII 2018, 2 ♂, MP, KA, MM; **36** – 21.VII 2018, 2 ♀, MP, KA, MM; **39** – 24-25.VII 2018, 1 ♀, MP, KA, MM; **40** – 13.VI 2019, 2 ♂, MP, KA, MM [FSCV].

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

REMARKS. The collected gynandromorph of this species had a mosaic structure (Figs 1–3). The head was generally male-like (including the tridentate mandibles) except the antennae which were female-like (they had ten flagellomeres and a length typical of the female). It was hardly possible to ascertain the sex-type of the thorax due to its poor sexual dimorphism in this species but the legs were definitely male-like (claws were bifurcate in all the pairs of legs). The metasoma was generally female-like expect the pilosity which was male-like both dorsally (apical bands of the terga were not as strong as in the female) and ventrally (scopa was replaced by sparse long bands of setae). The genitalia were female-like. The specimen bore deutonymphs of a symbiotic mite species.



Figs 1–3. *Megachile* (*Creightonella*) *albisecta* (Klug, 1817), gynandromorph: 1 – habitus, dorsal view (except wings); 2 – head, frontal view; 3 – metasoma, lateral view.

***Megachile* (*Creightonella*) *doriae* Magretti, 1890**

MATERIAL EXAMINED. **26** – 29.VII 2018, 1 ♂, MP, KA, MM [FSCV]; **36** – 21.VII 2018, 1 ♀, 1 ♂, MP, KA, MM [CAFK], 2 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Southern Europe (Greece), North Africa, *Azerbaijan, Turkey, Lebanon, Israel, Iran.

***Megachile* (*Eutricharaea*) *apicalis* Spinola, 1808**

Megachile apicalis: Maharramov *et al*., 2014: 146.

MATERIAL EXAMINED. **2** – 12.VI 2019, 3 ♀, 6 ♂, MP, KA, MM; **3** – 12.VI 2019, 1 ♀, MP, KA, MM [FSCV]; **6** – 12.VI 2009, 1 ♂, MM [IZAB]; **7** – 10.VI 2019, 1 ♂, MP, KA, MM; **14** – 26-27.VII 2018, 1 ♂, MP, KA, MM; **18** – 25.VI 2020, 14 ♀, 5 ♂, MM [FSCV]; **20** – 9.VI 2018, 1 ♂, MM [IZAB], 26.VI 2019, 2 ♂, MM, 5.VI 2020, 1 ♂, MM; **22** – 28.VII 2018, 1 ♀, MP, KA, MM; **26** – 29.VII 2018, 1 ♂, MP, KA, MM; **35** – 24.VII 2018, 2 ♀, MP, KA, MM; **36** – 3.VII 2016, 1 ♀, MM [IZAB]; **38** – 30.VII 2018, 1 ♂, MP, KA, MM; **39** – 24-25.VII 2018, 3 ♀, 1 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Europe, North Africa, Russia (European part), Georgia, Azerbaijan, Turkey, Cyprus, Israel, Iraq, Iran, Pakistan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China, North America (introduced).

***Megachile* (*Eutricharaea*) *burdigalensis* Benoist, 1940**

MATERIAL EXAMINED. **11** – 28.VI 2019, 1 ♂, MM [FSCV]; **16** – 26.VII 2018, 1 ♀, MP, KA, MM [CAFK]; **18** – 1.VI 2020, 1 ♀, MM [FSCV]; **20** – 17-18.VI 2019, 1 ♀, MP, KA, MM [CAFK].

DISTRIBUTION. Western and Southern Europe, Russia (European part), Georgia, Armenia, *Azerbaijan, Kazakhstan.

***Megachile* (*Eutricharaea*) *deceptoria* Pérez, 1890**

Megachile deceptoria: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. **10** – 16.VI 2019, 1 ♀, MP, KA, MM; **16** – 16.VI 2019, 3 ♀, 3 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Siberia), Azerbaijan, Turkey, Iran, Pakistan, Turkmenistan, Tajikistan, Uzbekistan, Kazakhstan.

***Megachile* (*Eutricharaea*) *giraudi* Gerstäcker, 1869**

MATERIAL EXAMINED. **22** – 17.VI 2019, 1 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, Russia (European part), Armenia, *Azerbaijan, Turkey, Tajikistan, Uzbekistan.

***Megachile* (*Eutricharaea*) *leachella* Curtis, 1828**

MATERIAL EXAMINED. **1** – 2-6.VI 2019, 1 ♀, MM [IZAB], 18.VI 2019, 3 ♀, 1 ♂, MP, KA, MM; **4** – 3.VI 2020, 1 ♀, 1 ♂, MM [FSCV]; **6** – 14.VI 2016, 1 ♀, MM [IZAB], 1.VI 2020, 1 ♂, MM [FSCV]; **7** – 7.VI 2018, 1 ♀, MM [IZAB], 2 ♀, MM [FSCV]; **9** – 20.VI 2019, 3 ♀, 2 ♂, MP, KA, MM; **10** – 16.VI 2019, 1 ♀, MP, KA, MM; **13** – 16.VI 2019, 2 ♀, 1 ♂, MP, KA, MM; **14** – 26-27.VII 2018, 1 ♂, MP, KA, MM; **17** – 27.VII 2018,

1 ♂, MP, KA, MM; **18** – 13.VI 2019, 6 ♀, 9 ♂, MP, KA, MM, 25.VI 2020, 1 ♀, MM; **19** – 13.VI 2019, 1 ♀, MP, KA, MM; **20** – 26.VI 2019, 3 ♂, MM, 5.VI 2020, 3 ♀, 1 ♂, MM, 16.VI 2020, 1 ♂, MM; **32** – 19.VI 2019, 1 ♀, MP, KA, MM; **37** – 23.VII 2018, 1 ♀, 2 ♂, MP, KA, MM; **38** – 22.VII 2018, 1 ♂, MP, KA, MM, 30.VII 2018, 1 ♀, 2 ♂, MP, KA, MM; **40** – 13.VI 2019, 1 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Europe, North Africa, Russia, Georgia, Azerbaijan (new to Nakhchivan AR), Turkey, Cyprus, Syria, Israel, Saudi Arabia, Iraq, Iran, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China.

***Megachile* (*Eutricharaea*) *leucomalla* Gerstäcker, 1869**

MATERIAL EXAMINED. **1** – 12.VI 2019, 1 ♂, MP, KA, MM, 18.VI 2019, 1 ♂, MP, KA, MM [FSCV]; **7** – 22.VI 2012, 2 ♂, KA [IZAB]; **14** – 26-27.VII 2018, 1 ♂, MP, KA, MM [CAFK], 2 ♀, MP, KA, MM; **17** – 27.VII 2018, 4 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part), Georgia, Azerbaijan (new to Nakhchivan AR), Turkey, Jordan, Iran, Kazakhstan.

***Megachile* (*Eutricharaea*) *marginata* Smith, 1853**

MATERIAL EXAMINED. **1** – 21.VI 2019, 1 ♀, MP, KA, MM; **13** – 16.VI 2019, 1 ♀, 2 ♂, MP, KA, MM; **14** – 26-27.VII 2018, 1 ♂, MP, KA, MM; **20** – 2.VII 2019, 1 ♀, MM; **38** – 22.VII 2018, 1 ♂, MP, KA, MM; **39** – 24-25.VII 2018, 1 ♀, 2 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Western and Southern Europe, North Africa, Russia (European part), Azerbaijan (new to Nakhchivan AR), Turkey, Cyprus, Iraq, Iran, Afghanistan, Pakistan, Tajikistan, Uzbekistan, Kyrgyzstan.

***Megachile* (*Eutricharaea*) *melanogaster* Eversmann, 1852**

MATERIAL EXAMINED. **12** – 27.VII 2018, 1 ♀, MP, KA, MM [FSCV]; **28** – 21.VII 2018, 2 ♂, MP, KA, MM [CAFK]; **39** – 24-25.VII 2018, 1 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals), *Azerbaijan, Turkey, Kazakhstan.

***Megachile* (*Eutricharaea*) *pilidens* Alfken, 1924**

MATERIAL EXAMINED. **3** – 12.VI 2019, 1 ♀, MP, KA, MM; **6** – 1.VI 2020, 1 ♀, MM; **11** – 15.VII 2020, 1 ♀, MM; **14** – 26-27.VII 2018, 1 ♀, MP, KA, MM, 15.VI 2019, 2 ♀, MP, KA, MM; **16** – 16.VI 2019, 1 ♀, MP, KA, MM; **29** – 25.VII 2018, 1 ♀, 2 ♂, MP, KA, MM; **30** – 24.VII 2018, 1 ♀, MP, KA, MM; **33** – 18.VI 2019, 1 ♂, MP, KA, MM; **35** – 24.VII 2018, 1 ♀, MP, KA, MM; **38** – 22.VII 2018, 1 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, North Africa, Russia (European part, Urals, Western Siberia), Georgia, Armenia, *Azerbaijan, Turkey, Cyprus, Jordan, Israel, Iran, Kazakhstan.

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

Megachile rotundata: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. 5 – 11.VI 2019, 1 ♀, MP, KA, MM; 6 – 14.VI 2019, 1 ♂, MP, KA, MM; 7 – 10.VI 2019, 1 ♀, MP, KA, MM; 20 – 17-18.VI 2019, 1 ♀, 4 ♂, MP, KA, MM, 26.VI 2020, 2 ♀, 3 ♂, MM [FSCV]; 23 – 27.VI 2012, 2 ♂, KA [IZAB].

DISTRIBUTION. Europe, North Africa, Russia, Georgia, Azerbaijan, Turkey, Cyprus, Iran, Pakistan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, Mongolia, China, Japan, India, North and South America (introduced), Australia and New Zealand (introduced).

***Megachile* (*Eutricharaea*) *semicircularis* auct., nec van der Zanden, 1996**

MATERIAL EXAMINED. **1** – 12.VI 2019, 1 ♀, MP, KA, MM, 18.VI 2019, 1 ♀, 1 ♂, MP, KA, MM; **3** – 12.VI 2019, 2 ♀, MP, KA, MM; **7** – 6.VI 2020, 1 ♀, MM; **9** – 20.VI 2019, 2 ♀, MP, KA, MM; **11** – 15.VII 2020, 1 ♀, MM; **13** – 16.VI 2019, 1 ♀, MP, KA, MM; **14** – 26-27.VII 2018, 1 ♀, MP, KA, MM; **18** – 13.VI 2019, 2 ♂, MP, KA, MM; **19** – 13.VI 2019, 2 ♀, MP, KA, MM [FSCV]; **25** – 29.VI 2007, 1 ♀, MM [IZAB]; **36** – 21.VII 2018, 1 ♀, MP, KA, MM, 26.VI 2020, 2 ♀, MM; **38** – 30.VII 2018, 2 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Southern Europe (Greece), Russia (European part), *Azerbaijan, Turkey, Iran.

REMARKS. The description of *M. semicircularis* by van der Zanden (1996) perfectly fits the characters of the specimens listed in the above material; however, the type series includes several taxa and the male holotype does not belong to this species but belongs to *M. apicalis* (C.J. Praz, in litt.).

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

Megachile centuncularis: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. **17** – 27.VII 2018, 1 ♂, MP, KA, MM [CAFK]; **35** – 24.VII 2018, 1 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Europe, North Africa, Russia, Georgia, Azerbaijan, Turkey, Cyprus, Israel, Iran, Kazakhstan, China, Japan, India, Malaysia, North America.

***Megachile* (*Megachile*) *melanopyga* Costa, 1863**

Megachile melanopyga: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. **25** – 29.VI 2007, 1 ♀, MM [IZAB].

DISTRIBUTION. Western, Southern, and Eastern Europe, Russia (European part, Siberia), Azerbaijan, Turkey, Cyprus, Jordan, Israel, Kazakhstan, China, Korean Peninsula, Japan.

***Megachile* (*Megachile*) *octosignata* Nylander, 1852**

MATERIAL EXAMINED. **33** – 18.VI 2019, 1 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, Russia (European part), Georgia, Azerbaijan (new to Nakhchivan AR), Turkey, Iran.

***Megachile* (*Megachile*) *pilicrus* Morawitz, 1877**

MATERIAL EXAMINED. **12** – 27.VII 2018, 1 ♂, MP, KA, MM; **18** – 25.VI 2020, 3 ♀, MM; **22** – 28.VII 2018, 2 ♀, MP, KA, MM; **26** – 29.VII 2018, 1 ♀, MP, KA, MM; **31** – 23.VII 2018, 1 ♂, MP, KA, MM; **39** – 24-25.VII 2018, 9 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Western, Southern, and Eastern Europe, Russia (European part), Georgia, *Azerbaijan, Turkey, Iran, Tajikistan, Uzbekistan, Kyrgyzstan, China.

***Megachile* (*Megachile*) *versicolor* Smith, 1844**

Megachile versicolor: Maharramov *et al*., 2014: 148.

MATERIAL EXAMINED. **31** – 23.VII 2018, 1 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Europe, Russia, Azerbaijan, Turkey, Iran, Kazakhstan, Mongolia.

***Megachile* (*Pseudomegachile*) *ericetorum* Lepeletier de Saint-Fargeau, 1841**

MATERIAL EXAMINED. **7** – 6.VI 2020, 1 ♂, MM; **17** – 15.VI 2019, 1 ♂, MP, KA, MM [FSCV]; **20** – 9.VI 2018, 1 ♂, MM [IZAB], 17-18.VI 2019, 1 ♀, MP, KA, MM; **22** – 17.VI 2019, 1 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Europe, North Africa, Russia (European part, Urals), Armenia, *Azerbaijan, Turkey, Cyprus, Syria, Israel, Iran, Kazakhstan, China, North America (introduced).

***Megachile* (*Pseudomegachile*) *flavipes* Spinola, 1838**

Megachile flavipes: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. **6** – 1.VI 2020, 1 ♂, MM; **9** – 20.VI 2019, 4 ♀, MP, KA, MM; **13** – 20.VI 2019, 4 ♀, MP, KA, MM [FSCV]; **20** – 9.VI 2018, 1 ♂, MM [CAFK], 17-18.VI 2019, 5 ♂, MP, KA, MM, 26.VI 2019, 1 ♂, MM, 5.VI 2020, 1 ♂, MM, 16.VI 2020, 1 ♂, MM [FSCV]; **38** – 30.VII 2018, 1 ♂, MP, KA, MM [CAFK].

DISTRIBUTION. Southern Europe (Greece), North Africa, Russia (European part), Armenia, Azerbaijan, Turkey, Syria, Israel, Saudi Arabia, Oman, Iraq, Iran, Afghanistan, Pakistan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, India.

***Megachile* (*Pseudomegachile*) *tecta* Radoszkowski, 1888**

MATERIAL EXAMINED. **14** – 26-27.VII 2018, 2 ♀, MP, KA, MM [CAFK], 7 ♀, MP, KA, MM; **20** – 26.VI 2019, 1 ♂, MM, 2.VII 2019, 1 ♂, MM, 16.VI 2020, 2 ♂, MM; **29** – 25.VII 2018, 1 ♀, MP, KA, MM; **37** – 23.VII 2018, 6 ♀, MP, KA, MM; **38** – 22.VII 2018, 2 ♀, MP, KA, MM [FSCV].

DISTRIBUTION. Russia (European part), *Azerbaijan, Iran, Afghanistan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China.

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

Megachile circumcincta: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. **8** – 11.VI 2019, 3 ♂, MP, KA, MM; **22** – 17.VI 2019, 2 ♀, 2 ♂, MP, KA, MM [FSCV]; **24** – 22.V 2019, 1 ♂, MM [IZAB].

DISTRIBUTION. Europe, North Africa, Russia, Georgia, Azerbaijan, Turkey, Iran, North America.

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

Megachile lagopoda: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. **26** – 29.VII 2018, 1 ♂, MP, KA, MM [FSCV].

DISTRIBUTION. Europe, North Africa, Russia, Azerbaijan, Turkey, Lebanon, Israel, Iran, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China, Korean Peninsula, Japan.

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

Megachile maritima: Maharramov *et al*., 2014: 147.

MATERIAL EXAMINED. **6** – 14.VI 2016, 1 ♀, MM; **11** – 8.VI 2017, 1 ♂, MM [IZAB]; **16** – 16.VI 2019, 1 ♂, MP, KA, MM [FSCV]; **21** – 26.V 1980, 1 ♀, KA; **24** – 13.VI 1980, 1 ♀, KA, 14.VI 1980, 2 ♀, KA [IZAB].

DISTRIBUTION. Europe, North Africa, Russia (European part, Siberia, Far East), Azerbaijan, Turkey, Iran, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, China, Korean Peninsula.

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

MATERIAL EXAMINED. **24** – 13.VI 1980, 1 ♀, KA, 14.VI 1980, 1 ♀, KA [IZAB].

DISTRIBUTION. Europe, North Africa, Russia, Georgia, *Azerbaijan, Turkey, Israel, Tajikistan, Kyrgyzstan, China, Korean Peninsula, Japan.

DISCUSSION

We reported the data on 38 species of megachilid bees in the tribes Lithurgini, Dioxyini, and Megachilini from the Nakhchivan Autonomous Republic of Azerbaijan. Among them, 17 species are newly recorded from Azerbaijan and four other species are newly recorded from Nakhchivan AR. At the same time, we did not collect or find the material on ten species of the 31 previously reported from Azerbaijan by Maharramov *et al.* (2014) and Ascher & Pickering (2021): *Aglaoapis tridentata* (Nylander, 1848), *Coelioxys* (*Allocoelioxys*) *castaneus* Morawitz, 1886, *C.* (*A.*) *sogdianus* Morawitz, 1875, *C.* (*Paracoelioxys*) *elongatus* Lepeletier de Saint-Fargeau, 1841, *C.* (*Rozeniana*) *rufescens* Lepeletier de Saint-Fargeau et Audinet-Serville, 1825, *Megachile* (*Chalicodoma*) *alborufa* Friese, 1911, *M.* (*Ch.*) *desertorum* (Morawitz, 1875), *M.* (*Eutricharaea*) *concinna* Smith, 1879, *M.* (*Pseudomegachile*) *cinnamomea* Alfken, 1926, and *M.* (*P.*) *saussurei* Radoszkowski, 1874. We consider at least two of them (*M. desertorum* and *M. concinna*) being incorrectly identified and apparently reported from Nakhchivan AR by a mistake. Their distributional ranges are distant from Azerbaijan (Ascher & Pickering, 2021) and their records from its territory are hardly possible. Thus, we added 17 species to the 29 already known ones that resulted to 46 species in the tribes Lithurgini (two species), Dioxyini (two species), and Megachilini (42 species). Of them, only three species were not recorded in Nakhchivan AR (*C. sogdianus*, *M. alborufa*, and *M. cinnamomea*). Combining these data with the previously published numbers of species in the tribes Osmiini (Proshchalykin & Maharramov, 2020 – 68 species) and Anthidiini (Fateryga *et al*., 2020 – 46 species), we can assume that the fauna of Azerbaijan contains at least 160 species of megachilid bees. These data are obviously incomplete (at least due to the five unidentified species) and further studies of megachilid bees of this country will certainly reveal new important results.

A gynandromorph of *M. albisecta* is reported for the first time but gynandromorphs of a similar mosaic structure are known for at least 25 other species in the genus *Megachile* (Michez *et al*., 2009; Fateryga *et al*., 2011; Hinojosa-Díaz *et al*., 2012). Most of them have a male-like head (with the exception of female-like antennae), male-like legs, and a female-like metasoma with female genitalia. These gynandromorphs, however, vary in the length of the antennae and the pilosity of the metasoma. For example, in the previously described gynandromorphs of *M. deceptoria* and *M. marginata* (reported as *M. picicornis* Morawitz, 1877) (Fateryga *et al*., 2011), the antennae had ten flagellomeres but a length typical of the

male. Their metasomae were also female-like but had a different pilosity: the terga had female-like bands of setae while the sterna were completely bare that was not typical of either female or male. It is obvious that all these gynandromorphs are unable either to collect pollen or to build nests because they do not have the scopa and their mandibles are not adapted to leaf-cutting. Such deviant expressions of the male-like traits (e. g., complete absence of the scopa or its replacement by sparse long bands of setae) in gynandromorphic bee females may be treated as an evolutionary novelty associated with the ancestry of the brood parasitism (Wcislo *et al*., 2004; Fateryga *et al*., 2011).

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