



To Studies on the Fauna of the Jewel Beetles (Coleoptera: Buprestidae) of the Nakhchivan Autonomous Republic of Azerbaijan

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Abstract: The purpose of this work is to study the current state of the fauna of jewel beetles of the Nakhchivan Autonomous Republic of Azerbaijan. Due to the special geographical position of the Nakhchivan Autonomous Republic, as well as due to the lack of common borders with Azerbaijan, over the past 30 years there have been no special studies on jewel beetles here. Nakhchivan Autonomous Republic is famous for its orchards far beyond the borders of Azerbaijan, and many representatives of the Buprestidae family are serious pests of fruit trees, therefore the study of the species composition is of particular topicality. The peculiarities of the floristic complex of the Nakhchivan Autonomous Republic contributed to the formation of a specific fauna of insects, including jewel beetles. The studies were carried out in the period from 2012 to 2018, beetles collection was carried out from various biotopes during the spring-summer expedition trips that covered all areas of Nakhchivan AR. The paper provides information on the 5 subfamilies and 11 genera. The number of species in subfamilies is distributed as follows: Julodinae - 3, Polycestinae - 4, Chrysocroinae - 8, Buprestinae - 9, Agrilinae - 5. The species *Agrilus pratensis* RATZEBURG, 1837 is first recorded for the fauna of Azerbaijan.. Our comparative studies show that today the qualitative composition of the Buprestidae family of the Nakhchivan Autonomous Republic is represented by a large number of species than the other two natural regions of Azerbaijan: Azerbaijan's territory of the Greater Caucasus and the Lenkoran natural region. The article presents the taxonomic distribution of species, the places of their gathering, the coordinates of the locality, as well as the worldwide distribution.

Keywords: Nakhchivan, Jewel Beetles, Species, Distribution

1. Introduction

The first information about the jewel-beetles spread in Azerbaijan is given in the works of Menetrie [1], Babajanidi [2], who recorded 57 species for the Elisavetpol (the former name of Ganja) environs. The works of Richter are of great importance [3]. N.G. Samadov indicates that the fauna of Azerbaijani jewel-beetles includes 171 species, 26 of which are pests of agricultural crops [4]. M.G. Volkovich recorded 151 species of jewel-beetles from Azerbaijan [5]. S. Billy works also include species from Azerbaijan [6]. The natural conditions of Azerbaijan are heterogeneous and very interesting in faunistic point of view. The flora and fauna of some areas include relict species. In modern conditions of strong anthropogenic impact, the processes of transformation

and depletion of natural cenoses take place. In this regard, the study of the faunistic composition and ecological features of the jewel beetles of various natural areas of the country is very relevant. In neighboring countries of Azerbaijan, the study of this group of beetles is also of great interest among researchers in Russia [7], Turkey [8, 9], Iran [10], Armenia [11], Turkmenistan [12], Kazakhstan [13].

Nakhchivan AR occupies the south-western part of the Caucasus. Almost 75% of the territory lies at an altitude of more than 1000 m. On the territory of Nakhchivan AR there is rare flora and fauna of Azerbaijan. The south and south-western parts of the territory along the Araks River are a plain of 600-1000 m in height. Although the territory of the Autonomous Republic is 6.2% of the entire territory of the Republic of Azerbaijan, according to species diversity its

flora and fauna represents respectively about 60% and 56% flora and fauna of the country. In the territory of Nakhchivan AR, the lower vegetative cover and its types are divided into: deserts and semi-deserts; phryganoid and steppe vegetation; mountain meadows and steppes; high grass, subalpine and alpine meadows [14]. A list of 29 species of beetles belonging to 11 genera and 5 subfamilies is presented below. The species *Agrilus pratensis* RATZEBURG, 1837 is first recorded for the fauna of Azerbaijan.

2. Material and Methods

Material. The species collected by senior author, as well as by colleagues used as a material for paper. The regular collections were conducted in the spring and summer seasons during 2012-2018 by standard entomological methods [15]. Species determination was carried out by keys [16].

Distribution. The separate list containing the names and coordinates of collection sites in Nakhchivan AR of Azerbaijan is given.

Taxonomic and nomenclatural acts. The taxonomic position, status, geographical distribution and nomenclature of the species corresponds to the modern system [5], the names are given in alphabetical order. Localities and dates of collection are listed in chronological order.

Mapping. Map was generated by exporting distributional data from the relational database. The collections of the beetles were conducted by generally-used entomological sampling methods, during the expedition trips to the regions of Nakhchivan AR (Babek, Julfa, Shahbuz, Sharur, Ordubad, Nakhchivan) covering spring-summer period from 2012 to 2018.



Figure 1. Map of the Nakhchivan Autonomous Republic of Azerbaijan.

3. Results

In a previously published paper on the fauna of the jewel beetles of Nakhchivan AR, 18 species were presented [17].

Over the past period, another 11 were added to this number. Below is a list of 29 species of jewel beetles collected in the Nakhchivan Autonomous Republic in accordance with their taxonomic position, an indication of the collection sites and localities. Pictures of some of them are also presented.

Family BUPRESTIDAE LEACH, 1815

Subfamily Julodinae LACORDAIRE, 1857

Genus *Julodella* SEMENOV, 1893

Julodella dilaticollis SEMENOV, 1893

Material: Julfa, Erefse, 30.06.2018, N39° 17'06.4" E045°46'59.7", 1591 m. I.KERIMOVA.6 sp.: Sharur, Tezekend, 29.06.2018, N39° 24'59.8" E045° 01'53.3", 777 m, I.KERIMOVA.1 sp.

Distribution: Europe: Azerbaijan, Georgia. Asia: Iran, Turkey.

Genus *Julodis* ESCHSCHOLTZ, 1829

Julodis andreae andreae (OLIVIER, 1790)

Material: Sirab, 23.06.12, N39° 14'826.4" E045° 26'388", H - 924 m, E.HUSEYNOVA. 4 sp.; Ordubad, Aghdara, 22.07.17, N39° 11'172", E045° 91'555", H-2018 m, E.HUSEYNOVA, 6 sp; Shakhdzuz, 02.07.18, N39° 52'840" E045° 77'49.0", H-1919 m, I.KERIMOVA. 1 sp.

Distribution: Europe: Azerbaijan, Armenia. Asia: Iran, Iraq, Turkey. Syria



Figure 2. *Julodis andreae andreae* (HUSEYNOVA E.).

Julodis variolaris variolaris PALLAS, 1771

Material: Ordubad, Aghdara, 22.07.17, N39° 11'172" E045° 91'555", H-2018 m. E.HUSEYNOVA, 1 sp.

Distribution: Europe: Azerbaijan, Kazakhstan, Russia (South European Territory). Asia: Afghanistan, China (Gansu), Iran, Kyrgyzstan, Kazakhstan, Turkmenistan, Turkey, Uzbekistan, China (Xinjiang).



Figure 3. *Julodis variolaris variolaris* (HUSEYNOVA E.).

Subfamily *Polycestinae* LACORDAIRE, 1857

Tribe *Acmaeoderini* KERREMANS, 1893

Genus *Acmaeoderella* COBOS, 1955

Subgenus *Carininota* VOLKOVITSH, 1979

Acmaeoderella flavofasciata albifrons (ABEILLE de PERRIN, 1891)

Material: Ordubad, 25.06.12, N39° 07'594" E 045° 26'388", H - 1199m, E.HUSEYNOVA, 1 sp.; Shakhbuz, 02.07.18, H-1919m: N-39.52°840" E-045.77°490". I.KERIMOVA1 sp.; Shakhbuz, Kolani, 02.07.2018. N39° 27'03.33" E 045° 40'34.89", H - 1393m. I.KERIMOVA 3 sp.

Distribution: Europe: Azerbaijan, Armenia. Asia: Turkey.

Subgenus *Euacmaeoderella* VOLKOVITSH, 1979

Acmaeoderella gibbulosa MÉNÉTRIÉS, 1832

Material: Ordubad, Aghdara, 22.07.17. N39° 11'172" E045° 91'555", H-2018 m, E.HUSEYNOVA, 2 sp.

Distribution: Europe: Azerbaijan, Armenia. Bulgaria, Croatia, Macedonia. Asia: Cyprus, Iran, Iraq, Israel, Jordan, Kazakhstan, Lebanon, Syria, Turkmenistan, Turkey.

Acmaeoderella vetusta (MÉNÉTRIÉS, 1832)

Material: Ordubad, Behrud, 27.06.12, N39° 04'32.16" E 045° 51'48.87", H - 1348 m, E.HUSEYNOVA, 8 sp.; Ordubad, Aghdara, 22.07.17, N39° 11'172" E045° 91'555", H-2018 m, E.HUSEYNOVA, 2 sp.; Ordubad, Aghdara, 06.07.18, 10 sp.; Kengerli, 03.07.18, N39° 23'.57.94" E 045° 10'59.73", I.KERIMOVA, H - 1074 m. 1sp.

Distribution: Europe: Azerbaijan, Armenia. Bulgaria, Croatia. Asia: Cyprus, Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkmenistan, Turkey.

Acmaeoderella villosula STEVEN, 1830

Material: Ordubad, Aghdara, 06.07.18. N39° 11'172" E045° 91'555", H-2018 m, I.KERIMOVA, 2 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia, Croatia, Macedonia. Asia: Afghanistan, Cyprus, Iran, Iraq, Israel, Jordan, Lebanon, Syria, Tajikistan, Turkmenistan, Turkey.



Figure 4. (USB) *Acmaeoderella villosula* (HUSEYNOVA E.).

Subfamily *Chrysochroinae* LAPORTE, 1835

Tribe *Dicercini* GISTEL, 1848

Genus *Capnodis* ESCHSCHOLTZ, 1829

Capnodis miliaris miliaris (KLUG, 1829)

Material: Ordubad, Bilav, 26.06.12. N39° 07'594" E045° 26'388", H - 1199 m, E.HUSEYNOVA. 1 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia, Italy,

Russia (South European Territory). Asia: Cyprus, Iran, Iraq, Israel, Jordan, Kyrgyzstan, Kazakhstan, Lebanon, Syria, Turkmenistan, Turkey, Uzbekistan.



Figure 5. *Capnodis miliaris miliaris* (HUSEYNOVA E.).

Genus *Perotis* DEJEAN, 1833

Perotis cuprata (KLUG, 1829)

Material: Sirab, 07.06.17, N39° 14'826.4" E045° 26'388", H - 924 m, E.HUSEYNOVA. 1 sp.

Distribution: Europe: Azerbaijan, Armenia. Asia: Iran, Iraq, Jordan, Lebanon, Syria, Turkey.

Perotis lugubris longicollis KRAATZ, 1880

Material: Ordubad, Aghdara, 28.06.12, N39° 11'172" E045° 91'555", H-2018 m, E.HUSEYNOVA. 3 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia. Asia: Iran, Iraq, Turkmenistan, Turkey.

Tribe *Sphenopterini* LACORDAIRE, 1857

Genus *Sphenoptera* DEJEAN, 1833

Subgenus *Chrysoblemma* JAKOVLEV, 1889

Sphenoptera orichalcea (PALLAS, 1781)

Material: Julfa, 01.07.2018. N-38°56'52.29", E-045° 037' 11.22", H 804, I.KERIMOVA, 1 sp.

Distribution: Europe: Azerbaijan, Armenia, Kazakhstan, Russia (Central and South European Territory). Asia: Kyrgyzstan, Kazakhstan, Mongolia, China (Northern Northwest Territory), Tajikistan, Turkmenistan, Uzbekistan. Russia (West Siberia).

Sphenopterascovitzii scovitzii FALDERMANN, 1835

Material: Ordubad, 25.06.12. N-39° 07' 594" E-045° 26' 388", H - 1199m, E.HUSEYNOVA. 1 sp.

Distribution: Europe: Azerbaijan, Armenia, Russia (South European Territory). Asia: Afghanistan, Iran, Iraq, Israel, Kazakhstan, Tajikistan, Turkmenistan, Turkey, Uzbekistan.

Subgenus *Deudora* JAKOVLEV, 1899

Sphenoptera sculpticollis HEYDEN, 1886

Material: Chalkhan Gala, 02.05.12. N-39° 19'256". E 045° 50'005". H-1900, E.HUSEYNOVA 1 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia. Asia: Cyprus, Iran, Iraq, Israel, Lebanon, Syria, Turkey.

Sphenoptera simplex JAKOVLEV, 1893

Material: Ordubad, Agdara, 28.07.2017. N-39° 11'172", E-045° 91'555", -2018 m, E.HUSEYNOVA. 1 sp.

Distribution: Europe: Azerbaijan, Armenia, Greece (Thracia, Aegean Islands). Asia: Iran, Turkey.

Subgenus *Sphenoptera* DEJEAN, 1833

Sphenoptera tragacanthae KLUG, 1829

Material: Ordubad, Agdara, 22.07.2017, N-39° 11' 172", E-045° 91' 555", H-2018 m, E.HUSEYNOVA. 11sp.; Shakhbuz, 02.07.2018, N-39° 052'840" E-045° 77'490" H-1919m, I.KERIMOVA.1 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia, Greece, Ukraine (Krym) Asia: Afghanistan, Iran, Iraq, Kyrgyzstan, Lebanon, Pakistan, Syria, Turkmenistan, Turkey.

Subfamily *Buprestinae* LEACH, 1815

Tribe *Anthaxiini* GORY & LAPORTE, 1837

Genus *Anthaxia* ESCHSCHOLTZ, 1829

Subgenus *Anthaxia* ESCHSCHOLTZ, 1829

Anthaxia bicolor bicolor FALDERMANN, 1835

Material: Shakhbuz, 3.05.12,N-39° 052'840" E-045° 77'490", H-2018 m, E.HUSEYNOVA.12 sp.

Distribution: Europe: Azerbaijan, Albania, Armenia, Bulgaria, Croatia, Georgia, Greece, Macedonia, Romania, Russia (South European Territory), Turkey, Ukraine (Krym).

Asia: Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkmenistan, Turkey.



Figure 6. *Anthaxia bicolor bicolor* (HUSEYNOVA E.).

Anthaxia ephippiata L. REDTENBACHER, 1850

Material: Shakhbuz, 3.05.12,N-39° 052'840" E-045° 77'490" H-2018 m, E.HUSEYNOVA.1 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia. Asia: Afghanistan, Iran, Iraq, Syria, Turkmenistan, Turkey.



Figure 7. (USB) *Anthaxia ephippiata* (HUSEYNOVA E.).

Anthaxia muliebris OBENBERGER, 1918

Material: Ordubad, Behrud, 27.06.12, N-39° 04'32.16", E-045° 51'48.87", H - 1348 m, E.HUSEYNOVA.1sp. Ordubad,

Bilav, 26.06.12, N-39° 07'594", E-045° 26'388", H-1199m. E.HUSEYNOVA. 3 sp.

Distribution: Europe: Azerbaijan, Armenia, Turkey. Asia: Iran, Israel, Syria, Turkmenistan, Turkey.

Subgenus *Cratomerus* SOLIER, 1833

Cratomerus diadema shelkovnikovi OBENBERGER, 1940

Material: Ordubad, Behrud. 27.06.12. N-39° 04'32.16", E-045° 51'48.87", H - 1348 m, E.HUSEYNOVA. 2 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia. Asia: Iran

Cratomerus hungaricus sitta (KÜSTER, 1852)

Material: Shakhbuz, 23.06.12. N-39° 052'840" E-045° 77'490", H-1919m, E.HUSEYNOVA.4 sp.; Ordubad Bilav, 26.06.12. N-39° 07'594" E-045° 26'388", H - 1199m. E.HUSEYNOVA. 7 sp.

Distribution: Europe: Azerbaijan, Armenia Georgia, Russia (South European Territory), Ukraine. Asia: Iran, Turkmenistan, Turkey.



Figure 8. *Cratomerus hungaricus sitta* (KERIMOVA I.).

Cratomerus mirabilis (ZHIKHAREV, 1918)

Material: Shakhbuz, 23.06.12. N-39° 052'840" E-045° 77'490" H-1919 m, E.HUSEYNOVA. 2 sp.

Distribution: Europe: Azerbaijan, Armenia. Asia: Turkey.

Cratomerus sponsa (KIESENWETTER, 1857)

Material: Ordubad, Bilav, 26.06.12,N-39° 07'594", E-045° 26'388", H - 1199m. E.HUSEYNOVA.3 sp.

Distribution: Europe: Azerbaijan, Armenia, Bulgaria, Georgia, Greece, Macedonia, Romania, Turkey. Asia: Iran, Israel, Jordan, Lebanon, Syria, Turkmenistan, Turkey.

Subgenus *Haplanthaxia* REITTER, 1911

Anthaxia cichorii (OLIVIER, 1790)

Material: Shakhbuz, 3.05.12. N-39° 052'840" E-045° 77'490" H-1919m, E.HUSEYNOVA. 3 sp.; Sirab, 23.06.12, N39° 14'826.4" E045° 26'388", H - 924 m, E.HUSEYNOVA. 4 sp.; Ordubad, 25.06.12. N-39° 07'594" E-045° 26'388", H - 1199 m, E.HUSEYNOVA. 4 sp.; Agdara, 05.07.2018, N39° 11'172" E045° 91'555" H-2018 m, I.KERIMOVA, 2 sp.

Distribution: Europe: Azerbaijan, Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Russia (Central and South European Territory), Czech Republic, France, Germany, Georgia, Greece, Hungary, Italy, Macedonia, Moldova, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine. Asia: Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkmenistan, Turkey.



Figure 9. (USB) *Anthaxia cichorii* (HUSEYNOVA E.).

Tribe *Melanophilini* BEDEL, 1921

Genus *Trachypterus* KIRBY, 1837

Trachypterus picta decostigma FABRICIUS, 1787

Material: Shakhbuz, 27.07.16. N-39° 52'840" E-045° 77'490". H-1919m, I.KERIMOVA, 8 sp.

Distribution: Europe: Azerbaijan, Albania, Armenia, Austria, Bosnia Herzegovina, Belarus, Croatia, Czech Republic, France, Georgia, Greece, Hungary, Italy, Macedonia, Moldova, Montenegro, Portugal, Romania, Serbia, Slovakia, Switzerland, Turkey, Ukraine. North Africa: Algeria, Morocco, Tunisia. Asia: Cyprus, Iran, Iraq, Israel, Syria, Turkey.



Figure 10. *Trachypterus picta decostigma* (KERIMOVA I.).

Subfamily *Agrilinae* LAPORTE, 1835

Tribe *Agrilini* LAPORTE, 1835

Subtribe *Agrilina* LAPORTE, 1835

Genus *Agrilus* CURTIS, 1825

Agrilus pratensis RATZEBURG, 1837

Material: Shakhbuz, 23.06.12, 10.06.2018, N-39° 52'840" E-045° 77'490", H-1393 m, E.HUSEYNOVA, 2 sp.

Distribution: Europe: Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark Finland France, Great Britain, Germany, Georgia, Greece, Hungary, Italy, Kazakhstan, Latvia Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands, Norway, Poland, Romania, Serbia, Slovakia, Slovenia, Spain, Russia (North Central South European Territory), Sweden, Switzerland, Turkey, Ukraine. Asia: Russia (West, East and Far East Siberia), Iran, Kazakhstan, Mongolia, China, Turkey.

Agrilus viridis LINNAEUS, 1758

Material: Shakhbuz, 23.06.12, N-39° 52'840" E-045° 77'490", H-1393 m, E.HUSEYNOVA, 11 sp.

Distribution: Europe: Azerbaijan, Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Finland, France, Great Britain, Germany, Georgia, Greece, Hungary, Italy, Kazakhstan, Latvia Liechtenstein, Lithuania, Luxembourg, Macedonia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Russia (North Central South European Territory), Sweden, Switzerland, Turkey, Ukraine. North Africa: Algeria, Morocco, Madeira Archipelago, Tunisia. Asia: China, Russia (West, East and Far East Siberia), Iran, Japan Kyrgyzstan, Kazakhstan, Mongolia, Turkey, Uzbekistan.

Tribe *Coraebini* BEDEL, 1921

Subtribe *Coraebina* BEDEL, 1921

Genus *Coraebus* GORY&LAPORTE, 1839

Coraebus elatus (FABRICIUS, 1787)

Material: Shakhbuz, 23.06.12, N-39° 52'840" E-045° 77'490", H-1393 m, E.HUSEYNOVA, 7 sp.

Distribution: Europe: Azerbaijan, Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Belarus, Croatia, Czech Republic, France, Germany, Georgia, Greece, Hungary, Italy, Macedonia, Montenegro, Poland, Portugal, Romania, Russia (South, Central and North European Territory), Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine. North Africa: Algeria, Egypt. Asia: Iran, Iraq, Israel, Kazakhstan, Syria, Turkmenistan, Turkey, Russia (West Siberia).

Coraebus rubi (LINNAEUS, 1767)

Material: Ordubad, Agdara, 05.07.2018. N-39° 11'172" E-045° 91'555", H-2018 m, I.KERIMOVA, 4 sp.

Distribution: Europe: Azerbaijan, Albania, Armenia, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Georgia, Greece, Hungary, Italy, Luxembourg, Macedonia, Montenegro, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Russia (South European Territory), Switzerland, Turkey, Ukraine. North Africa: Algeria, Morocco. Asia: Cyprus, Iran, Iraq, Israel, Lebanon, Syria, Turkey.



Figure 11. *Coraebus rubi* (KERIMOVA I.).

Subtribe *Meliboeina* MAJER, 2000

Genus *Meliboeus* DEYROLLE, 1864

Meliboeus robustus (KÜSTER, 1852)

Material: Ordubad, Agdara, 28.06.12, N-39° 11' 172", E-045° 91' 555", H-2018 m, E.HUSEYNOVA. 5 sp.

Distribution: Europe: Azerbaijan, Armenia, Georgia, Russia (South European Territory). Asia: Iran, Iraq, Turkmenistan, Turkey.



Figure 12. *Meliboeus robustus* (HUSEYNOVA E.).

As the diagram 1 shows, the largest number of species in the studied region belongs to the subfamily Buprestinae, and the smallest one to Julodinae.

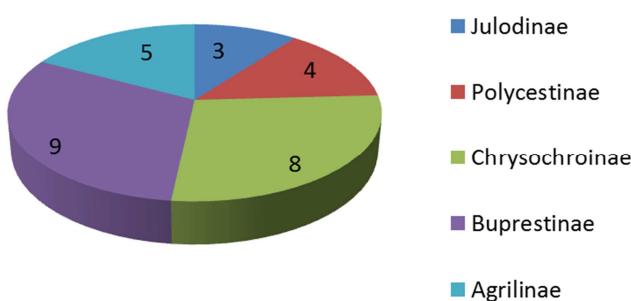
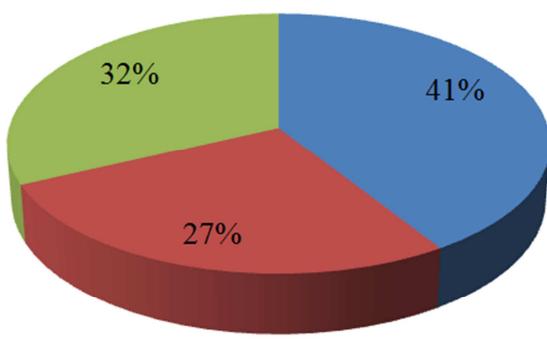


Figure 13. Numerical ratio of species by subfamily.

The compare of the number of species of jewel beetles in the Nakhchivan Autonomous Republic with other regions of Azerbaijan revealed, that it constitutes the majority making % 41.



■ Naxcivan ■ Lankaran ■ Greate Caucasus

Figure 14. Percentage ratio of species of jewel beetles in 3 natural areas of Azerbaijan.

4. Conclusion

This article is part of the work devoted to the study of the current state of the beetles of the Buprestidae family of Azerbaijan. The species composition of the jewel beetles of the Nakhchivan Autonomous Republic differs from other natural areas of Azerbaijan in particular diversity, 29 species presented here belong to 5 subfamilies (data are presented in the diagrams 13, 14). One of them *Agrilus pratensis* RATZEBURG, 1837 is new to Azerbaijan. Species collection covered all areas of the autonomous republic, which are presented on the map. The geographical coordinates of the sites of the finds and the distribution of beetles in the world according to literary sources are indicated. The work is illustrated with 11 original pictures of beetles.

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