

# Jewel beetles (Coleoptera, Buprestidae) of Zhetysu Alatau (Kazakhstan)

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## Abstract

Fifty-seven species and subspecies of jewel beetles (Buprestidae) from 20 genera, 11 tribes and 5 subfamilies (Julodinae, Polycestinae, Chrysochroinae, Buprestinae and Agrilinae) are recorded from Zhetysu (Dzhungar) Alatau Range. By species diversity at the subfamily level, the jewel beetles are distributed as follows: Julodinae – 1 species, Polycestinae – 5 species, Chrysochroinae – 14 species, Buprestinae – 14 species, Agrilinae – 22 species. At the genus level, *Agrilus* (15 species), *Sphenoptera* (9), *Acmaeoderella* (5), *Anthaxia* (5) and *Chrysobothris* (3) are the most abundant in the Zhetysu Alatau. The identified species of jewel beetles are confined to seven altitude belts and biotopes: the most populated is a shrub-steppe belt (25 species) followed by mountain-floodplain forests (14) and leaf-fir-forest belt (14), semidesert (11) and coniferous-forest (9) belts; medium-mountain mixedgrass belt (5) and subalpine meadows (2) demonstrate much poorer jewel beetle composition. Species of jewel beetles with known host plants are associated with arboreal and shrub plants from 21 families.

## Keywords

Distribution, fauna, host plants, jewel beetles, the mountains, Southeast Kazakhstan, Zhetysu Alatau

## Introduction

The Buprestidae family is one of the largest families of beetles (Coleoptera), accounting for more than 15,000 species in the world fauna (Bellamy 2008, updated).

In Kazakhstan, more than 200 species and subspecies of jewel beetles are recorded (Kostin 1973; Tleppaeva 2011; Volkovitsh 2013).

Jewel beetles are representatives of the life form of insects with a complete metamorphosis developing in the larval stage within living, dying, and dead plant tissues, while in the adult stage they feed with green parts or flowers of different host plants (Richter 1949). Jewel beetle larvae develop in trunks and twigs of woody plants, in stems of herbaceous plants, or in roots of both; Tracheini larvae (Agrilinae) are leaf miners. The larvae of some jewel beetles (Julodinae) develop in the soil and feed externally on the roots.

The duration of the development cycles from egg to beetle is varied in different taxa. Large species of Chalcophorinae and Buprestinae develop between two and four years. Smaller forms usually have a one-year generation, the representatives of Tracheini (Agrilinae) can have 2-3 generations per year. Eggs are laid one by one or several eggs together on the plant surface or within fissures and cracks; some species lay eggs in the soil (Julodinae, Sphenopterini) or on the leaves (Tracheini).

In general, the biology of many species of jewel beetle is still poorly studied. Some species are serious pests of forest and agriculture.

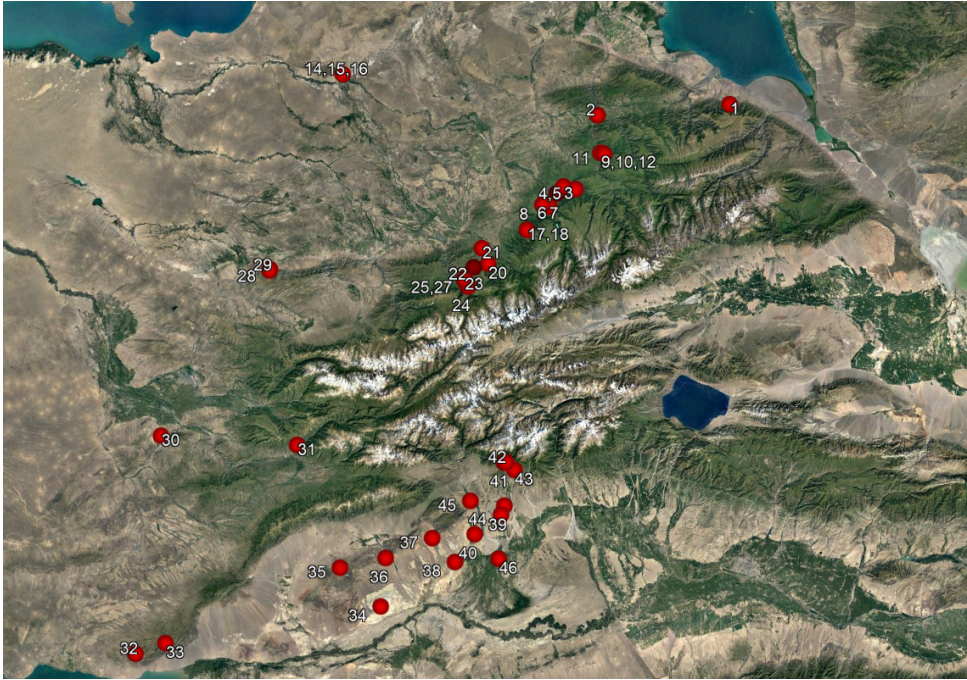
The mountain system of the Zhetysu (Dzhungar) Alatau is stretched between the valley of the Ili River and the Alakol Depression. Its ridges extend from the west and south-west to the east and north-east, where it is confined by the tectonic depression of the Dzhungar Gate from the Barlyk and Maily ranges (East Dzhungarian Alatau) located in China. The total extension of the Dzhungar Alatau is about 400 km (Chupakhin 1987). The following ridges are attributed to this mountain system: Kaikan, Kungey, Tastau and Barlyk entering in the north – and Toksanbay, Koyandytau, Itshoku, and Tyshkantau – in the south, the southern spurs are the mountains of Malaysary, Degeres, Matay, Sholak, Katutau, and the northern spurs are Arganaty, Lepsinskie Arkharly, Saikan, and some others.

The jewel beetle fauna of Zhetysu Alatau (Dzhungar) is still poorly known. I.A. Kostin (1955, 1973) provides information on the distribution of 7 species in Dzhungar Alatau: *Julodis variolaris*, *Anthaxia kuldjensis* (as *A. syrdariensis*), *A. auriventris*, *Chrysobothris affinis tremulae*, *Coraeus elatus*, *Habroloma breiti*, *Trachys* sp. The present author recorded 44 species of jewel beetles from the northern and southern parts of the Zhetysu Alatau (Tleppaeva 2014; Tleppaeva and Kadyrbekov 2022; Tleppaeva et. al. 2017a, 2017b, 2017c).

## Materials and methods

To study the fauna of jewel beetles, in 2009–2011 and 2015–2017 field explorations were carried out in the spring-summer and fall periods in the northern and southern parts of the Zhetysu Alatau. In the northern part, the Konyrtau, Kungey Range and the territory of the Zhongar-Alatau National Park were surveyed. In the southern part, the territory from the Aksu River gorge through the Central, Koksu, Tok-

sanbai, Koyandytau, Altynamel Ranges with their spurs to the Tyshkantau Ridge in the extreme southeast is covered (Figure 1). The material for the article was also studied in the collection of the Institute of Zoology of the Ministry of Education and Science of the Republic of Kazakhstan and the data from the literature were used.



**Figure 1.** The map of Zhetysu Alatau with collection localities.

Collections were made at the following points: **1** – Kungey range, Zhabyk Mountains, 1050 m a.s.l., N45.75146°, E81.66236°; **2** – 3 km NE of Gerasimovka village, 927 m a.s.l., N45.79767°, E80.91031°; **3** – Environs of Lepsinsk village, natural boundary of Black River, 1009 m a.s.l., N45.54002, E80.651667; **4** – 15 km W of Koktal village, SNNP "Zhongar-Alatau", 8 km E of Lepsinsk village, cordon "Black River", 1176 m a.s.l., N45.52125°, E80.71629°; **5** – Dzhungar Alatau mts., 8 km E Lepsinsk, 1176 m a.s.l., N45.52125°, E80.71629°; **6** – SNNP "Zhongar-Alatau", 8 km SSW of Lepsinsk village, cordon "Zhalanash", 1082 m a.s.l., N45.47124°, E80.55165°; **7** – SNNP "Zhongar-Alatau", 8 km SSW of Lepsinsk village, cordon "Zhalanash", 1162 m a.s.l., N45.47028°, E80.55076°; **8** – SNNP "Zhongar-Alatau", 8 km SW of Lepsinsk village, cordon "Zhalanash", 1050 m a.s.l., N45.48078°, E80.51806°; **9** – SNNP "Zhongar-Alatau", 3 km E of Kokzhar village, 1050 m a.s.l., N45.64742°, E80.89111°; **10** – SNNP "Zhongar-Alatau", environs of Kokzhar village, floodplain of the Tentek river, N45.64742°, E80.89111°; **11** – SNNP "Zhongar-Alatau", 3 km E of Kokzhar village, 1250 m a.s.l., N45.64025°, E80.91018°; **12** – SNNP "Zhongar-Alatau", floodplain of the Tentek river, 1050 m a.s.l., N45.64742°, E80.89111°; **13** –

SNNP "Zhongar-Alatau", Lepsinsk village, forest nursery, N45.51696°, E080.60821°, **14** – Right bank of Lepsy river, 45 km E st. Lepsy, Kyskash Mountains, 515 m a.s.l., N46.124748°, E79.505294°; **15** – Right bank of the Lepsy river, 45 km E Lepsy st., Kyskash Mountains, 510 m a.s.l., N46.124735, E79.505285; **16** – Kyskash Mountains, 505 m a.s.l., N46.124722, E79.505278; **17** – SNNP "Zhongar-Alatau", cordon "Osinovaya", 1500 m a.s.l., N45.39258°, E80.40826°; **18** – 8 km E Topolevka village, SNNP "Zhongar-Alatau", Soldatka ravine, 1500 m a.s.l., N45.39258°, E80.40826°; **19** – Floodplain of the Baskan river, N45.27903°, E080.07899°; **20** – Gorge of Malyy Baskan river, 1470 m a.s.l., N45.283611, E80.161667; **21** – Floodplain Small Baskan river, 1131 m a.s.l., N45.349167, E80.141111; **22** – SNNP "Zhongar-Alatau", 8 km SW Amanbokter village, 1303 m a.s.l., N45.23675°, E80.0177°; **23** – SNNP "Zhongar-Alatau", Sarkan ravine, 8 km SW Amanbokter village, 1200 m a.s.l., N45.23675°, E80.01707°; **24** – SNNP "Zhongar-Alatau", Sarkan ravine, 10 km SSW of Amanbokter village, 1400 m a.s.l., N45.20715°, E80.03156°; **25** – SNNP "Zhongar-Alatau", Sarkan ravine, 1500 m a.s.l., N45.22209°, E80.02463°; **26** – SNNP "Zhongar-Alatau", Sarkan ravine, 10 km SSW of Amanbokter village, 1300–1500 m a.s.l., N45.27903°, E080.07899°; **27** – SNNP "Zhongar-Alatau", 8 km SW Amanbokter village, 1300–1500 m a.s.l., N45.22209°, E80.02463°; **28** – Konyrtau range, Nurlybay ravine, 600 m a.s.l., N45.39414°, E78.93448°; **29** – Konyrtau range, 10 km SE Kyzylagash village, 576 m a.s.l., N45.39042°, E78.93060°; **30** – Neighborhood of Taldykorgan city, by the road, 773 m a.s.l., N44.79739°, E078.19006°; **31** – Koku range, Koku ravine, 4 km E Koku village, 1300 m a.s.l., N 44.68614°, E078.94880°; **32** – SNNP "Altyn-Emel", Sholak Mountains, Tajgak ravine; 909 m a.s.l., N43.943889°, E77.881111°, **33** – "Altyn-Emel", Sholak Mountains, Terekty ravine, 1343 m a.s.l., N43.971944°, E78.056944°; **34** – SNNP "Altyn-Emel", Aktau Mountains, 621 m a.s.l., N44.000833, E79.274722; **35** – SNNP "Altyn-Emel", Katutau Mountains, 1472 m a.s.l., N44.178333, E79.085; **36** – Katutau Mountains, neighborhood of Konyrolen village, 1078 m a.s.l., N44.19, E79.343333; **37** – SNNP "Altyn-Emel", Katutau Mountains, 20 km E of Konyrolen village, 1148 m a.s.l., N44.241389, E79.615278; **38** – SNNP "Altyn-Emel", 115 km Saryozek-Zharkent track, 590 m a.s.l., N44.133056, E79.719444; **39** – Panfilov district, Zharkentskoe gorge, 1072 m a.s.l., N44.325278, E80.038889; **40** – Tyshkantau range, neighborhood of Enbekshi village, 808 m a.s.l., N44.230833, E79.851389; **41** – Tyshkantau range, the gorge of the Tyshkan River, 1870 m a.s.l., N44.49615°, E080.08647°; **42** – Tyshkantau range, the gorge of the Tyshkan River, 1600 m a.s.l., N44.49530°, E080.07562°; **43** – Tyshkantau range, 7 km NE of Sarybel village, 1200 m a.s.l.; N44.460455°, E80.125314°; **44** – Southern part of Dzhungar Alatau, foothills of the Tyshkantau range, 10 km north of Zharkent city, 955 m a.s.l., N44.291389, E80.012778; **45** – Sauttau Mountains, floodplain of the Barakhudzir river, 1108 m a.s.l., N44.365, E79.856944; **46** – Zharkent City, Forestry; 575 m a.s.l., N44.119167, E79.961111

During the work, the following collection methods were used: sweeping with an entomological net, beating and shaking of plants, manual harvesting.

The collected beetles were determined under the MBS-9 binocular microscope. Identification keys were used to identify species (Richter 1949, 1952; Alexeev 1959, 1964; Kostin 1973; Bilý, 1984; Alexeev and Volkovitsh 1989; Jendek and Grebennikov 2011).

The taxonomy, synonymy and distribution of the jewel beetles are listed in accordance with the Catalog of Palearctic Coleoptera (Kubáň et al. 2006) and the annotated catalog of the Buprestidae of the fauna of the former USSR (Volkovitsh 2013).

The following abbreviations were used throughout the text: SNNP – State National Natural Park; W – to the west; E – in the east; N – north; SE – southeast; st. – station; V – village; H – altitude; ex. – exemplar; a.s.l. – above sea level; incl. – including.

## Result

### Systematic List from Jewel beetles of Zhetysu (Dzhongar) Alatau

#### Family Buprestidae

##### Subfamily Julodinae Lacordaire, 1857

##### *Julodis variolaris* (Pallas, 1771)

= *zablodskii* Motschulsky, 1845; = *kirghisica* Marseul, 1865; = *oberthuri* Kerremans, 1898; = *amurensis* Abeille de Perrin, 1904; = *seminata* Abeille de Perrin, 1904; = *kokandensis* Obenberger, 1924

**Material examined.** SNNP "Altyn-Emel", Sholak Mountains, Kyzylaus ravine, 16.V.1951, 1 ex., P.I. Marikovskiy; SNNP "Altyn-Emel", Aktau Mountains, 25.IV.2011, 2 ex., R.Kh. Kadyrbekov; Konyrtau range, Nurlybay ravine, 600 m a.s.l., N45.39414°, E78.93448°, 6.VI.2016, 1 ex., A.M.Tleppaeva.

**Identification.** Large species; body is massive, cylindrical, green, densely covered with hairs, with five rows of light yellow or white spots on each elytron. Body length 30–40 mm.

**Larval host plants.** Roots of *Alhagi* Gagn. (Fabaceae), *Kochia* Roth., *Salsola* L. (Amaranthaceae) (Yakhontov and Davletshina 1954; Marikovskiy 1955; Serkova and Kambulin 1972; Taranov 1984, 1987; Nurmuratov 1998).

**Distribution.** Azerbaijan, Russia (South European Territory), Iran, Afganistan, Turkmenistan, Kyrgyzstan, Kazakhstan, China (Gansu, Xinjiang).

##### Subfamily Polycestinae

##### Tribe Acmaeoderini Kerremans, 1893

***Acmaeoderella circassica* (Reitter, 1890)**

= *hellenica* (Obenberger, 1914); = *faldermanni* (Obenberger, 1934); = *florilega* (Obenberger, 1934); = *kubanica* (Obenberger, 1934); = *macedonica* (Obenberger, 1934); = *normanna* Sparacio, 2006

**Material examined.** Konyrtau range, Nurlybay ravine, 576 m a.s.l., N45.39042°, E78.93060°, 1.06.2016, 1 ex., A.M. Tleppaeva.

**Identification.** Small, entirely dark bronzy, almost black, with a faint bluish tint. Head and pronotum covered with cells. Antennae longer than the height of the eye. 3.7–5.8 mm.

**Larval host plants.** *Linum* L. (Linaceae), *Syrenia cana* (Piller & Mitterp.) (Brassicaceae) (Prokhorov 2010; Volkovitsh 2021).

**Adult host plants.** *Ferula* L., *Potentilla* L., *Achillea* L. (Volkovitsh 1986, 2021).

**Distribution.** Italy, Macedonia, Yugoslavia, Greece, Romania, Bulgaria, Russia (South European Territory), Ukraine, Turkey, Azerbaijan, Armenia, Kazakhstan.

***Acmaeoderella dsungarica* (Obenberger, 1918)**

= *zaisanicola* (Obenberger, 1935)

**Material examined.** SNNP "Altyn-Emel", Katutau Mountains, 29.V.2011, 27 ex., A.M. Tleppaeva; same place, Sholak Mountains, Kyzylaus ravine, 30.V.2011, 5 ex., A.M. Tleppaeva; same place, Sholak Mountains, Tajgak ravine, 1.VI.2011, 2 ex., A.M. Tleppaeva.

**Identification.** Pronotum with two barely visible keels at base. Tarsal claws without teeth. The elytra pattern is predominantly formed by yellowish stripes and spots. 5.1–7.5 mm.

**Larval host plants.** *Halimodendron halodendron* (Pall.) C.K. Schneid, *Caragana* spp. (Fabaceae) (Volkovitsh 1986, 2021; Alexeev and Volkovitsh 1989; Tleppaeva 2014).

**Adult host plants.** *Halimodendron* (H. halodendri), *Caragana* (spp.) (Fabales: Fabaceae) (Alexeev and Volkovitsh 1989).

**Distribution.** Kazakhstan, Mongolia, China (Xinjiang).

***Acmaeoderella flavofasciata tschitscherini* (Semenov, 1895)**

= *sterbai* (Obenberger, 1934)

**Material examined.** Right bank of Lepsy river, 45 km E st. Lepsy, Kyskash Mountains, 515 m a.s.l., 24.V.2005, 7 ex., A.M. Tleppaeva; SNNP "Altyn-Emel", Sholak Mountains, Kyzylaus ravine, 25.V.2008, 3 ex., P.A. Esenbekova; same place, 30.V.2010, 4 ex., A.M. Tleppaeva; same place, 4.VI.2010, 1 ex., A.M. Tleppaeva; same place, 5.VI.2010, 1 ex., A.M. Tleppaeva; SNNP "Altyn-Emel", Sholak Mountains, Tajgak ravine, 1.VI.2011, 10 ex., A.M. Tleppaeva; Konyrtau range, 10 km SE Kyzylagash village, 576 m a.s.l., N45.39042°, E78.93060°, 1.VI.2015, 9 ex., A.M. Tleppaeva; Kungey range, Zhabyk Mountains, 1050 m a.s.l., 14.VI.2015, 10 ex., A.M. Tleppaeva; Konyrtau range, Nurlybay ravine, 600 m a.s.l., N45.39414°, E 78.93448°, 6.VI.2016, 2 ex., R.Kh. Kadyrbekov.

**Identification.** The body covered with hair and white or yellowish scales. Pronotum with two keeled prominences along the basal margin. Head and pronotum black; elytra black-violet, usually with five yellow or reddish spots or bands. 7–9 mm.

**Larval host plants.** In the area of research, the larvae develop in shrubby rosaceous (Rosaceae) (Tleppaeva 2014).

**Adult host plants.** *Haplophyllum dzhungaricum* N. Rubtz. (Rutaceae), *Rosa iliensis* Chrshan., *R. laxa* Retz., *Potentilla bifurca* L., *P. orientalis* (Rosaceae), *Althea officinalis* L. (Malvaceae), *Hypericum perforatum* L. (Hyperaceae) (Tleppaeva 2014).

**Distribution.** Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan.

### *Acmaeoderella gibbulosa* (Ménétries, 1832)

= *lugens* (Gory, 1840); = *cuprinula* (Reitter, 1890); = *strumosa* Abeille de Perrin, 1895; *corsica* (Obenberger, 1922); = *tenuifrons* (Obenberger, 1924); = *lederi* (Obenberger, 1934); = *araxigena* (Obenberger, 1940); = *pseudocuprinula* (Obenberger, 1940)

**Material examined.** Right bank of the Lepsy river, 45 km E Lepsy st., Kyskash Mountains, 510 m a.s.l., 24.V.2005, 36 ex., A.M. Tleppaeva; SNNP "Altyn-Emel", Sholak Mountains, 20.V.2011, 2 ex., A.M. Tleppaeva.

**Identification.** Monochromatic, bronze, shiny. Eyes very large, their transverse diameter anearly equal to vertex width. Antennae as long as the heigth of the eye. 4.3–6.8 mm.

**Larval host plants.** *Onopordum* L., *Chondrilla* L. (Asteraceae), *Prangos* Lindl., *Ferula* L., *Malabaila* Hoffm., *Zosimia* Hoffm. (Apiaceae) (Volkovich and Alexeev 1994; Volkovitsh 2021).

**Distribution.** South Europe, Russia (South European Territory), Ukraine, Transcaucasia, Israel, Jordan, Lebanon, Syria, Iraq, Iran, Turkey, Turkmenistan, Kazakhstan.

### *Acmaeoderella opacicollis* (Abeille de Perrin, 1900)

**Material examined.** Kyskash Mountains, 505 m a.s.l., 24.V.2005, 2 ex., A.M. Tleppaeva; Natural Park "Altyn-Emel", Sholak Mountains, Tajgak ravine, 1.VI.2011, 2 ex., A.M. Tleppaeva; same place, Sholak Mountains Kyzylaus ravine, 5.VI.2010, 3 ex., A.M. Tleppaeva; same place, Sholak Mountains, Kyzylaus ravine, 30.V.2011, 4 ex., A.M. Tleppaeva;

**Identification.** Elytra is bright blue or greenish-blue, with whitish scales on the upper parts. Elytral interstriae 3–5 times as wide as rows. 4.2–7.8 mm.

**Larval host plants.** *Ferula* spp. (Apiaceae) (Tleppaeva 2013, 2014; Volkovitsh 2021).

**Adult host plants.** *Ferula* spp., *Haplophyllum dzhungaricum* N. Rubtz. (Tleppaeva 2013, 2014).

**Distribution.** Kazakhstan, Uzbekistan.

## Subfamily Chrysochroinae Laporte, 1835

### Tribe Dicercini Gistel, 1848

#### *Capnodis sexmaculata* Ballion, 1870

**Material examined.** Sholak Mountains, Kyzylaus ravine, 29.VIII.1952, 1 ex., A.S. Badenko; SNNP "Altyn-Emel", Sholak Mountains, Kyzylaus ravine, 25.V.2008, 1 ex., P.A. Esenbekova; same place, Tajgak ravine, 2.VI.2010, 1 ex., A.M. Tleppaeva; same place, Kyzylaus ravine, 5.VI.2010, 2 ex., A.M. Tleppaeva; same place, Katutau Mountains, 28.V.2011, 1 ex., A.M. Tleppaeva; same place, Katutau Mountains, 29.V.2011, 2 ex., A.M. Tleppaeva.

**Identification.** Charcoal black, slightly shiny. Pronotum with six smooth reliefs. The pronotum, except for smooth reliefs and often small spots on the elytra, is covered with a white wax coating. 21–28 mm.

**Larval host plants.** *Amygdalus* L. (Rosaceae) (Volkovich and Alexeev 1994). In the studied area, larva develops in the trunks of felt cherry (*Cerasus tianschanica* Pojark.).

**Distribution.** Iran, Pakistan, Afganistan, India (Kashmir), Middle Asia, Kazakhstan.

**Remarks.** This species is listed in the Red Book of the Almaty region (2006).

#### *Capnodis tenebricosa bucharica* Obenberger, 1945

**Material examined.** SNNP "Altyn-Emel", Sholak Mountains, Tajgak ravine, 21.VI.2007, 1 ex., P.A. Esenbekova; same place, 1.VI.2010, 1 ex., A.M. Tleppaeva.

**Identification.** Upper side bronze, bottom black-blue with copper punctures. Elytra with smoothed punctate rows, clearly expressed only in the apical half. Pronotum with two pairs of small rounded reliefs and with weak elongated relief in midline. 15–23 mm.

**Larval host plants.** *Rumex* L. (Polygonaceae) (Richter 1952).

**Distribution.** Iran, Afganistan, India (Kashmir), Middle Asia, Kazakhstan.

#### *Dicerca aenea validiuscula* Semenov, 1909

= *zicharevi* Obenberger, 1928

**Material examined.** 15 km W of Koktal village, 16.VI.2011, 1 ex., A.B. Zh-danko; SNNP "Zhongar-Alatau", 8 km E of Lepsinsk village, cordon "Black River", 1176 m a.s.l., N45.52125°, E80.71629°, 4.VI.2015, 1 ex., A.M. Tleppaeva; same place, 5.VI.2015, 2 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", 8 km SSW of Lepsinsk village, cordon "Zhalanash", 1082 m a.s.l., N45.47124°, E80.55165°, 6.VI.2015, 2 ex., A.M. Tleppaeva; same place, 8.VI.2015, 2 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", Sarkan ravine, 8 km SW Amanbokter village, 1303 m a.s.l., 11.VI.2015, 1 ex., A.M. Tleppaeva; same place, 12.VI.2015, 1 ex., A.M. Tleppaeva; same place, 1200 m a.s.l., N45.23675°, E80.01707°, 7.VI.2016, 2 ex., A.M. Tleppaeva; Koksuv range, Koksuv ravine, 4 km E Koksuv village, 1300 m a.s.l., N 44.68614°, E078.94880°,



29.V.2016, A.M. Tleppaeva, 1 ex., R.Kh. Kadyrbekov; 8 km E Topolevka village, SNNP "Zhongar-Alatau", Soldatka ravine, 1500 m a.s.l., N45.39258°, E80.40826°, 11.VI.2016, 2 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", 3 km E of Kokzhar village, 1050 m a.s.l., N45.64742°, E80.89111°, 14.VI.2016, 2 ex., A.M. Tleppaeva; same place, 22.VII.2017, 1 ex., A.M. Tleppaeva.

**Identification.** Bronze or blue-green. Apices of elytra slightly or not attenuated. The pronotum is not strongly transverse, the ratio of width to length is about 1.6. Elytra short with a dense hair, usually with waxy white coating. Hind coxae with rectangular teeth. 16–24 mm.

**Larval host plants.** *Populus* spp., *Salix* spp. (Salicaceae) (Richter 1952).

**Distribution.** Transcaucasia, Middle Asia, Kazakhstan.

### *Dicerca obtusa* Kraatz, 1882

**Material examined.** Koku range, Koku ravine, 4 km E Koku village, 1300 m a.s.l., 29.V.2016, 5 ex., A.M. Tleppaeva, R.Kh. Kadyrbekov; SNNP "Zhongar-Alatau", floodplain of the Tentek river, 1050 m a.s.l., N45.64742°, E80.89111°, 14.VI.2016, 14 ex., A.M. Tleppaeva.

**Identification.** Long oval, convex from above, bottom copper-red or copper-green. The elytral apices were slightly attenuated. Pronotum with longitudinal median depression and posterior angles protruding to the sides. Elytra convex, with clear punctate grooves and with regular mirror-like dark relief spots. 18–21 mm.

**Larval host plants.** *Juglans regia* (Juglandaceae) (Richter 1952). *Juglans regia* in the research region does not grow, we collected beetles from *Betula* sp. (Betulaceae).

**Distribution.** Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan.

## Tribe Poecilonotini Jakobson, 1913

### *Poecilonota variolosa variolosa* (Paykull, 1799)

= *conspersa* (Gyllenhal, 1808)

**Material examined.** SNNP "Zhongar-Alatau", 8 km SSW of Lepsinsk village, cordon "Zhalanash", 1162 m a.s.l., N45.47028°, E80.55076°, 8.VI.2015, 3 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", 3 km E of Kokzhar village, 1250 m a.s.l., N45.64025°, E80.91018°, 15.VI.2016, 1 ex., A.M. Tleppaeva.

**Identification.** Oval, flat, slightly widened backward, dark-colored, with spots of golden dots on the elytra and the underside copper or copper-red. The pronotum is strongly transverse, widest near midlength or in front of the mid-length. Elytra was not attenuated or slightly attenuated at the apices. 12.5–20.0 mm.

**Larval host plants.** *Populus alba*, *P. nigra* (Richter 1952), *Populus tremula* L. (Salicaceae) (Alexeev 1957; Tleppaeva 2017b; Tleppaeva and Kadyrbekov, 2022).

**Distribution.** Europe (including the European part of Russia and West Siberia), Transcaucasia, Kazakhstan, Mongolia.

## Tribe Sphenopterini Lacordaire, 1857

### *Sphenoptera (Chrysoblemma) amplicolis* Jakovlev, 1899

= *phryne* Jakovlev, 1905; = *obtusangula* Obenberger, 1927

**Identification.** Upperside bronze, with purple, copper or greenish sheen, bottom bright purple. Pronotum wide, about twice as long, with short obtuse posterior angles projecting beyond bases of elytra. Its anterior margin entire; the lateral keel is  $\frac{3}{4}$  of the length of pronotum. Oval, narrowed towards the end, covered with hairs. 12–15 mm.

**Larval host plants.** *Halothamnus* Jaub. & Spach. (Amaranthaceae) (Kaplin 1981; Volkovich and Alexeev 1994).

**Distribution.** Kazakhstan, Uzbekistan, Tajikistan, Turkmenistan.

**Remarks.** This species is known only from the literature (Kostin 1973).

### *Sphenoptera (Deudora) curta* Jakovlev, 1885

= *capsica* Jakovlev, 1904; = *plavilscikovi* Obenberger, 1952

**Material examined.** Southern spur of Dzhungar Alatau, foothills of the Tyshkantau range, 18.V.1996, 1 ex., R.Kh. Kadyrbekov.

**Identification.** Bronze, shiny. The entire anterior margin of the pronotum is carinated. Wide. 14–18 mm.

**Larval host plants.** *Eremosparton* (Fabaceae) (Kaplin 1981; Volkovich and Alexeev 1994, as *capsica*).

**Distribution.** Iran, Turkmenistan, Tajikistan, Uzbekistan, Kazakhstan.

### *Sphenoptera (Hoplistura) semenovi* Jakovlev, 1889

= *prosternalis* Reitter, 1890 [HN]; = *reitteri* Jakovlev, 1891; = *sagitta* Semenov, 1899; = *lamaica* Obenberger, 1920; = *jedlickai* Obenberger, 1927

**Material examined.** SNNP "Altyn-Emel", Aktau Mountains, 7.VIII.2010, A.M. Tleppeeva, 1 ex.

**Identification.** Narrow, copper-bronze, monochromatic. In males, the forehead is golden-green. Prothorax with a narrow but deep longitudinal groove in the middle, which passes through its posterior process. Pronotum parallel-sided, nearly as long as wide, without depressions, with equal punctures; its sides almost straight, the anterior margin slightly narrower than the width of the head including eyes. The elytral apices ended with sharp teeth. 11–13 mm.

**Larval host plants.** *Tamarix* spp. (Tamaricaceae) (Kostin 1973; Volkovich and Alexeev 1994).

**Distribution.** Azerbaijan, Iran, Afganistan, Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan, Mongolia, China (Northwest Territory).

### *Sphenoptera (Sphenoptera) chalybaea* Ménériés, 1848

= *askhabadensis* Obenberger, 1927; = *schelli* Obenberger, 1927

**Material examined.** Dzhungar Alatau, Sarytobe, 24.IV.1974, 1 ex., I.A. Kostin I.A.

**Identification.** Totally blue or completely black below, underside without purple sheen. The anterior margin of the pronotum completely carinated, with wide and deep depression in the middle and with slight depressions on the sides. Elytra rough, with very indistinct rows of punctures. 9–19 mm.

**Larval host plants.** *Astragalus* L. (Fabaceae) (Kaplin 1981; Volkovich and Alexeev 1994).

**Distribution.** Kazakhstan, Turkmenistan.

***Sphenoptera (Sphenoptera) cuprina cuprina* Motschulsky, 1860**

= *dilatipes* Jakovlev, 1891; = *fallaciosa* Jakovlev, 1903; = *balcanica* Jakovlev, 1908; = *castelnaudi* Kerremans, 1913; = *fossithorax* Obenberger, 1920; = *circe* Obenberger, 1927; = *jermaki* Obenberger, 1927; = *lutshniki* Obenberger, 1927; = *nowickii* Obenberger, 1927; = *uralensis* Obenberger, 1927

**Material examined.** Katutau Mountains, neighborhood of Konyrolen village, 16.V.1969, 3 ex., I.A. Kostin, A.S. Badenko; foothills of Tyshkantau range, 18.V.1996, 1 ex., R.Kh. Kadyrbekov.

**Identification.** Upperside bronze, with a purple, copper, or greenish sheen, and underside bright purple. Pronotum with wide and deep depression in the middle and with weak depressions on the sides. Micropunctuation of delicate pronotum but clearly visible. Elytra are more or less transversely rugose, with more or less distinct longitudinal carinae or their traces with longitudinal rows of punctures or short streaks not merging with each other. 8–14 mm.

**Larval host plants.** *Caragana arborescens* Lam. (Fabaceae) (Alexeev 1957).

**Distribution.** South Europe, Transcaucasia, Russia (South European Territory), Ukraine, Kazakhstan, China (Northwest Territory).

***Sphenoptera (Sphenoptera) foveola* (Gebler, 1825)**

= *strandii* Obenberger, 1920

**Material examined.** Panfilov district, Zharkentskoe gorge, 19.V.1951, 1 ex., Plak-sina; Tyshkantau range, neighborhood of Enbekshi village, 15.V.1997, 1 ex., A.M. Tleppaeva; Katutau Mountains, neighborhood of Konyrolen village, 17.V.1996, 1 ex., R.Kh. Kadyrbekov.

**Identification.** Complete black or black and blue. Apex of the elytra without teeth and notches. Convex pronotum with a short and deep fossa in front of the scutellum. Elytra convex, weakly or not at all depressed near the scutellum, with clear transverse roughness. 15–19 mm

**Larval host plants.** *Chondrilla ambigua* Fisch., *Chondrilla* spp. (Asteraceae) (Tleppaeva 2013, 2014).

**Distribution.** Russia (South European Territory), Kazakhstan, Kyrgyzstan.

***Sphenoptera (Sphenoptera) lateralis* Faldermann, 1836**

**Material examined.** Southern part of Dzhungar Alatau, foothills of the Tyshkantau range, 10 km north of Zharkent city, 16.IV.1995, 1 ex., R.Kh. Kadyrbekov.

**Identification.** Upper parts copper to dark bronze or black, abdomen blue-black. Elytral apices drawn into long narrow tips. Body robust. The pronotum immediately narrowed strongly anteriorly from base. 15–19 mm.

**Larval host plants.** *Anabasis* sp. (Amaranthaceae) (Volkovich and Alexeev 1994).

**Distribution.** Russia (South European Territory), Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan.

***Sphenoptera (Sphenoptera) sulcata sulcata* (Fischer, 1824)**

= *fossulata* (Gebler, 1825); = *gebleri* Gory & Laporte, 1839; = *impressicollis* Marseul, 1865; = *mendax* Marseul, 1869 [RN]; = *benedicenda* Obenberger, 1927; = *bergrothi* Obenberger, 1927; = *tifliensis* Obenberger, 1927; = *uralicola* Obenberger, 1927

**Material examined.** Dzhungar Alatau, Sarytobe, 24.IV.1974, 1 ex., A.S. Badenko; SNNP "Altyn-Emel", Katutau Mountains, 10.V.2007, 1 ex., P.A. Esenbekova.

**Identification.** Upper side bronze, the lower side usually black. The pronotum is rather convex transversely. Lateral and median longitudinal impressions developed more strongly in posterior half of pronotum, but not separated from the rest of the surface by sharp ledge. Elytra with slightly raised row spacings and transverse wrinkles. The apices of the elytra are rather strongly attenuated and narrowly angularly rounded. 10–16 mm.

**Larval host plants.** Unknown.

**Distribution.** Russia (South European Territory, West and East Siberia), Transcaucasia, Iran, Kazakhstan and China (Northwest Territory).

***Sphenoptera (Tropeopeltis) schneideri* Reitter, 1898**

= *lebedevi* Obenberger, 1928; = *mujunkumensis* Obenberger, 1928

**Material examined.** Sholak Mountains, Kyzylaus ravine, 21.IV.1967, withdrawn from Calligonum, 1 ex., A.S. Badenko.

**Identification.** Copper-bronze, covered with thin gray pubescence, stronger on the bottom. Body 2.9 to 3.0 times as long as wide. Elytra with distinct striae and with smaller punctures that do not protrude beyond margins of striae, 2.05–2.13 times as long as wide. Pronotum 1.3–1.4 times as wide as long, with distinct micropunctures. The fore and middle tibiae of males are clearly curved inwards. 6.8 to 11.5 mm.

**Larval host plants.** *Calligonum* spp. (Polygonaceae) (Kaplin 1981; Volkovich and Alexeev 1994).

**Distribution.** Kazakhstan, Uzbekistan, Turkmenistan.

**Subfamily Buprestinae Leach, 1815**

**Tribe Anthaxiini Gory & Laporte, 1839**

***Anthaxia (Anthaxia) auriventris* Ballion, 1871**

= *alexandri* Obenberger, 1938; = *zarudniana* Richter, 1945

**Material examined.** Soldatka ravine, withdrawn from fir, 3.V.1963, 1 ex., A.S. Badenko; 8 km E of Topolevka village, SNNP "Zhongar-Alatau", cordon "Osinovaya", 1500 m a.s.l., N45.39258°, E80.40826°, 11.VI.2016, 4 ex., A.M. Tleppaeva; same place, 4.II.2016, withdrawn from fir, 4 ex., A.M. Tleppaeva; same place, 15.II.2016, withdrawn from fir, 1 ex., A.M. Tleppaeva; same place, 2.III.2017, withdrawn from fir, 4 ex., A.M. Tleppaeva; same place, 15.III.2017, withdrawn from fir, 1 ex., A.M. Tleppaeva.

**Identification.** Light bronze, golden, brass color. Sides of the pronotum with well-developed depressions in posterior corners and very often with two small rounded depressions on the pronotal disc. Scutellum slightly longer than wide. The apical part of the elytra is more obtuse. 5.0–7.5 mm.

**Larval host plants.** *Abies sibirica* Ledeb (Pinaceae) (Kostin 1973; Tleppaeva 2017b; Tleppaeva and Kadyrbekov, 2022).

**Adult host plants.** *Ranunculus* sp. flowers and *Potentilla* sp. (Tleppaeva 2017 b).

**Distribution.** Kazakhstan, Kyrgyzstan, Uzbekistan.

### ***Anthaxia (Melanthaxia) conradti* Semenov, 1891**

= *canifrons* Abeille de Perrin, 1894; = *strangulata* Abeille de Perrin, 1900; = *buchari-ca* Obenberger, 1913; = *ferghanensis* Obenberger, 1938; = *semirjetshica* Obenberger, 1938

**Material examined.** Tyshkantau range, the gorge of the Tyshkan River, 1870 m a.s.l., N44.49615°, E080.08647°, 25.V.2016, 2 ex., A.M. Tleppaeva; same place, 1600 m a.s.l., N44.49530°, E080.07562°, 26.V.2016, 5 ex., A.M. Tleppaeva leg.

**Identification.** Monochromatic bronze. Hairs on forehead short, gray, central grains of cells small, in the form of tubercle in the middle of cell. Cellular, finely transversely wrinkled, pronotum. Pronotum without or with traces of four depressions, 4–7 mm.

**Larval host plants.** *Juniperus* spp. (Cupressaceae) (Richter 1949).

**Adult host plants.** *Potentilla* L., *Ranunculus* sp.

**Distribution.** Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, China (Nei Mongol, Xizang).

### ***Anthaxia (Melanthaxia) quadripunctata quadripunctata* (Linnaeus, 1758)**

= *punctata* (Ponza, 1805); = *angulata* Küster, 1851; = *angulicollis* Küster, 1851

**Material examined.** SNNP "Zhongar-Alatau", 8 km SSW of Lepsinsk village, cordon "Zhalanash", H–1082 m a.s.l., N45.47124°, E80.55165°, 6.VI.2015, 1 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", Lepsinsk village, forest nursery, N45.51696°, E080.60821°, 13.VI.2016, 4 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", 3 km E of Kokzhar village, 1250 m a.s.l., N45.64025°, E80.91018°, 15.VI.2016, 5 ex., A.M. Tleppaeva.

**Identification.** Bronze black or black. Pronotum with four, rarely with two pits arranged transversely in rows in the middle. Eyes noticeably close each other on vertex, minimum distance between them approximately twice extended width of

eye, forehead narrowed backwards. Pubescence poorly developed or absent. 4.5–8.0 mm.

**Larval host plants.** *Pinus silvestris* L. and other coniferous (Pinaceae) (Richter 1949; Alexeev 1957).

**Distribution.** Europe, Russia (European part, West and East Siberia), Turkey, Kazakhstan.

***Anthaxia (Haplanthaxia) kuldjensis* Obenberger, 1913**

= *syrdarjensis* Obenberger, 1934

**Material examined.** Kyskash Mountains, withdrawn from chingil (Halymodendron halodendron), 29.V.2017, 1 ex., A.M. Tleppaeva.

**Identification.** Elytral epipleuron reaching suture and bordering apices from below, making them double. Body short and flat. Males are bronze-green above and blue-green on the underside below, with bright green back and golden red front half of the forehead. Bronze females, with copper-red frons and narrow blue stripe along the anterior margin of the clypeus. 4–5 mm.

**Larval host plants.** *Halimodendron halodendron* (Pall.) (Fabaceae) (Kostin 1973; as *syrdarjensis*).

**Distribution.** Kazakhstan, Kyrgyzstan, Uzbekistan, China (Xinijang).

***Anthaxia (Melanthaxia) tianshanica* Bily, 1984**

**Material examined.** Tyshkantau range, 18.V.1996, 1 ex., R.Kh. Kadyrbekov; Tyshkantau range, 7 km NE of Sarybel village, 1200 m a.s.l., 19.V.1996, 1 ex., R.Kh. Kadyrbekov; Tyshkantau range, the gorge of the Tyshkan River, 1870 m a.s.l., N44.49615°, E080.08647°, 25.V.2016, 2 ex., A.M. Tleppaeva; same place, 1600 m a.s.l., N44.49530°, E080.07562°, 12.VI.2015, 25 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", 8 km SW of Lepsinsk village, cordon "Zhalanash", 1050 m a.s.l., N45.48078°, E80.51806°, 7.VI.2015, 2 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", Sarkan ravine, 10 km SSW of Amanbokter village, 1303 m a.s.l., N45.23675°, E80.01707°, 11.VI.2015, 3 ex., A.M. Tleppaeva; same place, 1400 m a.s.l., N45.20715°, E80.03156°, 12.VI.2015, 8 ex., A.M. Tleppaeva; same place, 1300–1500 m a.s.l., N45.27903°, E080.07899°, 7.VI.2016, 9 ex., A.M. Tleppaeva; same place, 8.VI.2016, 5 ex., A.M. Tleppaeva; same place, 9.VI.2016, A.M. Tleppaeva leg., 3 ex.; same place, 1500 m s.l., 10.VI.2016, 1 ex., A.M. Tleppaeva.

**Identification.** Bronze, flattened with silky, matte, and soft sheen. Pronotum with well-developed depressions in posterior corners and very often with two small rounded depressions in the pronotal disc. Scutellum slightly longer than wide. The apical part of the elytra is more obtuse. 5.0–7.5 mm.

**Larval host plants.** *Picea schrenkiana* Fisch. et Mey. (Pinaceae) (Bílý 1984; Tleppaeva 2017b; Tleppaeva and Kadyrbekov, 2022).

**Distribution.** Kazakhstan, Kyrgyzstan, China (Xinjiang).

**Genus *Cratomerus* Solier, 1833 (according to Volkovitsh, 2013)*****Cratomerus mancatulus* (Abeille de Perrin, 1900)**

= *intermedia* (Obenberger, 1913)

**Material examined.** Neighborhood of Taldykorgan city, by the road, 773 m a.s.l., N44.79739°, E078.19006°, 5.VI.2016, 2 ex., A.M. Tleppaeva.

**Identification.** Pronotum golden-green with indistinct longitudinal stripes or without them; tapered forward more than posteriorly, greatest width near the middle. Bronze-brown or bronze-green elytra. The elytra bordered with copper-red. 8–12 mm.

**Larval host plants.** *Celtis* (Celtidaceae), *Ulmus* (Ulmaceae), *Pyrus*, *Malus* (Rosaceae) (Volkovich and Alexeev 1994).

**Distribution.** Russia (South European Territory), Caucasus, Iran, Middle Asia, Kazakhstan.

**Tribe Buprestini Leach, 1815*****Buprestis haemorrhoidalis haemorrhoidalis* Herbst, 1780**

= *haemhorroidalis* Herbst, 1780 [incorrect original spelling]; = *punctata* Fabricius, 1787; = *quadristigma* Herbst, 1801; = *discoidea* Laporte & Gory, 1837; = *marginicollis* Laporte & Gory, 1837; = *niphe* (Gistel, 1857)

**Material examined.** Sauttau Mountains, floodplain of the Barakhudzir river, 15.VIII.2004, 1 ex., I.I Temreshev.

**Identification.** Abdomen with 2 yellow spots that often merge only on anal sternite. Pronotum with a small yellowish-white spot in the anterior corners. Oblong, dark, bronze-black, often with green, rarely with blue-green sheen. 12–22 mm.

**Larval host plants.** *Pinus* L., *Picea* Mill., *Abies* Mill. (Pinaceae) (Richter 1952; Bílý 2002).

**Distribution.** Europe, West Siberia, Kazakhstan, Afrotropical Region (introduced).

**Remarks.** Apparently, it was taken out of the lumber.

***Buprestis rustica rustica* (Linnaeus, 1758)**

= *violacea* DeGeer, 1774

**Material examined.** Tyshkantau range, 15.VIII.1988, 1 ex., M.K. Childebayev.

**Identification.** Pronotum 2.5 times as wide as long. The apices of the elytra cut short obliquely inwards or outward. The sharp lateral margin of the pronotum nearly reaches its anterior margin. Bronze-green to blue-violet above, without yellow spots above and below, rarely anal sternitis with 2 spots. 13–20 mm.

**Larval host plants.** *Pinus* L., *Picea* Mill., *Abies* Mill. (Pinaceae) (Richter 1952; Bílý 2002).

**Distribution.** Europe, Russia (European Territory, West and East Siberia, Far East), Turkey, Kazakhstan.

**Remarks.** Apparently, it was taken out of the lumber.

## Tribe Chrysobothrini Gory & Laporte, 1838

### *Chrysobothris affinis nevskyi* Richter, 1944

**Material examined.** Floodplain of the Baskan river, N45.27903°, E080.07899°, 7.VI.2016, 3 ex., A.M. Tleppaeva.

**Identification.** Elytra dark bronze with blue or greenish shine. Copper-bronze prostate and underside. Forehead and bottom of both sexes copper, golden, pits sometimes greenish. 11–16 mm.

**Larval host plants.** *Malus* P. Mill., *Armeniaca vulgaris* Lam. (Rosaceae), *Ulmus* L. (Ulmaceae) (Tleppaeva 2017b).

**Distribution.** Iran, Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan.

### *Chrysobothris affinis tremulae* Kostin, 1973

**Material examined.** Soldatka ravine, withdrawn from aspen, 28.VI.1963, 2 ex., A.S. Badenko.

**Identification.** Pronotum greenish-bronze. Frons of males pale-green. 10–11 mm.

**Larval host plants.** *Populus tremula* L. (Salicaceae) (Kostin 1973).

**Distribution.** Kazakhstan.

**Remarks.** Known from the literature (Kostin 1973).

### *Chrysobothris chryso stigma chryso stigma* (Linnaeus, 1758)

= *jureceki* Obenberger, 1913; = *stepaneki* Obenberger, 1940

**Material examined.** Gorge of Malyi Baskan river, 27.VI.1953, 3 ex., I.A. Kostin; same place, 13.VII.1953, 3 ex., I.A. Kostin; same place, 26.VII.1953, 3 ex., I.A. Kostin; same place, 27.VII.1953, 1 ex., Balabas; same place, 9.VIII.1953, 2 ex., I.A. Kostin; Lepsy river, 11.VI.1967, 1 ex., I.A. Kostin, A.S. Badenko; SNNP "Zhongar-Alatau", Sarkan ravine, 1500 m a.s.l, N45.22209°, E80.02463°, 10.VI.2016, 3 ex., A.M. Tleppaeva.

**Identification.** Upside copper-bronze, bronze-green, or black. Transverse costae and longitudinal costae of elytra distinct, high. The medial part of the underside of the body green, and the sides are covered with bright purple sheene. The elytral pits are golden-red or yellow. 12–17 mm.

**Larval host plants.** *Picea schrenkiana* Fisch. et Mey, *Abies sibirica* Ledeb. (Pinaceae) (Richter 1952; Kostin 1964; Tleppaeva 2017 b).

**Distribution.** Europe, Russia (European Territory, West and East Siberia, Far East), Turkey, India (Kashmir), Kyrgyzstan, Kazakhstan.

## Tribe Melanophilini Bedel, 1921

### *Melanophila acuminata* (De Geer, 1774)

= *acuminata* (Thunberg, 1787) [HN]; = *acuta* (Gmelin, 1790) [RN]; = *appendiculata* (Fabricius, 1792); = *longipes* (Say, 1823); = *immaculata* Mannerheim, 1837; = *pec-*



*chiolii* (Gory & Laporte, 1839); = *assimilis* LeConte, 1850; = *rugata* LeConte, 1857; = *amica* (Gistel, 1857); = *summifex* (Gistel, 1857); = *opaca* LeConte, 1860; = *anthaxioides* Marquet, 1870

**Material examined.** Kunakpay, 18.VI.1953, 1 ex., (collector unknown); SNNP "Zhongar-Alatau", 8 km SW Amanbokter village, 1303 m a.s.l., N45.23675°, E80.01707°, 11.VI.2015, 9 ex., A.M. Tleppaeva; same place, 1300–1500 m a.s.l., N45.22209°, E80.02463°, 7.VI.2016, 18 ex., A.M. Tleppaeva; same place, 8.VI.2016, 5 ex., A.M. Tleppaeva; same place, 10.VI.2016, 9 ex., A.M. Tleppaeva.

**Identification.** Completely black. Elytra apices with distinct cusps at ends, serrated along the margins. The pronotum is fine-meshed and slightly transversely wrinkled in the middle. 8.0–14.5 mm.

**Larval host plants.** Various species of coniferous trees (Richter 1952). In the studied area, larva develops in the trunks of *Picea schrenkiana* Fisch. et Mey. (Pinaceae) (Tleppaeva, 2017 b; Tleppaeva and Kadyrbekov, 2022).

**Distribution.** Algeria, Europe, Russia (European Territory, West and East Siberia, Far East), Turkey, Iran, India (Kashmir), Nepal, Uzbekistan, Kyrgyzstan, Kazakhstan, Mongolia, China (West Territories), Nearctic Region.

### ***Phaenops cyanea* (Fabricius, 1775)**

= *calybea* (Villers, 1789) [unused original spelling]; = *chalybaea* (Villers, 1789); = *azurea* (A.G. Olivier, 1790): Errata [3]; = *tarda* (Fabricius, 1792); = *clypeata* (Paykull, 1799); = *transbaicalica* (Obenberger, 1924)

**Identification.** Monochromatic, blue-green, blue-violet, or blue, bottom dark green. Forehead without hairs. Pronotum punctured. 8–12 mm.

**Larval host plants.** *Pinus silvestris* L. (Pinaceae) (Kostin 1973).

**Distribution.** Northern Africa, Europe, Russia (European Territory, West and East Siberia, Far East), Syria, Turkey, Kazakhstan.

**Remarks.** Known only from literature (Kostin 1955). Found in pine plantings.

### ***Trachypteris picta picta* (Pallas, 1773)**

= *leonhardi* (Obenberger, 1924)

**Material examined.** SNNP "Altyn-Emel", Sholak Mountains, Kyzylaus ravine, 5.VI.2010, 9 ex., A.M. Tleppaeva; Zharkent City, Forestry, 24.V.2016, 7 ex., A.M. Tleppaeva.

**Identification.** Bronze, with copper or greenish sheen. Elytra with clear longitudinal ribs, apices are rounded. On each elytron up to 8 yellow spots. 8.5–13.0 mm.

**Larval host plants.** *Salix* spp., *Populus* spp. (Salicaceae) (Kostin 1973).

**Distribution.** Russia (South-East of the European part, West Siberia), Iran, Afghanistan, India (Kashmir), Middle Asia, Kazakhstan, Mongolia, China (West Territories).

## Subfamily Agrilinae Laporte, 1835

### Tribe Agrilini Laporte, 1835

#### *Agrilus albogularis albogularis* Gory, 1841

= *sieversi* Abeille de Perrin, 1897

**Material examined.** Sholak Mountains, Kyzylaus ravine, 27.VI.1966, 1 ex., A.C. Badenko; same place, 3.VII.1960, 5 ex., A.S. Badenko.

**Identification.** Brass, bronze green, greenish blue, or blue. The median depression at the base of the pronotum is well developed, deep and longitudinally elongated, so it almost crosses median transverse eminence of pronotum. The elytra in the posterior third was slightly narrowed, widely rounded to the apices. Shiny white hairs forming dense spots only in the epimere extensions of the mesothorax and metathorax. 5–8 mm.

**Larval host plants.** Sagebrush of the subgenus *Oligosporus* (*Artemisia scoparia* Waldst et Kit., *A. songarica* Schrenk.) (Asteraceae) (Tleppeava 2014).

**Distribution.** Europe (apart West), Russia (European Territory), Transcaucasia, Turkey, Iran, Turkmenistan, Kazakhstan, China (Nei Mongol, Xinjiang).

#### *Agrilus araxenus lopatini* Alexeev, 1964

**Material examined.** Floodplain Small Baskan river, 30.VII.1967, 1 ex., (collector unknown).

**Identification.** Light bronze with a copper pronotum and head or entirely copper. Body covered above and below with short red hair-like scales, which form spots and stripes in depressions and humeral fossae of the pronotum and sutural impressions of the elytra. 6.0–7.7 mm.

**Larval host plants.** *Atraphaxis* L. (Polygonaceae), *Caragana* Fabr. (Fabaceae) (Alexeev 1964; Jendek 2016).

**Distribution.** Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan (Jendek 2016).

#### *Agrilus cuprescens cuprescens* (Ménétriés, 1832)

= *aurichalceus* L. Redtenbacher, 1847; = *proximus* Rey, 1891 [HN]; = *egenus* Abeille de Perrin, 1895 [HN]; = *lacrymans* Abeille de Perrin, 1895 [RN]; = *epistomalis* Abeille de Perrin, 1897; = *foveolatus* Abeille de Perrin, 1897 (chrysoderes, var.); = *obtusus* Abeille de Perrin, 1897 [HN] (chrysoderes, var.); = *rubicola* Abeille de Perrin, 1897 (chrysoderes, var.); = *callicola* Obenberger, 1916 (viridis, var./ab.); = *communis* Obenberger, 1924 (viridis, var.); = *krasai* Obenberger, 1924 (viridis, var.); = *mokrzeckii* Obenberger, 1927 (communis, ssp.); = *altaicola* Obenberger, 1935; = *kuznecovi* Obenberger, 1935 [HN] (communis, ssp.); = *kuznecovinus* Obenberger, 1936 [RN]; = *obtusifera* Schaefer, 1949 [RN]

**Material examined.** Black River Tract, 1–15.VII.1967, 2 ex., A.S. Badenko; SNNP "Altyn-Emel", Sholak Mountains, Kyzylaus ravine, 4.VI.2010, 1 ex., A.M. Tleppeava; Koksus range, Koksus ravine, 1290 m a.s.l., 28.V.2016, 1 ex., A.M. Tlep-

paeva; 8 km east of Topolevka village, SNNP "Zhongar-Alatau", Soldatka ravine, 1500 m a.s.l., 12.VI.2016, 1 ex., A.M. Tleppaeva; Natural Park "Zhongar-Alatau", environs of Kokzhar village, floodplain of Tentek River, N45.64742°, E080.89111°, 14.VI.2016, 1 ex., A.M. Tleppaeva.

**Identification.** Golden-bronze or copper-red, rarely bronze-black. The forehead between the eyes narrowed strongly in upper third and very slightly toward the upper edge. The width of the vertex is slightly greater than or equal to the minimum width between the eyes in the lower part of the forehead. Elytra broadly rounded at the apex. 5–9 mm.

**Larval host plants.** *Rosa* L. (Rosaceae) (Richter and Alexeev 1965; Bílý 2002, Jendek and Poláková 2014).

**Distribution.** Europe, Russia (European territory, West and East Siberia, Far East), Transcaucasia, Iran, Turkey, Turkmenistan, Kazakhstan, Mongolia, China, North and South Korea, Japan, Nearctic region (introduced).

### *Agrilus cyanenscens cyanenscens* (Ratzeburg, 1837)

= *caeruleus* (P. Rossi, 1792) [HN]; = *amabilis* Gory & Laporte, 1837; *sulcaticeps* Abeille de Perrin, 1869; = *acuticornis* Abeille de Perrin, 1897; = *fissifrons* Abeille de Perrin, 1897 [HN]; = *teriolensis* Obenberger, 1916; *italicus* Obenberger, 1920; = *kyselyi* Obenberger, 1924 [RN]; = *cockerelli* Fisher, 1925; = *pooli* Théry, 1936

**Material examined.** SNNP "Zhongar-Alatau", 8 km east of Lepsinsk village, cordon "Black River", 1176 m a.s.l., N45.52125°, E80.71629°, 5.VI.2015, 1 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", environs of Kokzhar village, floodplain of the Tentek river, N45.64742°, E080.89111°, 14.VI.2016, 18 ex., A.M. Tleppaeva; same place, 1250 m a.s.l., 15.VI.2016, 12 ex., A.M. Tleppaeva.

**Identification.** Monochromatic, blue, or blue-green. Pronotum with median transverse eminence. The keels in the posterior corners of the pronotum are straight and weakly expressed, or there are elongated eminences in their place. 6–7 mm.

**Larval host plants.** *Lonicera* spp. (Caprifoliaceae), *Rhamnus* (Rhamnaceae), *Populus* (Salicaceae) (Kostin 1973 (as *coeruleus*); Bily 2002; Gigli 1999; Jendek and Poláková 2014).

**Distribution.** Europe (apart north), Russia (European Territory, West and East Siberia, Far East), Transcaucasia, Turkey, Kazakhstan, China, North and South Korea, Nearctic Region (introduced).

### *Agrilus fleischeri fleischeri* Obenberger, 1925

= *kurosawai* Obenberger, 1940; = *kochi* Théry, 1942; = *tscherepanovi* Stepanov, 1954; *nipponicola* Kurosawa, 1963

**Material examined.** Natural Park "Zhongar-Alatau", surroundings of the Kokzhar village, 1250 m a.s.l., N45.64025°, E80.91018°, 15.VI.2016, 4 ex., A.M. Tleppaeva.

**Identification.** Body black, prehumeral shorter, with anterior apex distant from lateral pronotal margin; elytral spots prolonged and less tomentose; adsutural

spots at apical third of elytra in the form of “V”; elytral apex pubescent; elytral apex subangulate or aciminate elytral apex with top shifted laterally. 7.3–11.7 mm.

**Larval host plants.** *Populus tremula* L. (Salicaceae) (Tleppeeva 2017 b; Tleppeeva and Kadyrbekov, 2022).

**Distribution.** Kazakhstan, Russia (West and East Siberia, Far East), Mongolia, China (North Territory), Korea, Japan.

**Remarks.** As *Agrilus ater* (Tleppeeva et al. 2017a, 2017b, 2017c; 2018, misidentification).

### ***Agrilus morawitzi* Obenberger, 1936**

= *albogularis richteri* Alexeev, 1975

**Material examined.** Sholak Mountains, Kyzylaus ravine, 27.VI.1966, 2 ex., A.S. Badenko.

**Identification.** Greenish, brass, golden bronze. The sides of the pronotum are strongly arcuately notched in front of the posterior angles, usually strongly attenuated laterally. Maximal width of the pronotum at the front. Anterior median depression rather narrow, weakly developed; carinae in posterior corners S-shaped, well-developed single supramarginal carina, strongly offset from lateral margin, especially in front of posterior 1/3. Elytra with denser hair-like scales in sutural depressions in the posterior 1/3, abruptly irregularly rounded at the apex almost to suture. 6.0–7.5 mm.

**Larval host plants.** *Krascheninnikovia ceratoides* (L.) Gueldenst. (Amaranthaceae) (Jendek and Poláková 2014).

**Distribution.** Kazakhstan, Kyrgyzstan, Tajikistan, Russia (West Siberia), Mongolia.

### ***Agrilus pratensis* (Ratzeburg, 1837)**

= *robertii* Chevrolat, 1838; = *praeclarus* Krogerus, 1925; = *pseudocoeruleus* Obenberger, 1930; = *chankae* Obenberger, 1935; = *djukini* Obenberger, 1935; = *fennicus* Obenberger, 1936 [RN]

**Material examined.** 8 km to east of Topolevka village, SNNP "Zhongar-Alatau", Soldatka ravine, 1500 m a.s.l., 11.VI.2016, 1 ex., A.M. Tleppeeva.

**Identification.** Brilliant, elytra blue, green, olive black or brown-black, pronotum golden-green, orange, copper-red, rarely greenish-black with golden lateral impressions. Frons with strong transverse grooves. Grooves in the vertex smoothed. Pronotum with wide grooves and strong depressions anteriorly and at the base, separated by narrow, more or less acute eminences. 4–6 mm.

**Larval host plants.** *Populus tremula* L. (Salicaceae) (Bílý 2002).

**Distribution.** Europe, Russia (European territory, West and East Siberia), Turkey, Iran, Kazakhstan, Mongolia, China (Hubei, Nei Mongol, Shanghai, Xinjiang).

### ***Agrilus pseudolimoniastri* Cobos, 1968**

**Material examined.** SNNP "Altyn-Emel", Sholak Mountains, Kyzylaus ravine, 5.VI.2010, 3 ex., A.M. Tleppeeva.

**Identification.** Copper red, copper, bronze, rarely brass or dark bronze. Width of the vertex 4.2–4.4 times the width of the eye. The sides of the pronotum usually is weakly cut in front of almost straight, rarely sharp, slightly attenuated posterior angles. Carinae in posterior corners usually do not exceed 1/4 of the pronotum length, maximally distant from the pronotum margin by 1/2 of their length. The elytra in the posterior 1/3 narrowed towards apices, with bright white stripes of hair-like scales and waxy effusion in suture depressions. 5.8–7.0 mm.

**Larval host plants.** *Caragana leucophloea*, *C. microphilla* (Fabaceae) (Alexeev and Volkovitsh 1989). We collected beetles from the *Caragana balchashensis* Krassn. and *C. camilli-schneideri* Kom bushes.

**Distribution.** Kazakhstan, Mongolia, Russia (Altai, Republic of Tuva), China (Nei Mongol, Gansu).

### *Agrilus sericans* Kiesenwetter, 1857

= *sericarius* Abeille de Perrin, 1897; = *daghestanicus* Obenberger, 1930

**Material examined.** SNNP "Altyn-Emel", Sholak Mountains, Kyzylaus ravine, 30.V.2011, 10 ex., A.M. Tleppaeva; SNNP "Altyn-Emel", Katutau Mountains, 29.V.2011, 2 ex., A.M. Tleppaeva.

**Identification.** Brass, light green, rarely bluish green or blue. Median depression at the base of the pronotum weakly expressed, flat, not longitudinally elongated. The elytra in the posterior third was strongly arcuately narrowed toward the suture, narrowly rounded at the apices. Shiny white hairs form triangular spots on the sides of the abdominal sternites and a dense cover over the entire surface of the thoracic sternites. 4–6 mm.

**Larval host plants.** Sagebrush of the subgenus *Seriphidium* (*Artemisia* spp.) (Asteraceae) (Tleppaeva 2014).

**Distribution.** Austria, Greece, Bulgaria, Hungary, Romania, Moldova, Ukraine, Russia (Central and South European Territory), Georgia, Azerbaijan, Turkey, Iran, Afghanistan, Turkmenistan, Tajikistan, Kazakhstan.

### *Agrilus subauratus subauratus* (Gebler, 1833)

= *auripennis* Gory & Laporte, 1837; = *coryli* (Ratzeburg, 1837)

**Material examined.** SNNP "Zhongar-Alatau", 8 km south-southwest of Lepsinsk village, cordon "Zhalanash", 1162 m a.s.l., 8.VI.2015, 1 ex., A.M. Tleppaeva; same place, 1050 m a.s.l., 9.VI.2015, 3 ex., A.M. Tleppaeva.

**Identification.** Bicolor, blue, or green. Pronotum with slight or no impressions in the middle. Vertex with weak median groove and distinct concentric grooves. Frons with a distinct wide longitudinal impression, almost concave. Elytra golden green or orange, pronotum blue-green or elytra blue, pronotum orange. 7–10 mm.

**Larval host plants.** Salicaceae, Betulaceae (Alexeev, 1957; Grechkin 1951; Zagaykevych 1987; Gigli 1999; Bílý 2002, Jendek, Poláková, 2014). In the national park, species develop in the willow.

**Distribution.** Europe (apart North), Russia (Central and South European Territory, West and East Siberia), Turkey, Kyrgyzstan, Kazakhstan, Mongolia.

***Agrilus suvorovi* Obenberger, 1935**

= *populneus* Schaefer, 1946 (viridis, var.); = *brussae* Obenberger, 1956 (*suvorovi*, ssp.)

**Material examined.** SNNP "Zhongar-Alatau", 8 km east of Lepsinsk village, cordon "Black River", 1176 m a.s.l., N45.52125°, E80.71629°, 4.VI.2015, 2 ex., A.M. Tleppeeva; same place, 5.VI.2015, 2 ex., A.M. Tleppeeva; 8 km to east of Topolevka village, SNNP "Zhongar-Alatau", Soldatka ravine, 1500 m a.s.l., 12.VI.2016, 1 ex., A.M. Tleppeeva; SNNP "Zhongar-Alatau", environs of Kokzhar village, floodplain of the Tentek River, N45.64742°, E080.89111°, 14.VI.2016, 1 ex., A.M. Tleppeeva; same place, 15.VI.2016, 1 ex., A.M. Tleppeeva.

**Identification.** Large body, eyes moderate or large; pronotum widest at the anterior margin with sides almost straight in the posterior half; apical third of the elytra with obviously elongate apices. Olive green, bluish, bronzy. 7.5 to 11.0 mm.

**Larval host plants.** *Populus* spp. (Salicaceae) (Jendek and Poláková 2014). In the national park, species develop in the *Populus tremula* L.

**Distribution.** Europe, Russia (European part, West and East Siberia, Far East), Iran, Turkey, Kazakhstan, Mongolia, China, Korea.

***Agrilus tschitscherini* Semenov, 1895**

= *attila* Obenberger, 1930; = *lubischevi* Stepanov, 1958; = *uzbekistanus* Stepanov, 1958; = *gerschuni* Stepanov, 1958; = *machnovskii* Stepanov, 1958

**Material examined.** SNNP "Zhongar-Alatau", 8 km south-west of Lepsinsk village, cordon "Zhalanash", 1050 m a.s.l., 9.VI.2015, 26 ex., A.M. Tleppeeva.

**Identification.** Green. Single color. Forehead and ventral body with long, pale recumbent hairs. The abdomen is strongly expanded in the middle. The elytral apices were strongly attenuated. Forehead of males with deep groove, female without or with poorly made grooves. 6.5–8.0 mm.

**Larval host plants.** *Salix* spp., *Populus* spp. (Salicaceae) (Jendek and Poláková 2014).

**Distribution.** Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Russia (East Siberia), Mongolia, China (Nei Mongol).

***Agrilus vaginalis* Abeille de Perrin, 1897**

= *niveifrons* Abeille de Perrin, 1897; *syrdarjensis* Obenberger, 1928; *philippovi* Alexeev, 1965 (*vaginalis*, subsp.)

**Material examined.** Konyrtau range, Nurlybay ravine, 600 m a.s.l., N45.39414°, E78.93448°, 6.VI.2016, 2 ex., A.M. Tleppeeva.

**Identification.** Concentric striations on the vertex very sharply rounded posteriorly – on the rest of the vertex goes diagonally. Posterior angles of the pronotum projecting laterally; keels in its posterior angles short and strongly curved. The hairs on the elytra are dense in sutural impressions, forming a white stripe, abdominal sternites with triangular white hairy spots. Bronze. 5.5–7.5 mm.

**Larval host plants.** *Astragalus* L., *Colutea* L. (*Fabacea*) (Volkovich and Alexeev 1994).

**Distribution.** Macedonia, Bulgaria, Russia (South East of European part), Armenia, Azerbaijan, Turkey, Iran, Turkmenistan, Tajikistan, Uzbekistan, Kazakhstan.

***Agrilus viridis viridis* (Linnaeus, 1758)**

= *rosaceus* (Scopoli, 1763); = *serraticornis* (Scopoli, 1763); = *linearis* (Schrank, 1781) [HN]; = *lineatus* (Schrank, 1782) [HN] [RN]; = *linearis* (Fabricius, 1792) [HN]; = *bicolor* (Schrank, 1798); = *filiformis* (Herbst, 1801) [RN]; = *fagi* (Ratzeburg, 1837); = *nocivus* (Ratzeburg, 1837); = *capreae* (Chevrolat, 1838); = *aubei* Gory & Laporte, 1837; = *distinguendus* Gory & Laporte, 1837; = *viridipennis* Gory & Laporte, 1837; = *littlei* Curtis, 1840; = *bicolor* L. Redtenbacher, 1847 [HN]; = *quercinus* L. Redtenbacher, 1847; = *darwinii* Wollaston, 1857; = *imbellis* Kerremans, 1892 [HN]; = *brevitarsis* Lewis, 1893; = *indulgens* Kerremans, 1897; = *rudis* Abeille de Perrin, 1897; = *importunus* Kerremans, 1903 [RN]; = *lewisi* Kerremans, 1903 [RN]; = *montanellus* Obenberger, 1916 (*viridis*, var./ssp.); = *gebleri* Obenberger 1924; = *caenus* Obenberger, 1924 (*viridis*, ssp.); = *poppiusi* Obenberger 1924 (*viridis*, ssp.); = *kroggerusi* Obenberger, 1924 (*viridis*, ssp.); = *melantatus* Obenberger, 1924 (*viridis*, ssp.); = *brydli* Obenberger 1924; = *cernyi* Obenberger, 1925 (*viridis*, ssp.); = *vernadskii* Obenberger, 1927; = *kiricenkoi* Obenberger 1935; = *transbaicalensis* Obenberger 1935; = *pusztae* Obenberger, 1936; = *towadensis* Miwa & Chujo, 1940; = *salicivola* Kurosawa, 1963 (*suvorovi*, ssp.); = *cojbalanensis* Cobos, 1968; *rosei* Niehuis & Bernhard, 2005

**Material examined.** Environs of the Lepsinsk village, Black River, 1–15.VII.1967, 2 ex., A.S. Badenko; 4 km SE of the Lepsinsk village, Vilinka river, 17.VI.2001, 1 ex., A.V. Gromov.

**Identification.** Coloration is variable. Pronotum with distinct median depressions anteriorly and at base, with transverse elevation in the middle. Different keels in the posterior corners of the pronotum. The frons between eyes slightly widened in the upper third and also slightly narrowed towards the upper margin. Width of the vertex for the most part is slightly less than or equal to the minimum distance between the eyes in the lower part of the forehead. Elytra at the apices is often drawn into tails. 5–9 mm.

**Larval host plants.** Polyphagous species in studied region found on *Salix* spp. (*Salicaceae*).

**Distribution.** North Africa, Europe, Russia (European Territory, East and West Siberia, Far East), Transcaucasia, Iran, Turkmenistan, Uzbekistan, Kyrgyzstan, Kazakhstan, Mongolia, China (Beijing, Hebei, Jilin), Korea, Japan (Hokkaido).

***Agrilus zigzag* Marseul, 1866**

= *scutellatus* Abeille de Perrin, 1897; = *rossicus* Obenberger, 1916; = *clermontianus* Roubal, 1925; = *simbirensis* Obenberger, 1925; = *kusakievici* Obenberger, 1936; = *semirjeciae* Obenberger, 1936

**Material examined.** SNNP "Altyn-Emel", Katutau Mountains, 20 km E of Konyrolen village, 4.VI.2009, 6 ex., A.M. Tleppeva; Katutau Mountains, 29.V.2011, 2 ex., A.M. Tleppeva; Sholak Mountains, Kyzylaus ravine, 30.V.2011, 5 ex., A.M. Tleppeva; SNNP "Zhongar-Alatau", 8 km SW Amanbokter village, the gorge of the Sarkan River, 1303 m a.s.l., N45.23675°, E80.0170°7, 11.VI.2015, 22 ex., A.M. Tleppeva; same place, 1400 m a.s.l., 12.VI.2015, 8 ex., A.M. Tleppeva; same place, 1200 m a.s.l., 10.VI.2016, 7 ex., A.M. Tleppeva.

**Identification.** Dorsally, bronze-green, dark bronze. The forehead and vertex were strongly shagged, with narrow shallow depression. Carinae in the posterior corners of the pronotum smoothed, indistinct, and often completely absent. Hair-pubesence poorly developed, sometimes barely noticeable from above and from below. 4.5 to 7.0 mm.

**Larval host plants.** *Artemisia santolinifolia* Turcz. et Bess. (Asteraceae) (Tleppeva 2014).

**Distribution.** Bulgaria, Ukraine, Russia (Central and South European Territory, West Siberia), Kazakhstan, Kyrgyzstan, Mongolia.

### Tribe Aphanasticini Jacquelin du Val, 1859

#### *Cylindromorphus popovii* (Mannerheim, 1853)

= *mongolicus* Obenberger, 1928

**Material examined.** Environs of Lepsinsk village, tract of Black River, 1–15.VII.1967, 5 ex., A.S. Badenko; Sholak Mountains, Karaespe natural boundary, 8.V.1968, 1 ex., I.A. Kostin leg; Sholak Mountains, Kyzylaus ravine, 27.VI.1966, 2 ex., A.C. Badenko; same place, 31.V.2011, 28 экз., A.M. Tleppeva; SNNP "Zhongar-Alatau", 8 km east of Lepsinsk village, cordon "Black River", 1176 m a.s.l., N45.52125°, E80.71629°, 3.VI.2015, 2 ex., A.M. Tleppeva; 3 km NE of Gerasimovka village, 927 m a.s.l., N45.79767°, E80.91031°, 13.VI.2015, 7 ex., A.M. Tleppeva;

**Identification.** Head and pronotum with rough, strongly depressed punctures. Anterior part of the head with smooth median depression dividing it into 2 convex halves (viewed from above). Notch of the anterior edge of the clypeus is 2.5–3 times wider than its height. Marginal carina of the pronotum nearly straight. The apices of the elytra were mostly distinctly attenuated. Bronze, black-bronze. 3–4 mm.

**Larval host plants.** Unknown.

**Distribution.** East Europe, Ukraine, Russia (Central, South European Territory, West and East Siberia), Kazakhstan, Kyrgyzstan, Mongolia, China (Nei Mongol).

#### *Cylindromorphus pyrethri* (Stierlin, 1864)

= *pyrethri* Marseul, 1866 [HN]; *caspicus* Obenberger, 1934

**Material examined.** SNNP "Altyn-Emel", Katutau Mountains, 20 km E of Konyrolen village, 4.VI.2009, 2 ex., A.M. Tleppeva; same place, 115 km Saryozek-Zharkent track, 4.VI.2009, 9 ex., A.M. Tleppeva; Sholak Mountains, Kyzylaus ra-



vine, 4.VI.2010, 10 ex., A.M. Tleppaeva; Konyrtau range, Nurlybay ravine, 600 m a.s.l., N45.39414°, E78.93448°, 1.VI.2015, 7 ex., A.M. Tleppaeva.

**Identification.** The head and pronotum were strongly shag, with silky sheen, covered with flat depressed punctures. The head is strongly flattened in front – forms a small ledge in front of the eyes margins (viewed from above). Notch of the anterior margin of the clypeus is 2 times wider than height. Marginal carina of the pronotum distinctly concave posteriorly. The apices of the elytra are mostly not attenuated. Bronze, bronze-black, usually with a brass or greenish pronotum. 3.0–4.5 mm.

**Larval host plants.** *Carex colchica* J. Gay (Cyperaceae) (Richter and Alexeev 1965).

**Distribution.** Moldova, Ukraine, Russia (Central, South European Territory, East and West Siberia), Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, Mongolia.

***Paracylindromorphus subuliformis subuliformis* (Mannerheim, 1837)**

= *tauricus* (Gory, 1841); = *japanensis*: Alexeev 1975 (nec Saunders, 1873) (misidentification)

**Material examined.** Sholak Mountains, Karaespe natural boundary, 8.V.1968, 4 ex., I.A. Kostin.

**Identification.** Elytra 3.5–4.0 times as long as wide. Supramarginal carinae of the pronotum distinct from base to anterior quarter, strongly elevated, sharp in the basal half. Pronotum roughly shagreened, with deep depressed punctures. Anal segment apically without teeth, rounded, obtuse. Bronze black. 3.0–3.5 mm.

**Larval host plants.** *Agropyron*. Gaertn, *Glyceria* R.Br. (Poaceae) (Volkovich and Alexeev 1994).

**Distribution.** South and East Europe, Russia (South European Territory, West and East Siberia, Far East), Lebanon, Syria, Turkey, Transcaucasia, Iran, Afganistan, Middle Asia, Kazakhstan, Mongolia, China (North-West Territory).

**Tribe Coraebini Bedel, 1921**

***Coraebus elatus* (Fabricius, 1787)**

= *sinuatus* (Panzer, 1796) [HN]; = *aeruginosus* (Latreille, 1804) [RN]; = *lapsanae* (Bonelii, 1812); = *metallicus* Gory & Laporte, 1839; = *pruinus* Küster, 1846; = *subfasciatus* Küster, 1846; = *comari* Marseul, 1866; = *repletus* Abeille de Perrin, 1893; = *cylindraceus* Abeille de Perrin, 1896 [HN]; = *protensulus* Obenberger, 1935 [RN]

**Material examined.** Environs of Lepsinsk village, natural boundary of Black River, 1–15.VII.1967, 5 ex., A.S. Badenko; SNNP "Zhongar-Alatau", 8 km SW of Lepsinsk village, cordon "Zhalanash", 1050 m a.s.l., 7.VI.2015, 1 ex., A.M. Tleppaeva; same place, 1162 m a.s.l., N45.47028°, E80.55076°, 8.VI.2015, 1 ex., A.M. Tleppaeva; 3 km NE of Gerasimovka village, 927 m a.s.l., N45.79767°, E80.91031°, 13.VI.2015, 1 ex., A.M. Tleppaeva.

**Identification.** Monochromatic, bronze green, bronze blue, or blue. Pronotum with developed carinae in front of posterior corners. In the male thorax in the middle with more or less dense erect hairs. 6.0–7.5 mm.

**Larval host plants.** In herbaceous plants of the family Rosaceae (Bily 2002; Gobbi 1986; Janicki 2001).

**Distribution.** North Africa, Europe (apart North), Russia (Central, South European Territory, West Siberia), Israel, Syria, Turkey, Iraq, Transcaucasia, Iran, Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan.

***Meliboeus reitteri* (Semenov, 1889)**

= *klapperichi* Cobos, 1966; = *pamirensis* Obenberger, 1935; = *zaisanensis* Obenberger, 1935

**Material examined.** SNNP "Altyn-Emel", Sholak Mountains, Tajgak ravine, 2.VI.2010, 4 ex., A.M. Tleppaeva; same place, 3.VI.2010, 5 ex., A.M. Tleppaeva; same place, Kyzylaus ravine, 4.VI.2010, 3 ex., A.M. Tleppaeva; same place, Kyzylaus ravine, 5.VI.2010, 5 ex., A.M. Tleppaeva; same place, Kyzylaus ravine, 30.V.2011, 5 ex., A.M. Tleppaeva.

**Identification.** Monochromatic, bronze. The head and pronotum were strongly shagged. Forehead and vertex in shallow punctures. Prothorax collar with deep notch in middle of the anterior margin. The tooth of the tarsal claws is very small, almost invisible. 3.8–4.5mm.

**Larval host plants.** Sagebrush of the subgenus *Seriphidium* (*Artemisia* spp.) (Asteraceae) (Tleppaeva 2014).

**Distribution.** Russia (South European Territory), Iran, Afganistan, Middle Asia, Kazakhstan.

**Tribe Tracheini Laporte, 1835**

***Habroloma aureum* (Semenov, 1890)**

= *reticulatum* (Abeille de Perrin, 1900)

**Material examined.** Sholak Mountains, Kyzylaus ravine, 17.V.1951, 5 ex., A.C. Badenko.

**Identification.** The border of prothorax not narrowed forward, with parallel sides. Complete body with sparse, but clearly visible waxy scales, which are grouped on the elytra into barely visible irregular transverse bands. Depressions in the pronotum are shallow, narrow. Dark bronze, with a violet sheen of 2.5 to 3.0 mm.

**Larval host plants.** Mining leaves of *Erodium* L'-Hér. ex. Ait. (Geraniaceae) (Korotyayev et al. 2016).

**Adult host plants.** *Rosa iliensis* Chrshan., *Tamarix ramosissima* Ledeb. (Tleppaeva 2014).

**Distribution.** Turkey, Armenia, Azerbaijan, Iran, Turkmenistan, Tajikistan, Kyrgyzstan, Kazakhstan.

***Habroloma breiti* (Obenberger, 1918)**

= *benedictum* (Roubal, 1920); = *lukianovici* (Obenberger, 1927)

**Material examined.** Environs of Lepsinsk village, natural boundary of the Black River, 1-15.VII.1967, 8 ex., A.S. Badenko.

**Identification.** Glabrous. The middle part of the prothorax is parallel-sided, transversely convex. Longitudinal depressions of the pronotum, wide and deep. Head and pronotum dark bronze, elytra dark blue. 2.8–3.0 mm.

**Larval host plants.** Unknown.

**Distribution.** Ukraine, Russia (South European Territory, East and West Siberia), Kazakhstan, Kyrgyzstan.

***Trachys minutus minutus* (Linnaeus, 1758)**

= *mandjurica* Obenberger, 1917; = *reflexiformis* Obenberger, 1918

**Material examined.** Dzhungar Alatau mts., 8 km E Lepsinsk, 1176 m a.s.l., N45.52125°, E80.71629°, 4.VI.2015, 3 ex., A.M. Tleppaeva; SNNP "Zhongar-Alatau", 8 km SW of Lepsinsk village, cordon "Zhalanash", 1050 m a.s.l., N45.48078°, E80.51806°, 9.VI.2015, 3 ex., A.M. Tleppaeva; 8 km E of Topolevka village, SNNP "Zhongar-Alatau", Soldatka ravine, 1500 m a.s.l., 12.VI.2016, 2 ex., A.M. Tleppaeva.

**Identification.** Elytra with sinuous transverse bands of white hairy scales; their humeral tubercles protrude strongly from the sides. The upper side is dark blue or black, and the underside is black and blue. Very strongly longitudinally depressed, bronze, shining. 3.0–3.5 mm.

**Larval host plants.** Mining leaves of *Acer*, *Salix Tilia*, and *Ulmus* (Bily 2002); *Betula Padus* (Cryshtal 1959); *Alnus*, *Crataegus*, *Populus*, *Pyrus*, and *Sorbus* (Gobbi 1986); *Cerasus*, *Convolvulus*, *Malus* (Zagaykevych 1987); *Rubus*, *Ulmus* (Janicki 2001) from families Salicaceae, Betulaceae, Aceraceae, Ulmaceae, Rosaceae, Fagaceae, Convolvulaceae, Celastraceae. We collected this species from willow (*Salix* spp.) (Salicaceae).

**Distribution.** Europe, Russia (North, South European Territory, West and East Siberia, Far East), Syria, Turkey, Iran, Transcaucasia, Kazakhstan, Mongolia, China (North and Northern Territory), North America.

**Discussion**

Totally, 57 species and subspecies of jewel beetles from 20 genera, 11 tribes, and 5 subfamilies (Julodinae, Polycestinae, Chrysochroinae, Buprestinae, Agrilinae) were recorded from Zhetysu Alatau.

By species diversity at the subfamily level, the beetles are distributed as follows: Julodinae – 1 species, Polycestinae – 5 species, Chrysochroinae – 14 species, Buprestinae – 14 species, Agrilinae – 22 species.

At the genus level, *Agrilus* (15 species), *Sphenoptera* (9 species), *Acmaeoderella* (5 species), *Anthaxia* (5 species) and *Chrysobothris* (3 species) are most abundant in the Zhetysu Alatau.

Species of jewel beetles with known host plants are associated with arboreal and shrubby plants from 21 families: Salicaceae (11), Pinaceae (8), Fabaceae (8), Rosaceae (7), Asteraceae (6), Amaranthaceae (4), Polygonaceae (3), Apiaceae (2), Ulmaceae (2), Poaceae (2), Linaceae (1), Brassicaceae (1), Juglandaceae (1), Tamaricaceae (1), Cupressaceae (1), Celtidaceae (1), Caprifoliaceae (1), Rhamnaceae (1), Betulaceae (1), Cyperaceae (1), Geraniaceae (1). The host plants of 3 species are still unknown.

Among the most preferred plant genera *Populus* (9 species), *Salix* (5) (Salicaceae), *Picea* (5), *Abies* (4), *Pinus* (4), *Caragana* (4), and *Artemisia* (4) predominate.

The identified species of jewel beetles are confined to seven altitude belts and biotopes – lacking only in the alpine lowgrass meadows.

Semi-desert belt (up to 750 m above sea level). It is well developed in the southern half of the Zhetysu Alatau in the spurs of the Altynamel ranges (Degeres, Malaisary, and Sholak Mountains) and Koyandytau (Kututau Mountains) and in the northern half in the spurs of the Konyrtau ridge. The jewel beetles found in this belt are as follows: *Julodis variolaris*, *Acmaeoderella gibbulosa*, *A. opacicolis*, *Sphenoptera amplicollis*, *S. foveola*, *S. cuprina cuprina*, *S. sulcata*, *S. schneideri*, *S. semenovi*, *Anthaxia kuldjiensis*, and *Agrilus pseudolimoniastris* (11 species).

The shrub-steppe belt (600–2500 m above sea level) comprises a most diverse composition of jewel beetles as follows: *Acmaeoderella circassica*, *A. gibbulosa*, *A. flavofasciata tschitscherini*, *A. dsungarica*, *A. opacicolis*, *Capnodis tenebricosa bucharica*, *C. sexmaculata*, *Sphenoptera curta*, *S. lateralis*, *S. sulcata*, *S. cuprina cuprina*, *S. chalybaea*, *Agrilus cuprescens cuprescens*, *A. araxenus lopatini*, *A. vaginalis*, *A. albogularis albogularis*, *A. sericans*, *A. zigzag*, *A. morawitzi*, *A. pseudolimoniastris*, *Cylindromorphus popovii*, *C. pyrethri*, *Paracylindromorphus subuliformis subuliformis*, *Meliboeus reitteri*, and *Habroloma aureum* (25 species and subspecies).

In mountain floodplain forests, the following mostly forest species are recorded: *Dicerca aenea validiuscula*, *Poecilonota variolosa variolosa*, *Cratomerus mancatulus*, *Chrysobothris affinis affinis*, *C. affinis tremulae*, *Trachypteris picta picta*, *Agrilus fleischeri*, *A. suvorovi*, *A. viridis viridis*, *A. cyanenscens cyanenscens*, *A. pratensis*, *A. subauratus subauratus*, *Cylindromorphus pyrethri*, and *Trachys minutus minutus* – totally 14 species and subspecies.

In the leafy-fir forest belt (1000–1400 m above sea level) a rather different set of forest species was observed: *Dicerca obtusa*, *D. aenea validiuscula*, *Poecilonota variolosa variolosa*, *Anthaxia auriventris*, *A. quadripunctata*, *Chrysobothris chrysostigma chrysostigma*, *C. affinis tremulae*, *Phaenops cyanea*, *Agrilus fleischeri*, *A. suvorovi*, *A. viridis viridis*, *A. cyanenscens cyanenscens*, *A. pratensis*, and *A. tschitscherini* – total 14 species and subspecies.

In the coniferous forest belt (1400 to 2700 m above sea level), transpalearctic species mixed with Turkestan forest species are predominating: *Anthaxia auriventris*, *A. quadripunctata*, *A. tianshanica*, *A. conradti*, *Buprestis haemorrhoidalis haemorrhoidalis*, *B. rustica rustica*, *Chrysobothris chrysostigma chrysostigma*, *Melanophila acuminata*, and *Phaenops cyanea* – total of 9 species and subspecies.

Medium-mountain mixed grass meadows (1000–2700 m above sea level) show a much poorer buprestid fauna: *Anthaxia quadripunctata*, *A. tianshanica*, *A. conradti*, *Coraebus elatus*, and *Habroloma breiti*, total 5 species and subspecies.

In subalpine meadows (2700–3000 m a.s.l.) only flower-visited species associated with lower growing conifers were found: *Anthaxia tianshanica* and *Anthaxia conradti*, total 2 species.

Thus, the most abundantly populated by jewel beetles mounting belts are as follows: shrub-steppe belt (25 species), mountain-floodplain forests (14 species), leaf-fir-forest belt (14 species), semi-desert (10 species) and coniferous-forest (9 species) belts. The minimal number of jewel beetle species is revealed in medium-mountain mixed grass (5 species) and subalpine meadows (2 species).

In general, the fauna of Zhetysy Alatau is quite diverse due to the penetration of desert species *Julodis variolaris*, *Acmaeoderella dsungarica*, *A. gibbulosa*, *A. opacicollis*, *Sphenoptera amplicollis*, *S. curta*, *S. semenovi*, *S. chalybaea*, *S. foveola*, *S. lateralis*, *S. schneideri*, and *Agrilus vaginialis*. At the same time, the Zhetysy Alatau is the southernmost end of the ranges of northern species that do not penetrate into the Northern Tien Shan, such as *Poecilnota variolosa variolosa*, *Agrilus cyanenscens cyanenscens*, *Agrilus subauratus subauratus*, *Coraebus elatus*, and *Trachys minutus minutus*. As a result of global warming, some southern species are also found in Zhetysy Alatau *Dicerca obtusa*, *Capnodis tenebricosa bucharica*, *Cratomerus mancutulus*, and *Anthaxia kuldjensis*.

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