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## AN ANNOTATED CHECK-LIST OF ORTHOPTERA OF TIVA AND ADJACENT REGIONS. PART 3. SUBORDER CAELIFERA (ACRIDIDAE: GOMPHOCERINAE: GOMPHOCERINI; LOCUSTINAE)

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**Summary.** A total of 30 species belonging to the family Acrididae (the tribe Gomphocerini from the subfamily Gomphocerinae, and the subfamily Locustinae = Oedipodinae), are known as occurring in Tuva. Two taxa are recorded from the region for the first time, namely *Chorthippus dorsatus orientalis* Bey-Bienko and *Sphingonotus nebulosus* (Fischer de Waldheim). At least 6 species and a subspecies are known from the adjacent areas and listed as probably occurring in the region. Distribution patterns and taxonomic composition of Orthoptera fauna of Tuva are briefly discussed.

**Key words:** Caelifera, fauna, new records, Siberia, Russia.

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**Резюме.** К настоящему времени для Тувы известны находки 30 видов короткоусых прямокрылых из семейства Acrididae (триба Gomphocerini из подсемейства Gomphocerinae и подсемейство Locustinae = Oedipodinae). Один подвид и один вид из этих таксонов указываются для Тувы впервые: *Chorthippus dorsatus orientalis* Вей-Биеико и *Sphingonotus nebulosus* (Fischer de Waldheim). Шесть видов и один подвид также известны из сопредельных регионов, поэтому вполне возможно их обнаружение в Туве. Кратко обсуждаются таксономический состав и распределение прямокрылых насекомых (Orthoptera) фауны Тувы.

## INTRODUCTION

The main environmental peculiarities of the region, history of its orthopterological studies, materials and methods are described in the first and second parts of this check-list (Sergeev *et al.*, 2018, 2019). The third part of the check-list includes several taxa from the family Acrididae, namely the tribe Gomphocerini from the subfamily Gomphocerinae and the tribes of the subfamily Locustinae, or Oedipodinae.

All species and subspecies known from Tuva were numbered (in the round brackets – continuous numbers for the entire check-list). An asterisk (\*) was used to mark new species for Tuva. We have used the following abbreviations for collectors: IS – I.V. Stebaev, MS – M.G. Sergeev, SS – S.Yu. Storozhenko, AB – A.A. Benediktov.

## SUBORDER CAELIFERA

### FAMILY ACRIDIDAE

#### Subfamily Gomphocerinae

#### Tribe Gomphocerini

#### Genus *Gomphocerippus* Roberts, 1941

#### 1(65). *Gomphocerippus rufus* (Linnaeus, 1758)

*Gomphocerippus rufus*: Berezikov, 1956: 104; Ivanova, 1967: 133.

*Gomphocerus rufus*: Sergeev, 1986: 205; Benediktov, 1997: 118.

REMARKS. The species was mentioned from the mountains on the boundary between Khemchik and Ulug-Khem Intermountain Basins (Atartysh Pass) for the first and last time by Benediktov (1997).

DISTRIBUTION. **Tuva:** KHE (?), UKH (?). – Europe (except the extreme North), Siberia (except the extreme North and NE parts), Amur Region, N Caucasus; W Kazakhstan, NE China.

ECOLOGY. In Siberia usually associated with the forest meadows.

#### Genus *Gomphocerus* Thunberg, 1815

#### 2(66). *Gomphocerus sibiricus* (Linnaeus, 1767)

*Gomphocerus sibiricus*: Miram, 1907: 6; Ivanova, 1967: 133.

*Gomphocerus sibiricus sibiricus*: Berezikov, 1956: 100.

*Aeropus sibiricus*: Berezikov, 1951: 19–20; Sergeev *et al.*, 1995: 96–98; Benediktov, 1997: 117; Bukhvalova & Vedenina, 1998: 118.

*Aeropus sibiricus* (sic!): Pavlov, 2004: 65.

**MATERIAL. Tuva:** W Sayan Mts., Sayanskij Pass, 50°42'N, 89°53'E, 2230–2240 m, mountain tundra, 12.VII 2012, 1 larvae (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37'N, 90°05'E, 1450 m, terraces and flood-plain, short meadows, 14.VIII 2016, 1 ♂ (MS); Alash Plateau, Kara-Khol, 25.VI 2003, 1 ♀ (M. Zasyapkina); Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 2 ♂, 1 ♀ (IS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, plakor, mixed steppe, 20–21.VII 2014, 1 ♂, 2 ♀ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, southeastern slope, stony steppe, 8.VII 1978, 3 ♀ (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1000–1039 m, terraces, steppe and meadow, 9.VII 1978, 1 ♂, 9 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°53'N, 92°04'E, 2250 m, mountain tundra, 19.VIII 1985, some specimens observed (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°52'N, 92°04'E, 2060 m, alpine steppe and meadow, 19.VIII 1985, 10 ♂, 13 ♀, 6 larvae (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51'N, 92°04'E, 1700–1900 m, mountain steppes, 19.VIII 1985, 31 ♂, 26 ♀, 6 larvae (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, agricultural fields including abandoned and plots along canal and roads, 21.VIII 1978, 1 ♀ (MS); W Tannu-Ola Mts., 5 km W Torgalyg settlement, Khandybai Mt., near timber-line, meadows, 23.VI 1962, 5 ♂, 4 ♀, 6 larvae (IS); W Tannu-Ola Mts., 5 km W Torgalyg settlement, Khandybai Mt., mountain steppe, 23.VI 1962, 2 ♂, 12 ♀, 10 larvae (IS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, lower terrace, steppe and short meadow between shrubs and *Larix* trees, 17.VII 1978, 8 ♂, 25 ♀ (MS); the same locality, southern slope and upper terrace, stony steppes, 17.VII 1978, 3 ♀ (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, upper terrace, steppe and short meadow with *Caragana*, 17.VII 1978, 6 ♂, 13 ♀, 2 larvae (MS); the same locality, upper flood-plain, meadow, 17.VII 1978, 2 ♂ (MS); the same locality, lower terrace, steppe, 12.VIII 1978 5 ♂, 7 ♀ (MS); the same locality, upper terrace, steppe, 12.VIII 1978, 3 ♀ (MS); the same locality, upper flood-plain, meadow, 12.VIII 1978, 1 ♀ (MS); the same locality, upper terrace, short meadow, 12.VIII 1978, 2 ♀ (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, flood-plain and terraces, steppe and short meadow between shrubs and *Larix* trees, 28.VI 1978, 15 ♂, 30 ♀, 20 larvae (MS); E Tannu-Ola Mts., Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1041 m, piedmont plain, grazed meadow, 10.VII 1978, 1 ♀ (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°41'N, 95°19'E, 1173 m, local southern slope and piedmont plain, steppe, 10.VII 1978, 1 ♂, 1 ♀ (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°42'N, 95°20'E, 1106 m, southern slope, mountain steppe, 11.VII 1978, 2 ♂, 3 ♀ (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°37'N, 95°11'E, 1495 m, southern slope and upper terrace, mountain steppe, 12.VII 1978, 17 ♂, 26 ♀ (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°38'N, 95°11'E, 1492 m, short meadow, 5.VII 2017, 4 ♂, 12 ♀ (MS); E Tannu-Ola Mts., 13 km NEE Samagaltaj settlement, Kaldak-Khamar (Shuurmak) Pass, 50°38'N, 95°11'E, 1500 m, rangeland, 19.VII 2014, 3 ♂, 4 ♀ (SS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, southern slopes and piedmont plain, steppes with *Caragana*, 24.VII 2003, a male observed (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°45'N, 94°34'E, 1280–1301 m, terraces, dry meadows, 8.VII 2017, some specimens observed (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N – 50°45'N, 94°33'E – 94°34'E, 1400–1650 m, mountain slopes, 24.VI–12.VIII 1978, >10 specimens, including larvae (T. Myagkaya, A. Lee); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°14'N, 94°31'E, 894 m, flood-plains of lake and small stream, short meadows with halophytes, 6.VII 2017, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, S Tore Lake, 50°01'N, 95°04'E, 1154–1166 m, 07.VII 2017, sand semi-desert and upper terraces with birch forest, 2 ♀ (MS); Uvs-Nuur Intermountain Basin, S Tore Lake, 50°05'N, 95°09'E, 1174 m, sandy semi-desert with *Caragana bungei*, 7.VII 2017, some specimens observed (MS); 31 km NEE Erzin settlement, Erzin River, 50°21'N, 95°34'E, 1300 m, northern slope, balka with *Caragana*, 18.VII 2014, 2 ♀ (SS). **Krasnoyarsk Region:** southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 1 ♂, 9 ♀ (MS).

**DISTRIBUTION** (nominotypical subspecies). **Tuva:** WSW, UKH, KKH, MT, WTO, ETO, UVS, SAN. – N, NE Europe, Siberia (except the extreme North); N Kazakhstan, N Mongolia, NE China. Other subspecies are in the mountains of S Europe, Asia Minor, Caucasus, Tien Shan, Pamiro-Alay, SE Tibet, and Himalayas.

ECOLOGY. In Tuva, the species inhabits a wide variety of habitats: from the mountain tundra to the sandy semi-deserts. However, it prefers the mountain steppes with some grasses and forbs.

### Genus *Aeropedellus* Hebard, 1935

#### 3(67). *Aeropedellus variegatus* (Fischer de Waldheim, 1846)

*Gomphocerus variegatus*: Miram, 1907: 7.

*Dasyhippus variegatus*: Berezchkov, 1951: 10.

*Aeropedellus variegatus*: Ivanova, 1967: 132; Sergeev, 1986: 206; Sergeev *et al.*, 1995: 96, 98; Benediktov, 1997: 117; Bukhvalova & Vedenina, 1998: 119.

*Aeropedellus variegatus variegatus*: Berezchkov, 1956: 105; Tishechkin & Bukhvalova, 2009: 27.

MATERIAL. **Tuva**: Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 2 ♀ (IS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 650–700 m, piedmont plain, dry steppe, 6.VII 1978, 1 ♀ (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts with *Nanophyton grubovi*, 22.VII 2003, 2 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°05'E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, 3 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°02'E, 1225 m, piedmont plain, stony steppes with *Caragana*, 18.VIII 1985, 1 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°52'N, 92°04'E, 2060 m, alpine steppe and meadow, 19.VIII 1985, 2 ♂, 2 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51'N, 92°04'E, 1700–1900 m, mountain steppes, 19.VIII 1985, 2 ♂, 7 ♀ (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, agricultural fields including abandoned and plots along canal and roads, 21.VIII 1978, 4 ♂, 2 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°03'E, 1193 m, piedmont plain, lower terrace of stream, meadow, 21.VIII 1985, 2 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45'N, 92°09'E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1985, 2 ♂ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°04'E, 1170–1200 m, piedmont plain, desert with *Nanophyton grubovii*, 24.VIII 1985, 5 ♂, 1 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°03'E, 1200–1250 m, piedmont plain and northern slope, semi-desert with *Caragana* bushes, 24.VIII 1985, 4 ♂, 3 ♀ (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°41'N, 95°19'E, 1173 m, local southern slope and piedmont plain, steppe, 10.VII 1978, 8 ♂, 26 ♀ (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°42'N, 95°20'E, 1106 m, southern slope, mountain steppe, 11.VII 1978, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, Dus-Khol, 50°22'N, 94°52'E, 994–995 m, semi-desert with *Nanophyton grubovii*, 24–26.VII 1962, 1 ♀ (IS); Uvs-Nuur Intermountain Basin, 10 km S Erzin settlement, Tsuger-Els, 50°10'N, 95°11'E, 1154 m, sandy semi-desert, 23.VII 1978, 1 ♂, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, E Shara-Nuur, Yamalyg farwell rocks, 50°14'N, 94°45'E, 1150 m, piedmont plain, dry steppe, 6.VII 2017, some specimens observed (MS); 7 km SW Erzin settlement, Tes River, 50°12'N, 95°08'E, 13.VII 2014, 2 ♀ (SS); 25 km SSW Erzin settlement, Tore Lake, 50°02'N, 95°03'E, 1150 m, sands, grasses and *Caragana*, 11–12.VII 2014, 2 ♂, 3 ♀ (SS); 25 km SW Erzin settlement, Tes River, 50°05'N, 95°21'E, 14–15.VII 2014, 3 ♀ (SS); Tore Lake, 50°06'N, 95°06'E, 1100 m, steppe, steppe, 12.VII 2014, 6 ♀ (SS); 25 km NEE Erzin settlement, Belyj Medved Mt., 50°21'N, 95°27'E, steppe, 16.VII 2014, 3 ♀ (SS).

REMARKS. Almost all specimens may be determined as *Ae. variegatus variegatus*, but some individuals from the eastern part of the East Tannu-Ola Mts. look like *Ae. variegatus minutus* Mistshenko. Actually the genus should be revised in the nearest future.

DISTRIBUTION. **Tuva**: KHE, UKH, WTO, ETO, UVS, SAN. – N Caucasus, NE European Russia, Siberia; N Europe, mountains of S Europe, E Kazakhstan, Mongolia.

ECOLOGY. In Tuva, the species occurs in the different steppes, from the alpine ones to the dry steppes on piedmont plains and to the semi-deserts.

#### *Aeropedellus reuteri* (Miram, 1907)

*Gomphocerus reuteri*: Miram, 1907: 6–7.

REMARKS. The species is described from the southern part of Krasnoyarsk Region (including the vicinities of Minusinsk) and Irkutsk Region (the vicinities of Balagansk).

DISTRIBUTION. Type localities and Khakassia.

ECOLOGY. Associated with the dry steppes.

***Aeropedellus chogsomjavi* Altanchimeg, Chen et Nonnaizb, 2014**

REMARKS. This form was recently described from N Mongolia (near Tunamal Nuur, 1887 m, SW Hovsgol (Khövsgöl, Khuvsgul Province) (Altanchimeg *et al.*, 2014). The locality is just about 40–50 km away from the state boundary.

DISTRIBUTION. Only the type locality.

**Genus *Dasyhippus* Uvarov, 1930**

**4(68). *Dasyhippus barbipes* (Fischer de Waldheim, 1846)**

*Dasyhippus barbipes*: Berezikov, 1951: 19; Sergeev, 1985: 49; Sergeev, 1986: 206; Benediktov, 1997: 117; Bukhvalova & Vedenina, 1998: 118; Tishechkin & Bukhvalova, 2009: 43.

MATERIAL. **Tuva:** 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, 5 ♂, 8 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, upper terrace, dry meadow, 17.VI 2017, 4 ♂, 6 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 615–629 m, slopes and piedmont plain, semi-deserts, 21, 23.VI 2017, 2 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 610 m, steppe with *Stipa*, 23.VI 2017, 3 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 580–582 m, dry meadow, 23–26.VI 2017, 16 ♂, 11 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°45'E, 585–600 m, semi-desert and dry steppe, 25–26.VI 2017, 5 ♂, 28 ♀ (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 6 ♂, 6 ♀ (SS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°36'N, 94°09'E, 600–605 m, lower terrace, steppe, 7.VIII 1978, 5 ♂, 9 ♀ (MS); the same locality, upper flood-plain, meadow, 7.VIII 1978, 1 ♂ (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 630–830 m, mountain slopes and piedmont plain, semi-deserts with *Nanophyton grubovi*, 19.VII 1995, 3 larvae (MS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22'N, 94°04'E, 695 m, upper terrace, dry steppe, 16.VI 2017, some specimen observed (MS); W Tannu-Ola Mts., 5 km W Torgalyg settlement, Khandybai Mt., mountain steppe, 23.VI 1962, 2 ♂, 10 ♀ (IS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 931 m, upper flood-plain, meadow, 30.VI 1978, 2 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N – 50°45'N, 94°33'E – 94°34'E, 1200–1400 m, piedmont plains, terraces, dry meadows and steppes, 24.VI–12.VIII 1978, >10 specimens (T. Myagkaya, A. Lee); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, upper flood-plain and terraces, dry meadows and steppes, 27.VI 1978, 17 ♂, 44 ♀ (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain, meadows, 13.VII 1978, 2 ♂, 10 ♀ (MS); the same locality, upper flood-plain and terraces, 11.VIII 1978, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, terraces, steppes, 14.VII 1978, 6 ♂, 21 ♀ (MS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38' N, 95°19' E, 17.VII 2014, 2 ♂, 3 ♀ (SS); Dyttyg-Khem River, 13 km SW Samagaltai settlement, 8–10.VII 2013, 2 ♂ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, flood-plains, meadows, 21.VII 1978, 1 ♂, 1 ♀ (MS); the same locality, lower terrace, steppes, 23.VII 1978, 15 ♂, 33 ♀ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace and upper flood-plains, dry meadows and steppes, 22.VII 1978, 11 ♂, 11 ♀ (MS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°13'N, 94°32'E, 902–904 m, plain and upper terrace, sands, semi-desert and grassland with *Achnatherum*, 6.VII 2017, 5 ♂, 1 ♀ (MS); 25 km SW Erzin settlement, Tes River, 50°05'N, 95°21'E, 14–15.VII 2014, 8 ♂, 10 ♀ (SS); 31 km NEE Erzin settlement, Erzin River, 50°21'N, 95°34'E, 1100 m, flood-plain, meadow near cliff, 18.VII 2014, 1 ♂, 1 ♀ (SS)ment, Erzin River, 50°21'N, 95°34'E, 1100 m, flood-plain, meadow near cliff, 18.VII 2014, 1 ♂, 1 ♀ (SS).

DISTRIBUTION. **Tuva:** KHE, UKH, KKH, WTO, UVS, SAN. – SE Altay, Transbaikalia; Mongolia, N China.

ECOLOGY. Usually associated with the semi-deserts and dry steppes.

### Genus *Chorthippus* Fieber, 1852

#### 5(69). *Chorthippus apricarius* (Linnaeus, 1758)

*Stenobothrus apricarius*: Miram, 1907: 5.

*Chorthippus (Chorthippus) apricarius apricarius*: Sergeev, 1986: 207.

*Chorthippus apricarius*: Ivanova, 1967: 132; Vedenina & Bukhvalova, 2001: 117.

*Chorthippus apricarius apricarius*: Berezchkov, 1956: 113.

MATERIAL. **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37'N, 90°05'E, 1450 m, terraces and flood-plain, short meadows, 14.VIII 2016, 1 ♂ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 829 m, terrace, meadow, 12.VIII 2018, 4 ♂, 3 ♀, 1 larva (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 781–784 m, lower terrace and flood-plain, meadow, 11.VIII 2018, 2 ♂, 5 ♀, 2 larvae (MS); W Tannu-Ola Mts., 3 km S Torgalyg settlement, mountain steppe, 24.VI 1962, 1 ♀ (IS). **Krasnoyarsk Region:** southern part, W Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 1 larva (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 1 ♀ (MS).

REMARKS. The species was mentioned from NW Tuva for the first time by Sergeev & Baturina (2017).

DISTRIBUTION (nominotypical subspecies). **Tuva:** WSW, WSE, ET, WTO. – Europe (except the extreme North), S Siberia; Asia Minor, Kazakhstan, NW, N, NE China, Mongolia (including the Mongolian part of Uvs-Nuur Basin (Chogsomzhav, 1977)). Other subspecies occur in the Tatra Mts., Caucasus, Asia Minor, Kopetdagh, Tien Shan, Pamiro-Alay, Afghanistan.

ECOLOGY. In Tuva, relatively rare species associated with the dry meadows.

#### 6(70). *Chorthippus intermedius* (Bey-Bienko, 1926)

*Chorthippus intermedius*: Berezchkov, 1951: 18; Berezchkov, 1956: 122; Sergeev *et al.*, 1995: 96–98; Benediktov, 1997: 117, 2005: 124; Vedenina & Bukhvalova, 2001: 107; Bukhvalova, 2006: 201.

*Chorthippus (Chorthippus) intermedius*: Sergeev, 1986: 208.

MATERIAL. **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°28'E, 1075–1077 m, terraces, steppe and meadow, 12.VIII 2016, 3 ♂, 5 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 810 m, lower terrace and upper flood-plain, meadows, 13.VIII 2016, 1 ♂, 5 larvae (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°30'N, 90°12'E, 1250–1252 m, lower terrace and upper flood-plain, meadows, pebbles, 14.VIII 2016, 3 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37'N, 90°05'E, 1450 m, southern slope, meadow with bushes, 14.VIII 2016, 4 ♂, 2 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, 2 ♂, 3 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 580–582 m, dry meadow, 23–26.VI 2017, 2 ♂, 1 larva (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, southeastern slope, stony steppe, 8.VII 1978, 3 ♀ (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, piedmont plain, balka, meadow between larches, 8.VII 1978, 1 ♂, 6 ♀ (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, left side, 15 km S Balgazyn settlement, 50°53'N, 95°12'E, 900–950 m, piedmont plain of E Tannu-Ola Mts., meadow, 9.VII 1978, 4 ♂ (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1000–1039 m, terraces, steppe and meadow, 9.VII 1978, 5 ♀ (MS); the same locality, 1030–1050 m, southern slope, steppe and meadow, 10.VII 1978, 2 ♂, 1 ♀, 1 larvae (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°52'N, 92°04'E, 2060 m, alpine steppe and meadow, 19.VIII 1985, some specimens observed (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, flood-plain and terraces, steppe and short meadow between shrubs and Larix trees, 28.VII 1978, 11 ♂,

8 ♀, 21 larvae (MS); the same locality, upper flood-plain, meadow, 17.VII 1978, 1 ♂, 3 ♀ (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, terraces, steppe and short meadow between shrubs and *Larix* trees, 17.VII 1978, 12 ♂, 7 ♀ (MS); the same locality, upper terrace, short meadow, 12.VIII 1978, 9 ♂, 14 ♀ (MS); the same locality, upper terrace, steppe, 12.VIII 1978, 1 ♂ (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1360 m, upper terrace, short meadow, 15.VII 1978, 9 ♂, 10 ♀ (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, terrace, steppe and short meadow between shrubs and *Larix* trees, 17.VII 1978, 8 ♂, 5 ♀ (MS); the same locality, upper terrace, short meadow, 12.VIII 1978, 1 ♂ (MS); the same locality, lower terrace, steppe, 12.VIII 1978, 3 ♀ (MS); E Tannu-Ola Mts., Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1041 m, southern slope and piedmont plain, mountain steppe and grazed meadow, 10.VII 1978, 5 ♂, 5 ♀ (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°42'N, 95°20'E, 1106 m, southern slope, mountain steppe, 11.VII 1978, 1 ♂ (MS); Shuurmak River near Shuurmak settlement, 50°38'N, 95°19'E, mixed meadow (cutted), 19.VII 2014, 7 ♂, 2 ♀ (SS); E Tannu-Ola Mts., 7 km W Shuurmak settlement, 50°37'N, 95°14'E, 1400 m, local southern slope, stony steppe, 12.VII 1978, 1 ♂, 2 ♀ (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°37'N, 95°11'E, 1495 m, southern slope and upper terrace, mountain steppe, 12.VII 1978, 2 ♂, 1 ♀ (MS); the same locality, flood-plain, meadow with *Salix* bushes, 12.VII 1978, 3 ♂, 1 ♀ (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°38'N, 95°11'E, 1492 m, short meadow, 5.VII 2017, 7 ♂, 13 ♀ (MS); E Tannu-Ola Mts., 13 km NEE Samagaltaj settlement, Kaldak-Khamar (Shuurmak) Pass, 50°38'N, 95°11'E, 1550 m, open larch forest, 19.VII 2014, 4 ♂ (SS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, lower terrace, meadow 15.VII 1978, 4 ♂, 6 ♀ (MS); the same locality and habitats, 11.VIII 1978, 2 ♂, 4 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°45'N, 94°34'E, 1280–1301 m, terraces, dry meadows, 8.VII 2017, some specimens observed (MS); Dytyg-Khem River, 13 km SW Samagaltaj settlement, 8.VII 2013, 1 ♂ (M. Prostshalykin, V. Loktionov); 34 km NEE Erzin settlement, Erzin River, 50°22'N, 95°30'E, 1100 m, openings of larch forest, 16.VII 2014, 4 ♂, 2 ♀ (SS). **Krasnoyarsk Region:** southern part, W Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°21'N, 93°13'E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 2 ♂, 1 ♀ (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 1 ♀ (MS).

REMARKS. Vedenina & Bukhvalova (2001) and Bukhvalova (2006) also found this species in the vicinities of Erzin settlement and on the Tes River.

DISTRIBUTION. **Tuva:** WSW, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – Altay-Sayan Mts., Sakha (Yakutia), S Russian Far East (including Sakhalin); Mongolia, N, NE China, Tibet.

ECOLOGY. Usually prefers meadows.

#### 7(71). *Chorthippus hammarstroemi* (Miram, 1907)

*Stenobothrus hammarstroemi*: Miram, 1907: 5.

*Chorthippus hammarstroemi*: Berezikov, 1951: 19; Sergeev *et al.*, 1995: 96; Benediktov, 1997: 117, 2005: 125; Tishechkin & Bukhvalova, 2009: 33.

MATERIAL. **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°28'E, 1075–1077 m, terraces, steppe and meadow, 12.VIII 2016, 1 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°27'E, 1079–1085 m, southern slope, stony semi-desert, 13.VIII 2016, 7 ♂, 1 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°23'N, 90°28'E, 1208 m, southern slope, stony steppe, 13.VIII 2016, 2 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 810 m, lower terrace and upper flood-plain, meadows, 13.VIII 2016, 2 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 800–810 m, southern slope and upper terrace, semi-deserts, 13.VII 2016, 1 ♂ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 830–845 m, southern slope and piedmont plain, semi-deserts, 12.VIII 2018, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44'N, 95°26'E, 1006 m, southern slope, stony steppe, 11.VIII 2018, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 788–843 m, southern slope and upper terraces, steppes, 11.VIII 2018, 1 ♂, 1 ♀ (MS); 16 km N Boyarovka settlement, 15.VII 2013, 1 ♀ (M. Prostshalykin, V. Loktionov); Chaa-Khol River, 51°34'N, 92°23'E, 570–

600 m, dry steppes, 14–18.VII 1962, 1 ♂ (IS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, 12 ♂, 10 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, upper terrace, dry meadow, 17.VI 2017, 2 ♂, 3 ♀, 10 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 610 m, steppe with *Stipa*, 23.VI 2017, 1 ♂, 5 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 580–582 m, dry meadow, 23–26.VI 2017, 7 ♂, 5 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°45'E, 585–600 m, semi-desert and dry steppe, 25–26.VI 2017, 4 ♂, 1 ♀ (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 2 ♀ (SS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts with *Nanophyton grubovi*, 22.VII 2003, 1 ♀, 1 larva (MS); Kaa (Malyj Yenissei) River, right side, near Boyarovka settlement, 51°32'N, 95°21'E, 703 m, plain, dry steppe, 12.VIII 2018, 2 ♀ (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, plakor, mixed steppe, 20–21.VII 2014, 9 ♂, 8 ♀ (SS); the same locality, bottom of balka, wet meadow, 21.VII 2014, 1 ♂, 1 ♀ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, southeastern slope, stony steppe, 8.VII 1978, 7 ♂, 8 ♀ (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1030–1050 m, southern slope, steppe and meadow, 10.VII 1978, 3 ♂, 2 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45'N, 92°09'E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1985, 1 ♀ (MS); Shuurmak River near Shuurmak settlement, 1170 m, 12.VII 2011, 1 ♂, 2 ♀ (M. Prostshalykin, V. Loktionov); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°45'N, 93°09'E, 1030–1040 m, 29.VII 1978, upper terrace, dry steppe with *Caragana*, 1 ♂ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°39'N, 94°28'E, 990–995 m, flood-plain and terraces, dry steppes with *Caragana*, 28.VI 1978, 11 ♂, 7 ♀, 18 larvae (MS); the same locality and habitats, 18.VII 1978, 50 ♂, 66 ♀ (MS); the same locality and habitats, 10.VIII 1978, 8 ♂, 12 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, lower terrace, meadow, 15.VII 1978, 1 ♂ (MS); the same locality, lower flood-plain, pebbles and sand with scarce vegetation, 15.VII 1978, 1 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, dry steppe, 11.VIII 1978, 1 ♂, 1 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, southern slopes and piedmont plain, steppes with *Caragana*, 24.VII 2003, 1 ♂, 9 ♀, 1 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1259 m, piedmont plain, dry steppe with *Caragana*, 8.VII 2017, 4 ♂, 2 ♀, 11 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N – 50°45'N, 94°33'E – 94°34'E, 1200–1400 m, mountain slopes, piedmont plains, terraces, dry meadows and steppes, often with bushes and stones, 24.VI–12.VIII 1978, >40 specimens, including larvae (T. Myagkaya, A. Lee); Dytyg-Khem River, 12 km SW Samagaltai settlement, 50°38'N, 95°19'E, 17.VII 2014, 1 ♂ (SS); 31 km NEE Erzin settlement, Erzin River, 50°21'N, 95°34'E, 1300 m, northern slope, balka with *Caragana*, 18.VII 2014, 8 ♂, 10 ♀ (SS). **Krasnoyarsk Region**: southern part, W Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°21'N, 93°13'E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 9 ♂, 19 ♀ (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 1 ♀ (MS).

**DISTRIBUTION.** Tuva: WSW, WSE, ET, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – Altay-Sayan Mts., Transbaikalia, S Sakha (Yakutia), S Russian Far East, Mongolia, N, NE China, Korea.

**ECOLOGY.** Usually associated with the different types of the steppes and semi-deserts with bushes, especially from the family Fabaceae.

#### 8(72). *Chorthippus dorsatus orientalis* Bey-Bienko, 1941

**MATERIAL.** Tuva: 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, 1 ♂ (MS); Tandinskij District, Bah-Haak, 12.IX 1959, 23 ♂, 19 ♀ (N. Filippov) (Zoological Institute, Saint Petersburg, L. Mistshenko det.).

**REMARKS.** Several akin forms of this grasshopper group, namely *Chorthippus loratus* (Fischer de Waldheim), *Ch. giganteus* Mistshenko, *Ch. dichrous* (Eversmann), *Ch. dorsatus dorsatus* (Zetterstedt) and *Ch. dorsatus orientalis* Bey-Bienko, may be explicitly separated by



some groups of morphological traits, including the wing venation patterns. The last taxon is characterized by the narrow costal field of its tegmina and relatively long antennae of males. This allows us to discuss the taxonomic status of *Ch. (dorsatus) orientalis* Bey-Bienko. However, the acoustic signals of males of *Ch. dorsatus dorsatus* (Komarova & Dubrovin, 1973; Stumpner & Helversen, 1994; Bukhvalova & Zhantiev, 1993; Benediktov, 2005; Bukhvalova, 2006) and *Ch. dorsatus orientalis* (Cigliano *et al.*, 2019) are quite similar. On the contrary, the male acoustic signals of *Ch. dorsatus dorsatus*, *Ch. dichrous* and *Ch. loratus* are explicitly different (Komarova & Dubrovin, 1973; Stumpner & Helversen, 1994; Cigliano *et al.*, 2019)

**DISTRIBUTION.** **Tuva:** KHE, UKH. – Transbaikalia; Mongolia, NE China. Besides that, *Ch. dorsatus orientalis* occurs in the Mongolian part of Uvs-Nuur Intermountain Basin (Mistshenko, 1968; Chogsomzhav, 1972).

**ECOLOGY.** Rare, the main type of habitats is the dry meadows of the steppe and semi-desert altitudinal belts.

#### **\*9(73). *Chorthippus dorsatus dorsatus* (Zetterstedt, 1821)**

*Stenobothrus dorsatus:* Miram, 1907: 6.

*Chorthippus dorsatus:* Berezikov, 1951: 19; Benediktov, 1997: 117; Bukhvalova, 2006: 201.

**MATERIAL.** **Tuva:** W Sayan Mts., Kurtushibinskij Range, 52°16' N, 93°41' E, 1429 m, alpine meadows, 13.VIII 2018, 1 ♂, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°50'N, 95°25'E, 1132–1135 m, terrace and flood-plains, meadows, 11.VIII 2018, 1 ♂, 3 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 781–784 m, lower terrace and flood-plain, meadow, 11.VIII 2018, 1 ♂, 2 ♀ (MS); Kyzyl, swamp with the common reed and sedges, 14.VIII 1993, 3 ♂, 2 ♀ (AB); the same locality, 4.VIII 1994, 4 ♂, 3 ♀ (AB); Tes River, near Erzin settlement, flood-plain, swamp, 5.VIII 1989, 1 ♂ (M. Bukhvalova); 10 km S Naryn settlement, 2 km E Tagydy Pass, 1800 m, 26.VIII 1994, 1 ♂ (AB). **Krasnoyarsk Region:** southern part, W Sayan Mts., Uvs Intermountain Basin, near abandoned Idzhim settlement, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 10 ♂, 8 ♀, 25 larvae (MS); the same locality, 52°21'N, 93°13'E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 1 ♂ (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 4 ♂, 4 ♀, 11 larvae (MS).

**DISTRIBUTION.** **Tuva:** WSE, ET, UKH, KKH, UVS, SAN. – Europe (except the extreme North and the southern regions), N Caucasus, S Siberia (up to Krasnoyarsk Region); N Kazakhstan.

**ECOLOGY.** Usually associated with the forest meadows in the northern part of the region. In intermountain basins, commonly limited by flood-plains with swamps.

#### **10(74). *Chorthippus dichrous* (Eversmann, 1859)**

*Chorthippus dorsatus loratus* auct.: Berezikov, 1951: 19.

*Chorthippus dichrous:* Berezikov, 1956: 131 (bona sp.); Benediktov, 1997: 117; Vedenina & Bukhvalova, 2001: 108.

**MATERIAL.** **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 810 m, lower terrace and upper flood-plain, meadows, 13.VIII 2016, 5 ♂ (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570 m, flood-plain, meadow, 17.VII 1962, 1 ♂, 3 ♀, 28 larvae (IS); the same locality and habitat, 19.VIII 1962, 9 ♂, 6 ♀ (IS); the same locality, 570–600 m, dry steppes, 14–18.VII 1962, 5 larvae (IS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°15'E, 886 m, lower terrace, meadow, 8.VII 1978, 10 ♂, 5 ♀, 343 larvae (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, left side, 15 km S Balgazyn settlement, 50°53'N, 95°12'E, 900–950 m, piedmont plain of E Tannu-Ola Mts., meadow, 9.VII 1978, 2 ♂, 39 larvae (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 930 m, upper flood-plain, meadow, 16.VII 1978, 2 ♂ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, upper flood-plain, meadows, 21.VII 1978, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, meadows, 23.VII 1978, 2 ♀ (MS).

**DISTRIBUTION.** **Tuva:** WSW, KHE, UKH, KKH, UVS. – S, SE Europe, S Siberia (up to Tuva); Asia Minor, Caucasus, Iran, Kazakhstan, Tien Shan, Pamiro-Alay, NW China, Mongolia.

**ECOLOGY.** Commonly associated with the wet and dense vegetation of the flood-plains.

**11(75). *Chorthippus albomarginatus* (De Geer, 1773)**

*Stenobothrus albomarginatus*: Miram, 1907: 6.

**MATERIAL.** **Tuva:** E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°52'N, 95°26'E, 1230 m, terrace, meadow, 10.VIII 2018, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°50'N, 95°25'E, 1132–1135 m, terrace and flood-plains, meadows, 11.VIII 2018, 7 ♂, 23 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44' N, 95°26' E, 958 m, upper terrace, steppe, 11.VIII 2018, 12 ♂, 17 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 788–843 m, southern slope and upper terraces, steppes, 11.VIII 2018, 12 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 781–784 m, lower terrace and flood-plain, meadow, 11.VIII 2018, 1 ♂, 14 ♀ (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°15'E, 886 m, upper flood-plain, meadow, 8.VII 1978, 1 ♂ (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1000–1039 m, terraces, steppe and meadow, 9.VII 1978, 5 ♂, 4 ♀ (MS); the same locality, 1006 m, upper flood-plain, overgrazed meadow, 10.VII 1978, 1 ♂ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°02'E, 1225 m, piedmont plain, lower part, low terrace and flood-plain of stream, ruderal vegetation and meadow, 16.VIII 1985, 10 ♂, 19 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°03'E, 1193 m, piedmont plain, lower terrace of stream, meadow, 21.VIII 1985, 14 ♂, 32 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°05'E, 1200–1250 m, piedmont plain, lower part, stony steppes with *Caragana* and dry meadow, 21.VIII 1985, 8 ♂, 25 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, Mugur River, 50°44'N, 92°08'E, 1100–1150 m, low terrace and upper flood-plain, meadows, 24.VIII 1978, 116 ♂, 347 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°02'E, 1225 m, piedmont plain, middle part, lower terrace of stream, 25.VIII 1985, 6 ♂, 14 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, meadow, 11.VIII 1978, 1 ♂, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, meadows, 23.VII 1978, 3 ♂ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, upper flood-plain, meadows, 21.VII 1978, 35 ♂, 33 ♀ (MS). **Krasnoyarsk Region:** southern part, W Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 3 ♂, 1 ♀ (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 14 ♂, 49 ♀, 7 larvae (MS).

**REMARKS.** In Tuva, there are two species from this complex, namely *Chorthippus albomarginatus* and *Ch. karelini*. These taxa may be separated on the basis of morphological traits (the first species has relatively short antennae) and their acoustic signals. The morphological analysis shows that *Ch. albomarginatus* is mainly distributed in some relatively cold and wet parts of Tuva, but, in some cases, both species occur in the same habitat. Unfortunately, there are no acoustic data confirming these data.

**DISTRIBUTION.** **Tuva:** ET, KKH, WTO, UVS. – Europe (except the extreme North and the southern parts), W Siberia (up to Krasnoyarsk Region and except the Kulunda steppe); N Kazakhstan, N Mongolia.

**ECOLOGY.** The species prefers the dry meadows in the forest-steppe and forest life zones.

**12(76). *Chorthippus karelini* (Uvarov, 1910)**

*Chorthippus karelini*: Benediktov, 1997: 118, 2005: 126; Bukhvalova & Vedenina, 2001: 109, 115; Vedenina, 2015.

*Chorthippus albomarginatus*: Berezhkov, 1951: 19; Sergeev *et al.*, 1995: 97.

*Chorthippus albomarginatus karelini*: Bukhvalova, 2006: 201.

**MATERIAL. Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°28'E, 1075–1077 m, terraces, steppe and meadow, 12.VIII 2016, 1 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 810 m, lower terrace and upper flood-plain, meadows, 13.VIII 2016, 4 ♂, 2 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°30'N, 90°12'E, 1250–1252 m, lower terrace and upper flood-plain, meadows, pebbles, 14.VIII 2016, 10 ♂, 32 ♀ (MS); W Sayan Mts., Kurtushibinskij Range, 52°16' N, 93°41' E, 1429 m, alpine meadows, 13.VIII 2018, 1 ♂, 1 ♀ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 829 m, terrace, meadow, 12.VIII 2018, 2 ♂, 3 ♀ (MS). E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°57'N, 95°33'E, 1945 m, alpine meadow, 10.VIII 2018, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°56'N, 95°30'E, 1737–1869 m, southern slope, terraces, flood-plains, meadows, 9–10.VIII 2018, 1 ♂, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°52'N, 95°26'E, 1230 m, terrace, meadow, 10.VIII 2018, 1 ♂, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°50'N, 95°25'E, 1132–1135 m, terrace and flood-plains, meadows, 11.VIII 2018, 16 ♂, 61 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44' N, 95°26' E, 958 m, upper terrace, steppe, 11.VIII 2018, 1 ♂, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 788–843 m, southern slope and upper terraces, steppes, 11.VIII 2018, 21 ♂, 30 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 781–784 m, lower terrace and flood-plain, meadow, 11.VIII 2018, 15 ♂, 28 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, 140 ♂, 89 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, upper terrace, dry meadow, 17.VI 2017, 20 ♂, 13 ♀, 16 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 615–629 m, slopes and piedmont plain, semi-deserts, 21, 23.VI 2017, 2 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 610 m, steppe with *Stipa*, 23.VI 2017, 23 ♂, 21 ♀, 15 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 580–582 m, dry meadow, 23–26.VI 2017, 173 ♂, 187 ♀, 65 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°45'E, 585–600 m, semi-desert and dry steppe, 25–26.VI 2017, 27 ♂, 13 ♀, 4 larvae (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 3 ♂, 1 ♀ (SS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°36'N, 94°09'E, 600–605 m, lower terrace, steppe, 7.VIII 1978, 11 ♂, 6 ♀, 3 larvae (MS); the same locality, upper flood-plain, meadow, 7.VIII 1978, 27 ♂, 10 ♀, 2 larvae (MS); Kaa (Malyj Yenissei) River, right side, near Boyarovka settlement, 51°32'N, 95°21'E, 703 m, plain, dry steppe, 12.VIII 2018, 1 ♀ (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, bottom of balka, wet meadow, 21.VII 2014, 1 ♂, 1 ♀ (SS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, plakor, mixed steppe, 21.VII 2014, 4 ♂, 4 ♀ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°15'E, 886 m, lower terrace, meadow, 8.VII 1978, 48 ♂, 30 ♀, 33 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°02'E, 1225 m, piedmont plain, lower part, low terrace and flood-plain of stream, ruderal vegetation and meadow, 16.VIII 1985, 13 ♂, 6 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, Mugur River, 50°46'N, 92°04'E, 1170 m, marsh, wet meadow with bushes, 17.VIII 1985, 1 ♂ (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, plots along canal, 21.VIII 1978, 1 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°03'E, 1193 m, piedmont plain, lower terrace of stream, meadow, 21.VIII 1985, 7 ♂, 2 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°05'E, 1200–1250 m, piedmont plain, lower part, stony steppes with *Caragana* and dry meadow, 21.VIII 1985, 29 ♂, 22 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, Mugur River, 50°44'N, 92°08'E, 1100–1150 m, low terrace and upper flood-plain, meadows, 24.VIII 1978, 44 ♂, 55 ♀ (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°42'N, 95°20'E, 1086 m, upper flood-plain, wet meadow, 11.VII 1978, 1 ♀ (MS); Shuurmak River near Shuurmak settlement, 50°38'N, 95°19'E, mixed meadow (cutted), 19.VII 2014, 3 ♂, 3 ♀ (SS); Shuurmak River near Shuurmak settlement, 1170 m, 12.VII 2013, 1 ♂ (M. Prostshalykin, V. Loktionov); E Tannu-Ola Mts., Shuurmak Pass, 50°37'N, 95°11'E, 1495 m, flood-plain, meadow with *Salix* bushes, 12.VII 1978, 3 ♂, 3 ♀, 4 larvae (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°38'N, 95°11'E, 1492 m, short meadow, 5.VII 2017, 1 ♂, 1 ♀ (MS); E Tannu-Ola Mts., 13 km NEE Samagaltaj settlement, Kaldak-Khamar (Shuurmak) Pass, 50°38'N, 95°11'E, 1500 m, rangeland, 19.VII 2014, 3 ♀ (SS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 984 m, upper terrace, stony semi-desert, 29.VII 1978, 1 ♀ (MS); the same locality, lower terrace, meadow, 1 ♂ (MS); N Uvs-

Nuur Intermountain Basin, Iribitej River, 50°45'N, 93°09'E, 1030–1040 m, terraces, dry meadows and steppes, 29.VII 1978, 1 ♂, 4 ♀ (MS); N Uvs-Nuur Intermountain Basin, Amdaygyn-Khol, 50°42'N, 93°16'E, 783 m, meadow, 27.VII 1962, several specimens (IS); Uvs-Nuur Intermountain Basin, Tes River Valley, near Oo-Shyanaa settlement, 50°39'N, 93°40'E, 807 m, flood-plains, meadows with halophytes, 31.VII 1978, 2 ♂, 2 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 930 m, upper flood-plain, meadow, 16.VII 1978, 8 ♂, 12 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 931 m, upper flood-plain, meadow, 30.VI 1978, 15 ♂, 4 ♀, 17 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, lower terrace, meadow 15.VII 1978, 2 ♂, 3 ♀, 5 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°45'N, 94°34'E, 1280–1301 m, terraces, dry meadows, 8.VII 2017, some specimens observed (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain, meadows, 13.VII 1978, 1 ♂, 1 ♀, 2 larvae (MS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38' N, 95°19' E, 17.VII 2014, 2 ♂, 1 ♀ (SS); Dyttyg-Khem River, 13 km SW Samagaltai settlement, 6–10.VII 2013, 6 ♂, 3 ♀ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, flood-plains, meadows, 21.VII 1978, 8 ♂, 12 ♀ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, upper flood-plain, meadows, 21.VII 1978, 91 ♂, 44 ♀, 14 larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace and upper flood-plains, dry meadows and steppes, 22.VII 1978, 5 ♂, 5 ♀ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, meadows, 23.VII 1978, 23 ♂, 14 ♀ (MS); 7 km SW Erzin settlement, Tes River, 50°12'N, 95°08'E, 13.VII 2014, 2 ♂ (SS); 25 km SW Erzin settlement, Tes River, 50°05'N, 95°21'E, 14–15.VII 2014, 3 ♂, 7 ♀ (SS); the same locality, 5.VII 2013, 1 ♂ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, S Tore Lake, 50°01'N, 95°04'E, 1154–1166 m, 07.VII 2017, sand semi-desert and upper terraces with birch forest, 36 ♂, 17 ♀, 7 larvae (MS); Uvs-Nuur Intermountain Basin, S Tore Lake, 50°02'N, 95°03'E, 1152 m, flood-plain, meadow, 07.VII 2017, 6 ♂, 5 ♀ (MS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°13'N, 94°32'E, 902–904 m, plain and upper terrace, sands, semi-desert and grassland with *Achnatherum*, 6.VII 2017, 4 ♂, 7 ♀, 1 larva (MS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°14'N, 94°31'E, 894 m, flood-plains of lake and small stream, short meadows with halophytes, 6.VII 2017, 3 ♂, 3 ♀, 1 larva (MS); 34 km NEE Erzin settlement, Erzin River, 50°22'N, 95°30'E, 1100 m, openings of larch forest, 16.VII 2014, 2 ♂, 2 ♀ (SS); 25 km NEE Erzin settlement, Belyj Medved Mt., 50°21'N, 95°27'E, steppe, 16.VII 2014, 1 ♂, 1 ♀ (SS). **Krasnoyarsk Region:** southern part, W Sayan Mts., Uvs Intermountain Basin, near abandoned Idzhim settlement, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 1 ♂ (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 14 ♂, 8 ♀ (MS). **Khakassia:** W Sayan Mts., Bolshoj On River, 51°52'N, 89°48'E, 1200 m, upper terrace, opening, old gravel quarry, 15.VIII 2016, 1 ♀ (MS).

REMARKS. See under *Chorthippus albomarginatus*. We may also suppose that the main part of all records of *Ch. albomarginatus* from Tuva belongs to this species. Wide distribution of this species in Tuva is verified by the analysis of the male calling songs.

DISTRIBUTION. **Tuva:** WSW, WSE, ET, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – SW Europe, S Siberia (up to Tuva); Kazakhstan (except the North), Asia Minor, Caucasus, Iran, Middle Asia, Mongolia.

ECOLOGY. The species prefers the dry meadows in the steppes and semi-deserts.

### 13(77). *Chorthippus fallax* (Zubovsky, 1900)

*Stenobothrus ehnerbergi*: Miram, 1907: 5–6.

*Chorthippus fallax*: Berezhkov, 1951: 18; Ivanova, 1967: 132; Sergeev *et al.*, 1995: 96–98; Benediktov, 1997: 117, 2005: 125; Bukhvalova, 2006: 201.

*Chorthippus (Chorthippus) fallax*: Sergeev, 1986: 209.

MATERIAL. **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°28'E, 1075–1077 m, terraces, steppe and meadow, 12.VIII 2016, 1 ♂, 2 ♀, 2 larvae (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°27'E, 1079–1085 m, southern slope, stony semi-desert, 13.VIII 2016, 1 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°23'N, 90°28'E, 1208 m, southern slope, stony steppe,

13.VIII 2016, 2 ♂, 1 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 810 m, lower terrace and upper flood-plain, meadows, 13.VIII 2016, 7 ♂, 9 ♀, 45 larvae (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°30'N, 90°12'E, 1250–1252 m, lower terrace and upper flood-plain, meadows, pebbles, 14.VIII 2016, 8 ♂, 6 ♀, 7 larvae (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37'N, 90°05'E, 1450 m, terraces and flood-plain, short meadows, 14.VIII 2016, 1 ♀ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 829 m, terrace, meadow, 12.VIII 2018, 10 ♂, 8 ♀, 1 larva (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 788–843 m, southern slope and upper terraces, steppes, 11.VIII 2018, 1 ♂ (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570 m, flood-plain, meadow, 17.VII 1962, 1 ♂, 14 larvae (IS); the same locality, 570–600 m, dry steppes, 14–18.VII 1962, 18 larvae (IS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, 7 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, upper terrace, dry meadow, 17.VI 2017, 3 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 580–582 m, dry meadow, 23–26.VI 2017, 1 larva (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°36'N, 94°09'E, 600–605 m, lower terrace, steppe, 7.VIII 1978, 1 larva (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 630–830 m, mountain slopes and piedmont plain, semi-deserts *Nanophyton grubovi*, 19.VII 1995, 5 larvae (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°36'N, 94°09'E, 600–605 m, lower terrace and upper flood-plain, meadows, 20.VII 1995, 22 larvae (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts *Nanophyton grubovi*, 22.VII 2003, 22 larvae (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, southeastern slope, stony steppe, 8.VII 1978, 13 larvae (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, upper terrace, meadow with *Caragana* bushes, 8.VII 1978, 47 larvae (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°15'E, 886 m, lower terrace, meadow, 8.VII 1978, 2 ♂, 1 ♀, 25 larvae (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1000–1039 m, terraces, steppe and meadow, 9.VII 1978, 46 larvae (MS); the same locality, 1030–1050 m, southern slope, steppe and meadow, 10.VII 1978, 1 larva (MS); the same locality, 1006 m, upper flood-plain, overgrazed meadow, 10.VII 1978, 1 ♂, 5 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°02'E, 1225 m, piedmont plain, lower part, low terrace and flood-plain of stream, ruderal vegetation and meadow, 16.VIII 1985, 4 ♂, 4 ♀, 9 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, Mugur River, 50°46'N, 92°04'E, 1170 m, marsh, wet meadow with bushes, 17.VIII 1985, 1 ♂ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51'N, 92°04'E, 1700–1900 m, mountain steppes, 19.VIII 1985, 6 ♂, 2 ♀, 383 larvae (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, plots along canal, 21.VIII 1978, 1 ♀, 4 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°03'E, 1193 m, piedmont plain, lower terrace of stream, meadow, 21.VIII 1985, 49 ♂, 44 ♀, 132 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°05'E, 1200–1250 m, piedmont plain, lower part, stony steppes with *Caragana* and dry meadow, 21.VIII 1985, 1 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, Mugur River, 50°44'N, 92°08'E, 1100–1150 m, low terrace and upper flood-plain, meadows, 24.VIII 1978, 12 ♂, 10 ♀, 1 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°02'E, 1225 m, piedmont plain, middle part, lower terrace of stream, 25.VIII 1985, 2 ♂, 2 ♀, 2 larvae (MS); W Tannu-Ola Mts., 5 km W Torgalyg settlement, Khandybai Mt., near timber-line, meadows, 23.VI 1962, 2 larvae (IS); W Tannu-Ola Mts., 5 km W Torgalyg settlement, Khandybai Mt., mountain steppe, 23.VI 1962, 5 larvae (IS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, upper terrace, steppe and short meadow with *Caragana*, 17.VII 1978, 28 larvae (MS); the same locality, upper terrace, shorth meadow and steppe, 12.VIII 1978, 10 ♂, 11 ♀, 16 larvae (MS); the same locality, lower terrace, steppe, 12.VIII 1978, 6 ♂, 5 ♀, 12 larvae (MS); the same locality, upper flood-plain, meadow, 12.VIII 1978, 1 ♀, 6 larvae (MS); E Tannu-Ola Mts., Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1041 m, southern slope, mountain steppe, 10.VII 1978, 4 larvae (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°41'N, 95°19'E, 1173 m, local southern slope and piedmont plain, steppe, 10.VII 1978, 70 larvae (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°42'N, 95°20'E, 1106 m, southern slope, mountain steppe, 11.VII 1978, 1 larvae (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°37'N, 95°11'E, 1495 m, southern slope and upper terrace, mountain steppe,

12.VII 1978, 50 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°45'N, 93°09'E, 1030–1040 m, 29.VII 1978, flood plains and terraces, dry meadows and steppes, 1 ♀, 47 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 984 m, 29.VII 1978, flood-plains, meadows, 4 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 984 m, 29.VII 1978, upper terrace, stony semi-desert, 1 larva (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 931 m, upper flood-plain, meadow, 30.VI 1978, 4 larvae (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 930 m, upper flood-plain, meadow, 16.VII 1978, 2 ♂, 88 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, lower terrace, meadow 15.VII 1978, 1 ♂, 119 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°39'N, 94°28'E, 990–995 m, terraces, dry steppes with *Caragana*, 18.VII 1978, 10 larva (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower flood-plain, pebbles and stone with scarce vegetation, 11.VIII 1978, 1 ♂, 1 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, dry steppe, 11.VIII 1978, 17 ♂, 14 ♀, 39 larvae (MS); the same locality, lower terrace, wet meadow, 11.VIII 1978, 2 ♂, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, upper flood-plain and terraces, dry meadows and steppes, 27.VI 1978, 2 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain, meadows, 13.VII 1978, 15 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, terraces, steppes, 14.VII 1978, 18 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain and terraces, 11.VIII 1978, 1 ♂ (MS); Dytytg-Khem River, 12 km SW Samagaltai settlement, 50°38'N, 95°19'E, 17.VII 2014, 3 ♂, 3 ♀ (SS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, flood-plains, meadows between poplars and willows, 21.VII 1978, 18 larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, upper flood-plain, meadows, 21.VII 1978, 6 ♂ larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace and upper flood-plains, dry meadows and steppes, 22.VII 1978, 8 larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, meadows, 23.VII 1978, 2 ♂, 25 larva (MS); 31 km NEE Erzin settlement, Erzin River, 50°21'N, 95°34'E, 1100 m, flood-plain, meadow near cliff, 18.VII 2014, 3 ♂, 2 ♀ (SS). **Krasnoyarsk Region:** southern part, W Sayan Mts., Uvs Intermountain Basin, near abandoned Idzhim settlement, 52°21'N, 93°13'E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 1 ♂, 9 larvae (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 27 larvae (MS).

**DISTRIBUTION** (nominotypical subspecies). **Tuva:** WSW, WSE, ET, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – Siberia (except the western part of West Siberian Plain and the extreme North), S Russian Far East; E Kazakhstan, N Mongolia, N, NE China, Korea. Other subspecies occur on islands (Sakhalin, Kurile and Japan).

**ECOLOGY.** The species prefers the dry meadows with short vegetation and the steppes. It is also common in the different agricultural landscapes.

#### 14(78). *Chorthippus parallelus* (Zetterstedt, 1821)

*Stenobothrus parallelus*: Miram, 1907: 6.

*Chorthippus longicornis longicornis*: Berezchkov, 1956: 125–126.

**MATERIAL.** **Krasnoyarsk Region:** southern part, Oya River, Ermakovskoje settlement, 52°17'N, 92°27'E, 290 m, lower terrace, meadow, 17.VII 1995, 1 ♂, 1 ♀ (MS).

**REMARKS.** The species was mentioned from W Tuva for the first and last time by Miram (1907).

Defaut (2012: 17, 20) suggested to erect the new genus, namely *Pseudochorthippus*, with three species, namely *Chorthippus parallelus* (Zetterstedt), *Ch. montanus* (Charpentier), and *Ch. curtipennis* (Harris). However, the differential diagnosis of this genus is very weak and does not allow to indentify the generic position of many species and subspecies from the genus *Chorthippus* s. l. This means that the general taxonomic structure of the last genus should be revised in the future. This analysis should include not only the species discussed by Defaut, but also numerous taxa known from Eurasia.

**DISTRIBUTION.** **Tuva:** KHE. – Europe (except the extreme North), Siberia (except the North, but including the central parts of Sakha (Yakutia), and the southern parts of Krasnoyarsk Region and the Republic of Khakassia (Ivanova, 1967)), Asia Minor, Caucasus, Kazakhstan, Tien Shan, Mongolia [including the Mongolian part of Uvs-Nuur Basin (Chogsomzhav, 1977)], NW China.

**ECOLOGY.** Unknown.

**15(79). *Chorthippus montanus* (Charpentier, 1825)**

*Chorthippus montanus*: Berezchkov, 1951: 18–19; Benediktov, 1997: 117; Bukhvalova, 2006: 201.

**MATERIAL.** **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37'N, 90°05'E, 1450 m, terraces and flood-plain, short meadows, 14.VIII 2016, 1 ♂, 1 ♀, 1 larva (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37'N, 90°05'E, 1450 m, southern slope, meadow with bushes, 14.VIII 2016, 1 larva (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°42'N, 89°58'E, 1760–1767 m, southern slope and upper terrace, 15.VIII 2016, 1 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°42'N, 89°55'E, 1900–1907 m, mountain tundra with *Betula* bushes, 15.VIII 2016, 3 ♂, 7 larvae (MS); W Sayan Mts., Kurtushbinskij Range, 52°16' N, 93°41' E, 1429 m, alpine meadows, 13.VIII 2018, 2 ♂, 1 ♀, 1 larva (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°52'N, 95°26'E, 1230 m, terrace, meadow, 10.VIII 2018, 1 ♂, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°50'N, 95°25'E, 1132–1135 m, terrace and flood-plains, meadows, 11.VIII 2018, 5 ♂, 5 ♀ (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, southeastern slope, stony steppe, 8.VII 1978, 37 larvae (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°15'E, 886 m, lower terrace, meadow, 8.VII 1978, 79 larvae (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, left side, 15 km S Balgazyn settlement, 50°53'N, 95°12'E, 900–950 m, piedmont plain of E Tannu-Ola Mts., meadow, 9.VII 1978, 2 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, Mugur River, 50°46'N, 92°04'E, 1170 m, marsh, wet meadow with bushes, 17.VIII 1985, 23 ♂, 17 ♀ (MS); Uvs-Nuur Intermountain Basin, Tes River Valley, near Oo-Shynaa settlement, 50°39'N, 93°40'E, 807 m, flood-plains, meadows with halophytes, 31.VII 1978, 1 larva (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzlin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, flood-plains, meadows, 21.VII 1978, 17 larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzlin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, upper flood-plain, meadows, 21.VII 1978, 3 ♂, 1 ♀ (MS). **Krasnoyarsk Region:** southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 7 ♂, 2 ♀, 25 larvae (MS). **Khakassia:** W Sayan Mts., Bolshoj On River, 51°52'N, 89°48'E, 1200 m, upper terrace, opening, old gravel quarry, 15.VIII 2016, 2 ♂, 1 ♀ (MS).

**DISTRIBUTION.** **Tuva:** WSW, WSE, ET, KKH, WTO, UVS. – N, C Europe, Siberia, Russian Far East; N Kazakhstan, Mongolia, NE China, N Korea.

**ECOLOGY.** Usually associated with the wet meadows.

**Subfamily Locustinae (= Oedipodinae)**

**Tribe Parapleurini**

**Genus *Stethophyma* Fischer, 1853**

**16(80). *Stethophyma grossum* (Linnaeus, 1758)**

*Mecostethus grossus*: Miram, 1907: 7; Berezchkov, 1951: 20; Berezchkov, 1956: 142; Ivanova, 1967: 133.

*Stethophyma grossum*: Sergeev, 1986: 210; Benediktov, 1997: 117.

**MATERIAL.** **Tuva:** E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 781 m, flood-plain, meadow, 11.VIII 2018, some specimens observed (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, some specimens observed (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°55'N, 95°09'E, 901 m, flood-plain, meadow, 27.VII 1978, 3 ♂ (A. Bugrov); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°02'E, 1225 m, piedmont plain,

lower part, flood-plain of stream, wet meadow, 16.VIII 1985, 1 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, Mugur River, 50°44'N, 92°08'E, 1100–1150 m, low terrace and upper flood-plain, meadows, 24.VIII 1978, 14 ♂, 7 ♀ (MS); N Uvs-Nuur Intermountain Basin, Amdagyn-Khol, 50°42'N, 93°16'E, 783 m, meadow, 27.VII 1962, several specimens (IS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, Khol-Oozhu settlement, 50°45'N, 94°24'E, 1070–1080 m, lower terrace, meadow, 21.VII 1960, several specimens (IS); the same locality and habitat, 3.VIII 1960, several specimens (IS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, upper flood-plain, meadows, 21.VII 1978, 2 larvae (MS). **Krasnoyarsk Region:** southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 2 larvae (MS).

**DISTRIBUTION. Tuva:** ET, KHE, UKH, KKH, WTO, UVS. – Almost all temperate Eurasia (except the extreme North).

**ECOLOGY.** This species prefers mesohydrophilic vegetation along streams and marshes.

### ***Stethophyma magister* (Rehn, 1902)**

*Mecostethus tscherskii*: Berezchkov, 1956: 142–143.

**MATERIAL. Khakassia:** near Tashtyp settlement, VII 1920, 1 ♂, 1 ♀.

**DISTRIBUTION.** Southern parts of Khakassia and Krasnoyarsk Region, Transbaikalia, S Russian Far East, including Kurile Islands; Japan.

### **Tribe Epacromiini**

#### **Genus *Epacromius* Uvarov, 1942**

### **17(81). *Epacromius pulverulentus* (Fischer de Waldheim, 1846)**

*Aiolopus coerulipes*: Berezchkov, 1951: 20.

*Epacromius coerulipes*: Berezchkov, 1956: 154–155.

*Epacromius pulverulentus*: Sergeev, 1986: 210; Benediktov, 2018: 22.

**MATERIAL. Tuva:** Chaa-Khol River, 51°34'N, 92°23'E, 570 m, flood-plain, meadow, 17.VII 1962, 1 larva (IS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°36'N, 94°09'E, 600–605 m, lower terrace and upper flood-plain, meadows, 20.VII 1995, 1 ♂, 124 larvae (MS); Kaa (Malyj Yenissey) River, right side, near Boyarovka settlement, 51°32'N, 95°21'E, 703 m, plain, dry steppe, 12.VIII 2018, 1 ♂ (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, irrigated field, 21.VIII 1978, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, Tes River Valley, near Oo-Shynaa settlement, 50°39'N, 93°40'E, 807 m, flood-plains, meadows with halophytes, 31.VII 1978, 2 larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace and upper flood-plains, dry meadows and steppes, 22.VII 1978, 1 larva (MS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°14'N, 94°31'E, 894 m, flood-plains of lake and small stream, short meadows with halophytes, 6.VII 2017, 5 larvae (MS); the same locality, 50°13'N, 94°32'E, 902–904 m, plain and upper terrace, sands, semi-desert and grassland with *Achnatherum*, 6.VII 2017, 8 larvae (MS).

**REMARKS.** The synonymy of *Epacromia coerulipes* Ivanov, 1887 and *Oedipoda pulverulenta* Fischer de Waldheim, 1846 was shown by Mistshenko (1968: 494).

**DISTRIBUTION. Tuva:** UKH, KKH, WTO, UVS. – S Europe, S Siberia, S Russian Far East; Kazakhstan, Tien Shan, Kashmir, Mongolia, China.

**ECOLOGY.** Usually associated with halophytic vegetation.

### **18(82). *Epacromius tergestinus* (Megerle von Mühlfeld, 1825)**

*Aiolopus tergestinus*: Berezchkov, 1951: 20.

*Epacromius tergestinus*: Sergeev, 1986: 210.

**MATERIAL. Tuva:** 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°08'E, 600 m, lower flood-plain, wet meadow, 7.VIII 1978, 1 larvae (MS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°14'N,



94°31'E, 894 m, flood-plains of lake and small stream, short meadows with halophytes, 6.VII 2017, 2 ♀, 1 larva (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, grasses along willows near river, 22.VII 2014, 8 ♂, 10 ♀ (SS).

**DISTRIBUTION. Tuva:** KHE, UKH, UVS. – S Europe, S Siberia; Caucasus, Kazakhstan, Tien Shan, Pamiro-Alay, Afghanistan, NW Mongolia, NW China, Tibet.

**ECOLOGY.** Usually associated with halophytic vegetation.

### Tribe Locustini

#### Genus *Locusta* Linnaeus, 1758

##### 19(83). *Locusta migratoria* Linnaeus, 1758

*Locusta migratoria*: Sergeev, 1986: 211; Sergeev, 2017: 413.

**MATERIAL. Tuva:** Uvs-Nuur Intermountain Basin, near Shara Lake, 50°14'N, 94°31'E, 894 m, flood-plains of lake and small stream, short meadows with halophytes, 6.VII 2017, 2 larvae (MS, Ch. Kuzhuget); the same locality, 50°13'N, 94°32'E, 902–904 m, plain and upper terrace, sands, semi-desert and grassland with *Achnatherum*, 6.VII 2017, 14 ♂, 11 ♀, 2 larvae (MS).

**REMARKS.** The species was mentioned from S Tuva for the first time by Sergeev (2017).

**DISTRIBUTION. Tuva:** UVS. – The most widely distributed acridid species. Its ranges include almost all Eurasia (except the North), Africa, Australia and many islands. The nomenclotypical subspecies is chiefly distributed in the extra-tropical regions. *Locusta migratoria migratorioides* (Reiche & Fairmaire) occurs mainly in the tropical part of the species range (Ma *et al.*, 2012; Cigliano *et al.*, 2019).

**ECOLOGY.** The Migratory locust is one of the most important pest in a number of countries. In Tuva, its population is mainly associated with *Achnatherum* grasslands.

#### Genus *Oedaleus* Fieber, 1853

##### 20(84). *Oedaleus decorus asiaticus* Bey-Bienko, 1941

*Oedaleus nigrofasciatus*: Miram, 1907: 7.

*Oedaleus asiaticus*: Berezchkov, 1951: 20; Berezchkov, 1956: 152; Ivanova, 1967: 133.

*Oedaleus decorus*: Sergeev *et al.*, 1995: 97–98.

*Oedaleus decorus asiaticus*: Ritchie, 1981: 126–127; Sergeev, 1986: 211; Benediktov, 1997: 117.

**MATERIAL. Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°27'E, 1079–1085 m, southern slope, stony semi-desert, 13.VIII 2016, 1 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 800–810 m, southern slope and upper terrace, semi-deserts, 13.VII 2016, 24 ♂, 28 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 810 m, lower terrace and upper flood-plain, meadows, 13.VIII 2016, 2 ♂, 2 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°30'N, 90°12'E, 1250–1252 m, lower terrace and upper flood-plain, meadows, pebbles, 14.VIII 2016, 1 ♀ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 830–845 m, southern slope and piedmont plain, semi-deserts, 12.VIII 2018, 41 ♂, 13 ♀ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 829 m, terrace, meadow, 12.VIII 2018, 1 ♂ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°57'N, 95°33'E, 2005 m, along road (!) in mountain tundra, 10.VIII 2018, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°50'N, 95°25'E, 1132–1135 m, terrace and flood-plains, meadows, 11.VIII 2018, some specimens observed (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 788–843 m, southern slope and upper terraces, steppes, 11.VIII 2018, some specimens observed (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 10 ♂, 10 ♀, 9 larvae (IS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, 28 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, upper terrace, dry meadow, 17.VI 2017, 9 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 615–629 m, slopes and piedmont plain,

semi-deserts, 21, 23.VI 2017, 52 ♂, 4 ♀, 285 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 610 m, steppe with *Stipa*, 23.VI 2017, 3 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°45'E, 585–600 m, semi-desert and dry steppe, 25–26.VI 2017, 10 ♂, 21 larvae (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 4 ♂, 5 ♀ (SS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 650–700 m, piedmont plain, dry steppe, 6.VII 1978, 2 larvae (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 630–830 m, mountain slopes and piedmont plain, semi-deserts *Nanophyton grubovi*, 19.VII 1995, 27 ♂, 19 ♀, 8 larvae (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°08'E, 608 m, upper terrace, semi-deserts *Nanophyton grubovi*, 20.VII 1995, 16 ♂, 16 ♀, 2 larvae (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°36'N, 94°09'E, 600–605 m, lower terrace and upper flood-plain, meadows, 20.VII 1995, 1 ♂ (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts *Nanophyton grubovi*, 22.VII 2003, 7 ♂, 9 ♀ (MS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22'N, 94°04'E, 695 m, upper terrace, dry steppe, 16.VI 2017, a specimen observed (MS); Kaa (Malyj Yenissei) River, right side, near Boyarovka settlement, 51°32'N, 95°21'E, 703 m, plain, dry steppe, 12.VIII 2018, 3 ♂, 6 ♀ (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, slope of balka with steppe, 20–21.VII 2014, 3 ♂, 1 ♀ (SS); Ulug-Khem Intermountain Basin, 8 km N Cheder Lake, 51°32'N, 95°21'E, 750–760 m, steppes, 12.VIII 1962, 1 ♂ (IS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, upper terrace, meadow with *Caragana* bushes, 8.VII 1978, 1 larva (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°05'E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, 2 ♂, 1 ♀ (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, agricultural fields including abandoned and plots along canal and roads, 21.VIII 1978, 3 ♂, 1 ♀, 3 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°03'E, 1193 m, piedmont plain, lower terrace of stream, meadow, 21.VIII 1985, 1 larva (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°05'E, 1200–1250 m, piedmont plain, lower part, stony steppes with *Caragana* and dry meadow, 21.VIII 1985, 2 ♀, 2 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°50'N, 92°05'E, 1500–1550 m, piedmont plain, upper part, steppe, 21.VIII 1985, 2 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45'N, 92°09'E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1985, 16 ♂, 14 ♀, 4 larvae (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°44'N, 92°09'E, 1140 m, northern slope, stony semi-desert, 24.VIII 1985, 1 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°04'E, 1170–1200 m, piedmont plain, desert with *Nanophyton grubovii*, 24.VIII 1985, 4 ♂, 1 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°03'E, 1200–1250 m, piedmont plain and northern slope, semi-desert with *Caragana* bushes, 24.VIII 1985, 3 ♂, 2 ♀, 1 larva (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, lower terrace, steppe, 12.VIII 1978, 1 ♂ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938–973 m, 24.VI 1978, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 65 larvae (IS, MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°45'N, 93°09'E, 1030–1040 m, 29.VII 1978, upper terrace, semi-desert, 29.VII 1978, 2 ♂, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 984 m, 29.VII 1978, upper terrace, stony semi-desert, 29.VII 1978, 2 ♂, 5 ♀ (MS); the same locality, lower terrace, meadow, 29.VII 1978, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, 30.VII 1978, lower terrace and flood-plains, steppe, 30.VII 1978, 21 ♂, 15 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, 30.VII 1978, upper terrace and piedmont plain, semi-desert with *Nanophyton grubovii*, 26 ♂, 14 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 973 m, 30.VII 1978, piedmont plain, upper part, semi-desert with *Nanophyton grubovii*, 22 ♂, 21 ♀ (MS); N Uvs-Nuur Intermountain Basin, 50 km E Amdaygyn-Khol, semi-desert with *Nanophyton grubovii*, 26.VII 1962, 1 ♂, 1 larva (IS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 931 m, piedmont plain, lower part, semi-desert with *Nanophyton grubovii*, 30.VI 1978, some specimens observed (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 930 m, piedmont plain, lower part, meadow, semi-desert with *Nanophyton grubovii*, 16.VII 1978, 7 ♂, 3 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°39'N, 94°28'E, 990–995 m, flood-plain and terraces, dry steppes with *Caragana*, 28.VI 1978, 127 larvae (MS); the same locality and habitats,

18.VII 1978, 146 ♂, 32 ♀, 114 larvae (MS); the same locality and habitats, 10.VIII 1978, 112 ♂, 52 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, dry steppe, 15.VII 1978, 10 ♂, 5 ♀ (MS); the same locality and habitats, 11.VIII 1978, 13 ♂, 1 ♀ (MS); the same locality, lower terrace, wet meadow, 11.VIII 1978, 1 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, southern slopes and piedmont plain, steppes with *Caragana*, 24.VII 2003, 12 ♂, 3 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°45'N, 94°34'E, 1280–1301 m, terraces, dry meadows, 8.VII 2017, some specimens observed (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1259 m, piedmont plain, dry steppe with *Caragana*, 8.VII 2017, 2 ♂, 8 ♀, 42 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N – 50°45'N, 94°33'E – 94°34'E, 1200–1650 m, mountain slopes, piedmont plains, terraces, dry meadows and steppes, often with bushes and stones, 24.VI–12.VIII 1978, >100 specimens, including larvae (T. Myagkaya, A. Lee); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, terraces, dry meadows and steppes, 27.VI 1978, 1 ♂, 6 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain, meadows, 13.VII 1978, 1 ♂, 1 ♀, 2 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, terraces, steppes, 14.VII 1978, 1 ♂, 1 ♀ (MS); the same locality, upper flood-plain and terraces, 11.VIII 1978, 5 ♂, 1 ♀ (MS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38' N, 95°19' E, 17.VII 2014, 1 ♂, 1 ♀ (SS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace and upper flood-plains, dry meadows and steppes, 22.VII 1978, 8 ♂, 8 ♀ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, steppes, 23.VII 1978, 2 ♂, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, E Shara-Nuur, Yamalyg farwell rocks, 50°14'N, 94°45'E, 1150 m, piedmont plain, dry steppe, 6.VII 2017, numerous specimens observed (MS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°13'N, 94°32'E, 902–904 m, plain and upper terrace, sands, semi-desert and grassland with *Achnatherum*, 6.VII 2017, 1 ♂, 2 ♀ (MS); 25 km SW Erzin settlement, Tes River, 50°05'N, 95°21'E, 14–15.VII 2014, 4 ♂, 4 ♀ (SS); Tore Lake, 50°06'N, 95°06'E, 1100 m, steppe, steppe, 12.VII 2014, 4 ♂, 1 ♀ (SS); Uvs-Nuur Intermountain Basin, S Tore Lake, 50°01'N, 95°04'E, 1154–1166 m, 07.VII 2017, sand semi-desert and upper terraces with birch forest, 4 ♂, 3 ♀ (MS); Uvs-Nuur Intermountain Basin, S Tore Lake, 50°05'N, 95°09'E, 1174 m, sandy semi-desert with *Caragana bungei*, 7.VII 2017, 12 ♂, 19 ♀ (MS); 31 km NEE Erzin settlement, Erzin River, 50°21'N, 95°34'E, 1100 m, flood-plain, meadow near cliff, 18.VII 2014, 2 ♂, 2 ♀ (SS). **Khakassia:** W Sayan Mts., Bolshoj On River, 51°52'N, 89°48'E, 1200 m, upper terrace, opening, old gravel quarry, 15.VIII 2016, 4 ♀ (MS).

REMARKS. *Oedaleus asiaticus* was described by Bey-Bienko (1941) from S Transbaikalia, Tuva and Mongolia. Later Ritchie (1981) revised the genus *Oedaleus* Fieber and considered that *Oe. asiaticus* is conspecific with *Oe. decorus*. He diplomatically suggested a subspecific rank for the former taxon, but actually mentioned very significant variability of specimens of *Oe. decorus* from different parts of its range. Our data support this point of view. In the mountains of South Siberia, strong variations in sizes, shapes of the pronotal disc, hind wing fascia appearance don't allow to differ these forms. Besides, their habitat and trophic preferences are almost the identical.

Some orthopterists (Ma *et al.*, 1991; Zheng & Xia, 1998; Chen, 2005) follow Ritchie's proposal, but some others (Cigliano *et al.*, 2019) prefer to differ these two taxa as the separate species. Unfortunately, molecular data don't allow us to solve this problem explicitly. Fries *et al.* (2007) showed that these two forms are similar but should be considered as the separate species (estimated time of their divergence is about 34.7 Mya). Kindler *et al.* (2012) hypothesized that in the complex of *decorus-asiaticus*, there are three distinct, but closely related species or subspecies, namely Western European *Oe. decorus*, Eastern European *Oe. decorus* and *Oe. asiaticus*. Later Schmid *et al.* (2018) also showed similarity between *Oe. decorus* from Europe and *Oe. decorus asiaticus*. These slightly contradictory estimations may be resulted from either deep genetic splits between different spatial population groups of *Oe. decorus* (see Kindler *et al.*, 2012) or misidentification of specimens from East Asia where some other species of the genus *Oedaleus* occur. That is why we continue to follow the most comprehensive revision of the genus (Ritchie, 1981).

DISTRIBUTION. **Tuva:** WSW, WSE, ET, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – S Europe, S Siberia (up to Amur Region); N Africa, Asia Minor, Levant, Caucasus, Kazakhstan, Iran, Tien Shan, Pamiro-Alay, Kopetdagh, N Afghanistan, Mongolia, NW, N, NE, E China (ssp. *asiaticus* Bey-Bienko occurs in the eastern part of the species range, from the Altay-Sayan Mts. and NW Mongolia).

ECOLOGY. One of the most common and widely distributed species in the dry steppes.

#### ***Oedaleus infernalis* Saussure, 1884**

*Oedaleus infernalis amurensis*: Bereztkov, 1956: 152; Chogsomzhav, 1977: 187.

*Oedaleus infernalis*: Ritchie, 1981: 128–132.

REMARKS. Bereztkov (1956) recorded this species for W Siberia and Chogsomzhav (1977) mentioned it for the Mongolian part of Uvs-Nuur Basin, but both records probably are based on missidentification of *Oedaleus decorus*.

DISTRIBUTION. S Russian Far East, NE, E China, Tibet, Korea, Japan.

### **Genus *Psophus* Fieber, 1853**

#### **21(85). *Psophus stridulus* (Linnaeus, 1758)**

*Psophus stridulus*: Miram, 1907: 7; Bereztkov, 1951: 20; Bereztkov, 1956: 146; Ivanova, 1967: 133; Sergeev, 1986: 211; Benediktov, 1997: 117.

MATERIAL. **Tuva:** 25 km NW Balgazyn settlement, pine forest ("Balgazynskij Bor"), 900 m, 21.VIII 1994, 1 ♂ (AB); Baj-Haak settlement, VI 1959, meadow, 11 ♂, 2 ♀ (S. V. Sharova). **Krasnoyarsk Region:** southern part, West Sayan Mts., Uvs Intermountain Basin, near abandoned Idzhim settlement, 52°21'N, 93°13'E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 1 larva (MS); the same locality, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 3 larvae (MS).

REMARKS. The species was mentioned from E Tuva for the first time by Bereztkov (1951). Later it was found in the same part of the Republic.

DISTRIBUTION. **Tuva:** KKH. – Europe (except the extreme North), S Siberia, S Russian Far East; N Kazakhstan, NE China, Korea.

### **Tribe Oedipodini**

#### **Genus *Celes* Saussure, 1884**

#### **22(86). *Celes skalozubovi skalozubovi* Adelung, 1906**

*Celes skalozubovi*: Miram, 1907: 7–8; Bereztkov, 1951: 20–21; Sergeev, 1986: 212; Sergeev *et al.*, 1995: 96–97; Benediktov, 1997: 117.

*Celes skalozubovi skalozubovi*: Bereztkov, 1956: 158–159.

MATERIAL. **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°23'N, 90°28'E, 1208 m, southern slope, stony steppe, 13.VIII 2016, 1 larva (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 800–810 m, southern slope and upper terrace, semi-deserts, 13.VII 2016, 8 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 810 m, lower terrace and upper floodplain, meadows, 13.VIII 2016, 1 ♂ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 829 m, terrace, meadow, 12.VIII 2018, 1 ♂ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44'N, 95°26'E, 1006 m, southern slope, stony steppe, 11.VIII 2018, 2 ♂, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 788–843 m, southern slope and upper terraces, steppes, 11.VIII 2018, 2 ♂, 1 ♀ (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 1 ♂, 3 larvae (IS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 615–629 m, slopes and piedmont plain, semi-deserts, 21, 23.VI 2017, 11 larvae (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 1 ♀ (SS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22'N, 94°04'E, 695 m, upper terrace, dry steppe, 16.VI 2017, a specimen observed (MS); Kaa (Malyj Yenissei) River, right side, near Boyarovka settlement, 51°32'N, 95°21'E, 703 m, plain, dry steppe, 12.VIII 2018, 3 ♂,

1 ♀ (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, slope of balka with steppe, 20–21.VII 2014, 4 ♂ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, southeastern slope, stony steppe, 8.VII 1978, 22 larvae (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, upper terrace, meadow with *Caragana* bushes, 8.VII 1978, 6 larvae (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1030–1050 m, southern slope, steppe and meadow, 10.VII 1978, 7 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°05'E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, 1 ♂ (MS); E Tannu-Ola Mts., Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1041 m, southern slope, mountain steppe, 10.VII 1978, 5 larvae (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, upper terrace, steppe and short meadow with *Caragana*, 17.VII 1978, 1 larva (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°41'N, 95°19'E, 1173 m, local southern slope and piedmont plain, steppe, 10.VII 1978, 6 larvae (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°42'N, 95°20'E, 1106 m, southern slope, mountain steppe, 11.VII 1978, 3 larvae (MS); E Tannu-Ola Mts., 7 km W Shuurmak settlement, 50°37'N, 95°14'E, 1400 m, local southern slope, stony steppe, 12.VII 1978, 6 larvae (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°37'N, 95°11'E, 1495 m, southern slope and upper terrace, mountain steppe, 12.VII 1978, 9 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938–973 m, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 24.VI 1978, 5 larvae (IS, MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, lower terrace and flood-plains, steppe, 30.VII 1978, 2 ♂ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°39'N, 94°28'E, 990–995 m, flood-plain and terraces, dry steppes with *Caragana*, 28.VI 1978, 3 larvae (MS); the same locality and habitats, 18.VII 1978, 3 ♂, 10 larvae (MS); the same locality and habitats, 10.VIII 1978, 9 ♂, 9 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, dry steppe, 15.VII 1978, 1 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, southern slopes and piedmont plain, steppes with *Caragana*, 24.VII 2003, 2 ♀, 65 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, terraces, dry meadows and steppes, 27.VI 1978, 2 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain, meadows, 13.VII 1978, 2 larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, flood-plains, meadows, 21.VII 1978, 4 larvae (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, steppes, 23.VII 1978, 1 larva (MS). **Krasnoyarsk Region:** southern part, W Sayan Mts., Uvs Intermountain Basin, near abandoned Idzhim settlement, 52°21'N, 93°13'E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 6 larvae (MS); the same locality, 52°20'N, 93°20'E, 700–750 m, low terrace, meadow, 22.VII 1995, 1 larva (MS); the same locality, 52°16'N, 93°07'E, 680–700 m, terraces and southern slope, steppes, 22–23.VII 1995, 18 larvae (MS).

DISTRIBUTION (nominotypical subspecies). **Tuva:** WSW, WSE, ET, KHE, UKH, KKH, ETO, UVS. – S Siberia; N Kazakhstan, Mongolia, N China. *Celes skalozubovi akitanus* (Shiraki) occurs in S Russian Far East, E Mongolia, NE China, Korea, and Japan.

ECOLOGY. More or less common form of the dry steppes.

### Tribe Bryodemini

#### Genus *Bryodemella* Yin, 1982

#### Subgenus *Bryodemella* Yin, 1982

#### 23(87). *Bryodemella* (*Bryodemella*) *holdereri* (Krauss, 1901)

*Bryodemella holdereri*: Cherepanov, 1952: 207; Sergeev *et al.*, 1995: 98.

*Bryodemella holdereri occidentale*: Berezikov, 1951: 21.

*Bryodemella holdereri occidentale*: Benediktov, 1997: 117.

*Bryodemella holbeleri holbeleri* (sic!): Pavlov, 2004: 65.

*Bryodemella* (s. str.) *holdereri*: Benediktov, 1998: 796.

**MATERIAL. Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 800–810 m, southern slope and upper terrace, semi-deserts, 13.VII 2016, a male observed (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 1 larva (IS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts *Nanophyton grubovi*, 22.VII 2003, 31 ♂, 1 ♀ (MS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22'N, 94°04'E, 695 m, upper terrace, dry steppe, 16.VI 2017, a specimen observed (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, slope of balka with steppe, 20.VII 2014, 1 ♂ (SS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°05'E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, 3 ♂ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°50'N, 92°05'E, 1637 m, mountain steppes, 19.VIII 1985, 1 ♂, 5 ♀ (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, agricultural fields including abandoned and plots along canal and roads, 21.VIII 1978, 3 ♂, 3 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°05'E, 1200–1250 m, piedmont plain, lower part, stony steppes with *Caragana* and dry meadow, 21.VIII 1985, 3 ♂ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°50'N, 92°05'E, 1500–1550 m, piedmont plain, upper part, steppe, 21.VIII 1985, 2 ♂ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45'N, 92°09'E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1985, 3 ♂, 3 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°03'E, 1200–1250 m, piedmont plain and northern slope, semi-desert with *Caragana* bushes, 24.VIII 1985, some specimens observed (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938–973 m, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 24.VI 1978, 2 larvae (IS, MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°45'N, 93°09'E, 1030–1040 m, flood plains and terraces, dry meadows and steppes, 29.VII 1978, 12 ♂, 1 larva (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 984 m, lower flood-plain, pebbles and stone, scarce vegetation with *Salix* and *Nepeta*, 29.VII 1978, 1 ♂ (MS); the same locality, lower terrace, meadow 29.VII 1978, 1 ♂ (MS); the same locality, upper flood-plain, 29.VII 1978, 1 ♀ (MS); the same locality, upper terrace, stony semi-desert, 2 ♂ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, lower terrace and flood-plains, steppe, 30.VII 1978, 1 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, dry steppe, 15.VII 1978, 2 ♂, 1 ♀ (MS); the same locality and habitats, 11.VIII 1978, 1 ♂ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°39'N, 94°28'E, 990–995 m, lower terrace, dry steppe, 10.VIII 1978, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, Dus-Khol, 50°22'N, 94°52'E, 994–995 m, semi-desert with *Nanophyton grubovii*, 24–26.VII 1962, 2 ♂, 1 ♀ (IS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, flood-plains, meadows, 21.VII 1978, 1 ♂, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, steppes, 23.VII 1978, 4 ♂ (MS); Uvs-Nuur Intermountain Basin, 10 km S Erzin settlement, Tsuger-Els, 50°10'N, 95°11'E, 1154 m, sandy semi-desert, 23.VII 1978, 16 ♂, 10 ♀, 2 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain and terraces, 11.VIII 1978, 1 ♂, 1 ♀ (MS); Naryn River, near Naryn settlement, steppes, 16–20.VII 1971, some specimens (N. Antropova).

**DISTRIBUTION. Tuva:** MT, KHE, UKH, KKH, WTO, UVS, SAN. – SE Altay, Kha-kassia, S Krasnoyarsk Region, Transbaikalia; Mongolia, N, NE China.

**ECOLOGY.** Commonly in the dry steppes, including the mountain ones.

#### **24(88). *Bryodemella (Bryodemella) tuberculata (Fabricius, 1775)***

*Bryodemella tuberculatum*: Miram, 1907: 8; Berezchkov, 1951: 21; Sergeev *et al.*, 1995: 96–98; Kazakova & Sergeev, 1997: 317; Pavlov, 2004: 65.

*Bryodemella tuberculatum dilutum*: Berezchkov, 1951: 21; Benediktov, 1997: 117.

*Bryodemella* (s. str.) *tuberculatum*: Benediktov, 1998: 796.

**MATERIAL. Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°30'N, 90°12'E, 1250–1252 m, lower terrace and upper flood-plain, meadows, pebbles, 14.VIII 2016, 2 ♂, 1 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37'N, 90°05'E, 1450 m, terraces and flood-plain, short meadows, 14.VIII 2016, 2 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°28'E, 1075–1077 m, terraces, steppe and meadow, 12.VIII 2016, 1 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River,

51°24'N, 90°27'E, 1079–1085 m, southern slope, stony semi-desert, 13.VIII 2016, 1 ♀ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 800–810 m, southern slope and upper terrace, semi-deserts, 13.VII 2016, 1 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°31'N, 90°12'E, 1275 m, southern slope, steppe, 14.VIII 2016, 2 ♂, 1 larva (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 830–845 m, southern slope and piedmont plain, semi-deserts, 12.VIII 2018, 1 ♂, 1 larva (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44'N, 95°26'E, 1006 m, southern slope, stony steppe, 11.VIII 2018, 1 ♂ (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 2 ♀, 5 larvae (IS); 14 km SW Shagonar City, Shagonar River, 51°27'N, 92°45'E, 583 m, lower terrace, meadow between bushes, 17–18.VI 2017, some specimens observed (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 615–629 m, slopes and piedmont plain, semi-deserts, 21, 23.VI 2017, 1 ♂, 3 ♀, 5 larvae (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°45'E, 585–600 m, semi-desert and dry steppe, 25–26.VI 2017, 4 ♂ (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 3 ♂, 1 ♀ (SS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts with *Nanophyton grubovi*, 22.VII 2003, 4 ♂, 2 ♀, 1 larva (MS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22'N, 94°04'E, 695 m, upper terrace, dry steppe, 16.VI 2017, a specimen observed (MS); Kaa (Malyj Yenissei) River, right side, near Boyarovka settlement, 51°32'N, 95°21'E, 703 m, plain, dry steppe, 12.VIII 2018, 4 ♂, 1 ♀ (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08'N, 94°32'E, slope of balka, 20.VII 2014, 1 ♂ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, southeastern slope, stony steppe, 8.VII 1978, 5 ♂, 8 ♀, 7 larvae (MS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57'N, 95°16'E, 940 m, upper terrace, meadow with *Caragana* bushes, 8.VII 1978, 1 ♀ (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1030–1050 m, southern slope, steppe and meadow, 10.VII 1978, 3 ♂ (MS); W Tannu-Ola Mts., 5 km W Torgalyg settlement, Khandybai Mt., mountain steppe, 23.VI 1962, 2 larvae (IS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, upper terrace, steppe and short meadow with *Caragana*, 17.VII 1978, 2 ♂, 1 ♀, 15 larvae (MS); the same locality, southern slope and upper terrace, stony steppes, 17.VII 1978, 1 ♂, 1 ♀ (MS); the same locality, upper terrace, short meadow and steppe, 12.VIII 1978, 3 ♂, 2 ♀ (MS); the same locality, lower terrace, steppe, 12.VIII 1978, 1 ♂ (MS); the same locality, upper terrace, meadow, 12.VIII 1978, 1 ♂ (MS); the same locality, upper flood-plain, meadow, 12.VIII 1978, 1 ♂ (MS); E Tannu-Ola Mts., Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1041 m, southern slope, mountain steppe, 10.VII 1978, 3 ♂, 1 ♀, 1 larvae (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°41'N, 95°19'E, 1173 m, local southern slope and piedmont plain, steppe, 10.VII 1978, 1 ♂, 3 ♀, 1 larva (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°42'N, 95°20'E, 1106 m, southern slope, mountain steppe, 11.VII 1978, 1 larva (MS); E Tannu-Ola Mts., 7 km W Shuurmak settlement, 50°37'N, 95°14'E, 1400 m, local southern slope, stony steppe, 12.VII 1978, 15 ♂, 6 ♀, 1 larva (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°37'N, 95°11'E, 1495 m, southern slope and upper terrace, mountain steppe, 12.VII 1978, 116 ♂, 1 ♀, 2 larvae (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°38'N, 95°11'E, 1492 m, short meadow, 5.VII 2017, 3 ♂, 1 ♀ (MS); E Tannu-Ola Mts., 13 km NEE Samagaltaj settlement, Kaldak-Khamar (Shuurmak) Pass, 50°38'N, 95°11'E, 1500 m, rangeland, 19.VII 2014, 1 ♀ (SS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, southern slopes and piedmont plain, steppes with *Caragana*, 24.VII 2003, 1 ♀, 6 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°45'N, 94°34'E, 1280–1301 m, terraces, dry meadows, 8.VII 2017, some specimens observed (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain, meadows, 13.VII 1978, 2 ♂, 1 ♀, 2 larvae (MS); the same locality, upper flood-plain and terraces, 11.VIII 1978, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, terraces, steppes, 14.VII 1978, 2 ♂ (MS); Dyttyg-Khem River, 12 km SW Samagaltaj settlement, 50°38' N, 95°19' E, 17.VII 2014, 1 ♂ (SS); Dyttyg-Khem River, 13 km SW Samagaltaj settlement, 10.VII 2013, 1 ♂ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, flood-plains, meadows, 21.VII 1978, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, E Shara-Nuur, Yamalyg farwell rocks, 50°14'N, 94°45'E, 1150 m, piedmont plain, dry steppe, 6.VII 2017, some specimens observed (MS); 25 km SW Erzin settlement, Tes River, 50°05'N, 95°21'E, 14–15.VII 2014, 3 ♂, 2 ♀ (SS); Naryn River, near Naryn settlement, steppes, 20.VII 1971, some

specimens (N. Antropova). **Krasnoyarsk Region:** southern part, West Sayan Mts., Uvs Intermountain Basin, near abandoned Idzhim settlement, 52°21'N, 93°13'E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, some specimens observed (MS).

REMARKS. *Gryllus (Locusta) dilutus* Stoll, 1813 was described from Siberia but later synonymized with *Bryodema tuberculatus* by Kirby (1910: 261). Variability of this species in North Eurasia is very high. All subspecific traits of *Bryodemella tuberculata tuberculata* and *B. tuberculata diluta* are overlapped. That is why we support synonymy of these two forms.

DISTRIBUTION. **Tuva:** WSW, WSE, ET, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – Europe (except the extreme North and the southern regions of W Europe), Siberia and Far East (northwards to Magadan Region); Kazakhstan, Mongolia, Korea, China, Tibet, Himalayas.

ECOLOGY. Usually associated with the dry meadows and mountain steppes.

### Subgenus *Marikovskiella* Benediktov, 2009

#### ***Bryodemella (Marikovskiella) zaisanica fallax* (Bey-Bienko, 1930)**

*Bryodema zaisanicum*: Sergeev, 1986: 213.

*Bryodemella (Marikovskiella) zaisanicum fallax*: Benediktov, 2009: 23.

DISTRIBUTION. The Mongolian part of Uvs-Nuur Intermountain Basin (Chogsomzhav, 1974). NW Mongolia, NW China (Barlyk Range). The nominotypical subspecies is distributed in E Kazakhstan and probably in the northern part of Xinjiang.

#### **25(89). *Bryodemella (Marikovskiella) orientalis simulans* (Stebaev, 1964)**

*Bryodema orientale simulans*: Stebaev, 1964: 618–619; Benediktov, 1997: 117.

*Bryodemella (Angaridella) orientale simulans*: Benediktov, 1998: 797.

*Bryodemella (Marikovskiella) orientale simulans*: Benediktov, 2009: 23.

MATERIAL. **Tuva:** W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, agricultural fields including abandoned and plots along canal and roads, 21.VIII 1978, 21 ♂, 2 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45'N, 92°09'E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1985, 44 ♂, 14 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°04'E, 1170–1200 m, piedmont plain, desert with *Nanophyton grubovii*, 24.VIII 1985, 37 ♂, 7 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°03'E, 1200–1250 m, piedmont plain and northern slope, semi-desert with *Caragana* bushes, 24.VIII 1985, 2 ♀ (MS); N Uvs-Nuur Intermountain Basin, 50 km E Amdaygyn-Khol, semi-desert with *Nanophyton grubovii*, 26.VII 1962, several specimens (IS); N Uvs-Nuur Intermountain Basin, 40 km E Amdaygyn-Khol, semi-desert with *Nanophyton grubovii*, 26.VII 1962, several specimens (IS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 931 m, piedmont plain, lower part, semi-desert with *Nanophyton grubovii*, 30.VI 1978, 1 larva (MS).

DISTRIBUTION. **Tuva:** WTO, UVS. – The nominotypical subspecies occurs in NW Mongolia.

ECOLOGY. Usually in the stony semi-deserts and very dry steppes. In the preferable habitats, the abundance may be relatively high (more than 300 per hour).

### Genus *Bryodema* Fieber, 1853

#### **26(90). *Bryodema gebleri gebleri* (Fischer de Waldheim, 1836)**

*Bryodema gebleri*: Miram, 1907: 8; Cherepanov, 1952: 207; Sergeev *et al.*, 1995: 97–98; Benediktov, 1997: 117.

*Bryodema gebleri gebleri*: Berezkhov, 1951: 21; Benediktov, 1998: 797; Pavlov, 2004: 65.



**MATERIAL. Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°27'E, 1079–1085 m, southern slope, stony semi-desert, 13.VIII 2016, 4 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 800–810 m, southern slope and upper terrace, semi-deserts, 13.VII 2016, 6 ♂ (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 1 ♂ (IS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°44'E, 615–629 m, slopes and piedmont plain, semi-deserts, 21, 23.VI 2017, 37 ♂, 4 ♀, 1 larva (MS); 14 km SW Shagonar City, Shagonar River, 51°28'N, 92°45'E, 585–600 m, semi-desert and dry steppe, 25–26.VI 2017, 13 ♂, 1 larva (MS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 2 ♂, 1 ♀ (SS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°36'N, 94°09'E, 600–605 m, upper terrace, dry steppe, 7.VIII 1978, 1 ♂ (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts *Nanophyton grubovi*, 22.VII 2003, 8 ♂, 1 larva (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 650–700 m, piedmont plain, dry steppe, 6.VII 1978, 1 ♀ (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 630–830 m, mountain slopes and piedmont plain, semi-deserts with *Nanophyton grubovi*, 19.VII 1995, 12 ♂, 2 ♀, 3 larvae (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°08'E, 608 m, upper terrace, semi-deserts with *Nanophyton grubovi*, 20.VII 1995, 2 larvae (MS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22'N, 94°04'E, 695 m, upper terrace, dry steppe, 16.VI 2017, a specimen observed (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°05'E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, 1 ♂ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51'N, 92°04'E, 1700–1900 m, mountain steppes, 19.VIII 1985, 10 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°50'N, 92°05'E, 1637 m, mountain steppes, 19.VIII 1985, 3 ♂ (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, agricultural fields including abandoned and plots along canal and roads, 21.VIII 1978, 18 ♂ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°05'E, 1200–1250 m, piedmont plain, lower part, stony steppes with *Caragana* and dry meadow, 21.VIII 1985, 3 ♂ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°04'E, 1336 m, foothills on piedmont plain, stony steppe, 21.VIII 1985, 2 ♂, 1 larva (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°50'N, 92°05'E, 1500–1550 m, piedmont plain, upper part, steppe, 21.VIII 1985, 4 ♂ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45'N, 92°09'E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1985, 24 ♂, 11 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°04'E, 1170–1200 m, piedmont plain, desert with *Nanophyton grubovii*, 24.VIII 1985, 14 ♂, 1 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°03'E, 1200–1250 m, piedmont plain and northern slope, semi-desert with *Caragana* bushes, 24.VIII 1985, 12 ♂, 4 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°45'N, 93°09'E, 1030–1040 m, upper terraces, semi-deserts, 29.VII 1978, 3 ♂, 1 ♀, 2 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 984 m, lower flood-plain, pebbles and stone, scarce vegetation with *Salix* and *Nepeta*, 29.VII 1978, 1 ♂, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, lower terrace and flood-plains, steppe, 30.VII 1978, 8 ♂, 6 ♀, 21 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, upper terrace and piedmont plain, semi-desert with *Nanophyton grubovii*, 30.VII 1978, 3 ♂, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 973 m, piedmont plain, upper part, semi-desert with *Nanophyton grubovii*, 30.VII 1978, 6 ♂, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, 50 km E Amdaygyn-Khol, semi-desert with *Nanophyton grubovii*, 26.VII 1962, 1 ♂, 1 ♀, 1 larva (IS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 931 m, piedmont plain, lower part, semi-desert with *Nanophyton grubovii*, 30.VI 1978, 1 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 930 m, piedmont plain, lower part, meadow, semi-desert with *Nanophyton grubovii*, 16.VII 1978, 1 ♂ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°39'N, 94°28'E, 990–995 m, flood-plain and terraces, dry steppes with *Caragana*, 28.VI 1978, 1 ♀, 7 larvae (MS); the same locality and habitats, 18.VII 1978, 25 ♂, 10 ♀, 44 larvae (MS); the same locality and habitats, 10.VIII 1978, 30 ♂, 5 ♀, 2 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, dry steppe, 15.VII 1978, 1 ♀ (MS); the same locality and habitats, 11.VIII 1978, 1 ♂ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1200–1300 m, southern slopes and piedmont plain, steppes with

*Caragana*, 24.VII 2003, 2 ♂, 5 ♀, 1 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1259 m, piedmont plain, dry steppe with *Caragana*, 8.VII 2017, 1 ♂, 4 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N – 50°45'N, 94°33'E – 94°34'E, 1200–1400 m, mountain slopes, piedmont plains, terraces, dry meadows and steppes, often with bushes and stones, 24.VI–12.VIII 1978, >40 specimens, including larvae (T. Myagkaya, A. Lee); Uvs-Nuur Intermountain Basin, Tes River, 50°33'N, 94°31'E, 932–934 m, terraces, steppes, 14.VII 1978, 3 ♂, 3 ♀ (MS); Uvs-Nuur Intermountain Basin, Dus-Khol, 50°22'N, 94°52'E, 994–995 m, semi-desert with *Nanophyton grubovii*, 24–26.VII 1962, 2 ♂, 1 ♀, 1 larva (IS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38' N, 95°19' E, 17.VII 2014, 1 ♂, 1 ♀ (SS); Dyttyg-Khem River, 13 km SW Samagaltai settlement, 8–9.VII 2013, 5 ♂, 1 ♀ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, 3 km WNW Shara-Nuur, 50°14'N, 94°28'E, 19.VII 1978, 1097 m, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°14'N, 94°31'E, 894 m, flood-plains of lake and small stream, short meadows with halophytes, 6.VII 2017, 1 ♂ (MS); 25 km SW Erzin settlement, Tes River, 50°05'N, 95°21'E, slopes, pebbles, 14–15.VII 2014, 5 ♂, 5 ♀ (SS); 25 km SW Erzin settlement, Tes River, 5.VII 2013, 4 ♂, 1 ♀ (M. Prostshalykin, V. Loktionov); 25 km SSW Erzin settlement, Tore Lake, 50°02'N, 95°03'E, 1150 m, sands, grasses and *Caragana*, 11–12.VII 2014, 2 larvae (SS); 31 km NEE Erzin settlement, Erzin River, 50°21'N, 95°34'E, 1300 m, northern slope, balka with *Caragana*, 18.VII 2014, 1 ♂ (SS); 25 km NEE Erzin settlement, Belyj Medved Mt., 29.VI 2011, 1 larva (M. Prostshalykin, V. Loktionov).

**DISTRIBUTION.** **Tuva:** WSW, MT, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – S Ural Mts., Altay-Sayan Mts. (except SE Altay), S Cisbaikalia, Transbaikalia; Kazakhstan, Tien Shan (except the eastern part), NW China, W Mongolia.

**ECOLOGY.** Widely distributed species commonly associated with the stony semi-deserts and dry steppes.

#### ***Bryodema gebleri mongolicum* Zubovsky, 1900**

**REMARKS.** Bey-Bienko (1930: 106) noted several specimens (2 ♂, 1 ♀) from the southern slope of Tannu-Ola Mts. intermediate between *B. gebleri gebleri* and *B. gebleri mongolicum*. Some authors consider this form as a separate species (Zheng & Xia, 1998).

**DISTRIBUTION.** The Mongolian part of Uvs-Nuur Intermountain Basin (Mistshenko, 1968; Chogsomzhav, 1972, 1974); SE Altay; Mongolia (except the western part), E Tien Shan, NE China.

#### **Genus *Angaracris* Bey-Bienko, 1930**

##### **27(91). *Angaracris barabensis* (Pallas, 1773)**

*Bryodema barabense*: Miram, 1907: 8.

*Bryodema barabense* var. *rhodopa*: Miram, 1907: 8

*Angaracris barabensis*: Berezchkov, 1951: 21; Sergeev et al., 1995: 97–98; Benediktov, 1997: 117; Benediktov, 1998: 792; Storozhenko et al., 2017.

*Angaracris rhadopus* (sic !): Berezchkov, 1951: 21

*Angaracris rhodopa*: Sergeev et al., 1995: 97–98; Benediktov, 1997: 117.

*Angaracris rodopa* (sic.): Pavlov, 2004: 65.

**MATERIAL.** **Tuva:** W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°28'E, 1075–1077 m, terraces, steppe and meadow, 12.VIII 2016, 2 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°24'N, 90°27'E, 1079–1085 m, southern slope, stony semi-desert, 13.VIII 2016, 5 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25'N, 91°04'E, 800–810 m, southern slope and upper terrace, semi-deserts, 13.VII 2016, 9 ♂, 3 ♀ (MS); Sayan Mts., Alash Plateau, Ak-Sug River, 51°31'N, 90°12'E, 1275 m, southern slope, steppe, 14.VIII 2016, 6 ♂ (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°30'N, 90°12'E, 1250–1252 m, lower terrace and upper flood-plain, meadows, pebbles, 14.VIII 2016, 8 ♂, 1 ♀ (MS); Turan-Uyuk Intermountain Basin, Begreda River, 51°59'N, 94°18'E, 830–845 m, southern

slope and piedmont plain, semi-deserts, 12.VIII 2018, 1 ♂, 2 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37'N, 95°21'E, 788–843 m, southern slope and upper terraces, steppes, 11.VIII 2018, some specimens observed (MS); Chaa-Khol River, 51°34'N, 92°23'E, 570–600 m, dry steppes, 14–18.VII 1962, 2 ♂, 1 ♀, 8 larvae (IS); 32 km SW Kyzyl City, Elegest River, 51°29'N, 94°10'E, steppe, 22.VII 2014, 2 ♀ (SS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°09'E, 630–830 m, mountain slopes and piedmont plain, semi-deserts with *Nanophyton grubovi*, 19.VII 1995, 1 ♂ (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°35'N, 94°08'E, 608 m, upper terrace, semi-deserts with *Nanophyton grubovi*, 20.VII 1995, 1 ♂, 1 ♀ (MS); Ulug-Khem Intermountain Basin, 25 km SW Kyzyl City, Ulug River, 51°34'N, 94°10'E, 800–900 m, southern slope and piedmont plain, semi-deserts with *Nanophyton grubovi*, 22.VII 2003, 5 ♂, 1 ♀ (MS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22'N, 94°04'E, 695 m, upper terrace, dry steppe, 16.VI 2017, a specimen observed (MS); Kaa (Malyj Yenissei) River, right side, near Boyarovka settlement, 51°32'N, 95°21'E, 703 m, plain, dry steppe, 12.VIII 2018, 2 ♂, 1 ♀ (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47'N, 95°17'E, 1030–1050 m, southern slope, steppe and meadow, 10.VII 1978, 2 larvae (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°05'E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, 27 ♂, 11 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51'N, 92°04'E, 1700–1900 m, mountain steppes, 19.VIII 1985, 1 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°50'N, 9°05'E, 1637 m, mountain steppes, 19.VIII 1985, 6 ♂, 1 ♀ (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46'N, 92°01'E, 1150–1200 m, agricultural fields including abandoned and plots along canal and roads, 21.VIII 1978, 34 ♂, 32 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°03'E, 1193 m, piedmont plain, lower terrace of stream, meadow, 21.VIII 1985, 1 ♂ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°47'N, 92°05'E, 1200–1250 m, piedmont plain, lower part, stony steppes with *Caragana* and dry meadow, 21.VIII 1985, 12 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48'N, 92°04'E, 1336 m, foothills on piedmont plain, stony steppe, 21.VIII 1985, 3 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°50'N, 92°05'E, 1500–1550 m, piedmont plain, upper part, steppe, 21.VIII 1985, 16 ♂, 8 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45'N, 92°09'E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1985, 6 ♂, 11 ♀, 3 larvae (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, Mugur River, 50°44'N, 92°08'E, 1100–1150 m, low terrace and upper flood-plain, meadows, 24.VIII 1978, 1 ♀ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°04'E, 1170–1200 m, piedmont plain, desert with *Nanophyton grubovii*, 24.VIII 1985, 3 ♂ (MS); W Tannu-Ola Mts., near Khandagajty settlement, 50°43'N, 92°03'E, 1200–1250 m, piedmont plain and northern slope, semi-desert with *Caragana* bushes, 24.VIII 1985, 10 ♂, 7 ♀ (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, flood-plain and terraces, steppe and short meadow between shrubs and *Larix* trees, 28.VI 1978, 8 larvae (MS); E Tannu-Ola Mts., Shivelig River, 50°45'N, 94°34'E, 1330–1340 m, terraces, steppe and short meadow between shrubs and *Larix* trees, 17.VII 1978, 3 larvae (MS); the same locality, upper terrace, short meadow and steppe, 12.VIII 1978, 43 ♂, 12 ♀, 7 larvae (MS); the same locality, lower terrace, steppe, 12.VIII 1978, 1 ♂ (MS); E Tannu-Ola Mts., Shuurmak River, 5 km N Shuurmak settlement, 50°41'N, 95°19'E, 1173 m, local southern slope and piedmont plain, steppe, 10.VII 1978, 2 larvae (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°37'N, 95°11'E, 1495 m, southern slope and upper terrace, mountain steppe, 12.VII 1978, 1 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°45'N, 93°09'E, 1030–1040 m, upper terraces, dry meadows and steppes, 29.VII 1978, 2 ♂, 1 ♀, 2 larvae (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, lower terrace and flood-plains, steppe, 30.VII 1978, 13 ♂, 2 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, upper terrace and piedmont plain, semi-desert with *Nanophyton grubovii*, 30.VII 1978, 7 ♂, 7 ♀ (MS); N Uvs-Nuur Intermountain Basin, 50 km E Amdaygyn-Khol, semi-desert with *Nanophyton grubovii*, 26.VII 1962, 2 ♂, 1 ♀, 3 larvae (IS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E, 1215 m, lower terrace, dry steppe, 15.VII 1978, 2 ♂ (MS); the same locality and habitats, 11.VIII 1978, 41 ♂, 3 ♀, larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°39'N, 94°28'E, 990–995 m, flood-plain and terraces, dry steppes with *Caragana*, 18.VII 1978, 13 larvae (MS); the same locality and habitats, 10.VIII 1978, 57 ♂, 4 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°45'N, 94°34'E, 1280–1301 m, terraces, dry meadows, 8.VII 2017, some specimens observed (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N, 94°33'E,

1200–1300 m, southern slopes and piedmont plain, steppes with *Caragana*, 24.VII 2003, 3 larvae (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43'N – 50°45'N, 94°33'E – 94°34'E, 1200–1650 m, mountain slopes, piedmont plains, terraces, dry meadows and steppes, often with bushes and stones, 24.VI–12.VIII 1978, >100 specimens, including larvae (T. Myagkaya, A. Lee); Uvs-Nuur Intermountain Basin, Tes River, 50°32'N, 94°31'E, 930–932 m, upper flood-plain, meadows, 13.VII 1978, 1 ♂ (MS); the same locality, upper flood-plain and terraces, 11.VIII 1978, 5 ♂ (MS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38' N, 95°19' E, 17.VII 2014, 2 ♂ (SS); Dyttyg-Khem River, 13 km SW Samagaltai settlement, 8–10.VII 2013, 1 ♂, 1 ♀ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, Dus-Khol, 50°22'N, 94°52'E, 994–995 m, semi-desert with *Nanophyton grubovii*, 24–26.VII 1962, 2 larvae (IS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, upper flood-plain, meadows, 21.VII 1978, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace and upper flood-plains, dry meadows and steppes, 22.VII 1978, 19 ♂, 7 ♀, 4 larvae (MS); Uvs-Nuur Intermountain Basin, 10 km S Erzin settlement, Tsuger-Els, 50°10'N, 95°11'E, 1154 m, sandy semi-desert, 23.VII 1978, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, 7 km S Erzin settlement, Tes River, 50°11'N, 95°12'E, 1097 m, lower terrace, steppes, 23.VII 1978, 10 ♂, 4 ♀, 1 larva (MS); Uvs-Nuur Intermountain Basin, E Shara-Nuur, Yamalyg farwell rocks, 50°14'N, 94°45'E, 1150 m, piedmont plain, dry steppe, 6.VII 2017, some specimens observed (MS); 25 km SW Erzin settlement, Tes River, 50°05'N, 95°21'E, 14–15.VII 2014, 2 ♂ (SS); 31 km NEE Erzin settlement, Erzin River, 50°21'N, 95°34'E, 1300 m, northern slope, balka with *Caragana*, 18.VII 2014, 1 ♀ (SS).

**DISTRIBUTION.** **Tuva:** WSW, WSE, ET, MT, KHE, UKH, KKH, WTO, ETO, UVS, SAN. – S Siberia, Amur Region; N Kazakhstan, Mongolia, N, NE China.

**ECOLOGY.** One of the most common and widely distributed species in the typical and dry steppes.

### Genus *Compsorhipis* Saussure, 1889

#### 28(92). *Compsorhipis davidiana* (Saussure, 1888)

Kazakova, Sergeev, 1993 : 71.

**MATERIAL.** **Tuva:** N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, piedmont plain, semi-desert with *Nanophyton grubovii*, 30.VII 1978, several specimens observed (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, piedmont plain, semi-desert with *Nanophyton grubovii*, 27.VII 1962, several specimens (IS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 930 m, piedmont plain, lower part, semi-desert with *Nanophyton grubovii*, 16.VII 1978, 1 ♂, 2 ♀ (MS); Uvs-Nuur Intermountain Basin, 3 km WNW Shara-Nuur, 50°14'N, 94°28'E, 1097 m, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 19.VII 1978, 1 larva (MS).

**DISTRIBUTION.** **Tuva:** UVS. – S Transbaikalia; Mongolia, NW, N China.

**ECOLOGY.** Occurs in the stony semi-deserts and deserts.

### Tribe Sphingonotini

#### Genus *Sphingonotus* Fieber, 1852

#### 29(93). *Sphingonotus beybienkoi* Mistshenko, 1936

*Sphingonotus beybienkoi*: Berezkhov, 1951: 21; Stebaev, 1964: 616; Benediktov, 1997: 117.

*Sphingonotus bey-bienkoi*: Cherepanov, 1952: 207.

**MATERIAL.** **Tuva:** N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, piedmont plain, semi-desert with *Nanophyton grubovii*, 30.VII 1978, 9 ♂, 9 ♀ (MS); N Uvs-Nuur Intermountain Basin, 40 km E Amdaygyn-Khol, semi-desert with *Nanophyton grubovii*, 26.VII 1962, 5 ♂, 5 ♀, 6 larvae (IS).

**DISTRIBUTION.** **Tuva:** UVS. – S Transbaikalia; C, E Kazakhstan, N Kyrgyzstan, Mongolia, NW China.

**ECOLOGY.** This species is associated with the stony semi-deserts and deserts.

***Sphingonotus rubescens* (F. Walker, 1870)**

DISTRIBUTION. The Mongolian part of Uvs-Nuur Intermountain Basin (Chogsomzhav, 1974). Arid part of N Caucasus; N Africa, SW Asia, deserts of Middle Asia (including mountains), NW Mongolia, NW China.

***Sphingonotus elegans* Mistshenko, 1936**

DISTRIBUTION. The Mongolian part of Uvs-Nuur Intermountain Basin (Chogsomzhav, 1974). Middle Asia, NW China, Mongolia.

**\*30(94). *Sphingonotus nebulosus* (Fischer de Waldheim, 1846)**

MATERIAL. **Tuva:** N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44'N, 93°08'E, 938 m, piedmont plain, semi-desert with *Nanophyton grubovii*, 30.VII 1978, 3 larvae (MS).

REMARKS. Coloration of hind legs of these larvae is intermediate between *S. nebulosus nebulosus* and *S. nebulosus discolor* Uvarov.

DISTRIBUTION. **Tuva:** UVS. – Orenburgh Region, SE Altay; Asia Minor, Caucasus, Kazakhstan (except the North), Tien Shan, Pamiro-Alay, Kopetdagh, Iran, Pakistan, NW Mongolia, NW China

ECOLOGY. The species was found only in the stony semi-deserts.

**31(95). *Sphingonotus salinus* (Pallas, 1773)**

*Sphingonotus salinus*: Stebaev, 1964: 616; Benediktov, 1997: 117.

MATERIAL. **Tuva:** N Uvs-Nuur Intermountain Basin, 40 km E Amdaygyn-Khol, semi-desert with *Nanophyton grubovii*, 26.VII 1962, 1 ♀ (IS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43'N, 94°17'E, 931 m, piedmont plain, lower part, semi-desert with *Nanophyton grubovii*, 30.VI 1978, 2 ♂, 2 ♀ (MS); the same locality and habitat, 16.VII 1978, 2 ♂, 2 ♀ (MS); Uvs-Nuur Intermountain Basin, Dus-Khol, 50°22'N, 94°52'E, 994–995 m, semi-desert with *Nanophyton grubovii*, 24–26.VII 1962, 5 ♂, 5 ♀ (IS); Uvs-Nuur Intermountain Basin, 3 km WNW Shara-Nuur, 50°14'N, 94°28'E, 19.VII 1978, 1097 m, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 1 ♀ (MS).

DISTRIBUTION. **Tuva:** UVS. – SE Europe; Caucasus (deserts), Kazakhstan (semi-deserts and deserts), Middle Asia, NW China. NW Mongolia.

ECOLOGY. Usually associated with the semi-deserts with some halophytes.

**TAXONOMIC COMPOSITION OF ORTHOPTERAN FAUNA OF TUVA**

In the beginning of the 21st century, the list of the orthopteran species known from Tuva includes 95 species and subspecies (Sergeev *at al.*, 2018, 2019 and this publication). They belong to 5 families, 11 subfamilies, and 21 tribes (1 subfamily and 2 tribes are also possible):

- Tettigoniidae (19 species + 6 possible)
  - Tettigoniinae (14 + 4)
    - Tettigoniini (2 + 1)
    - Bergiolini (2 + 1)
    - Gampsocleidini (1 + 1)
    - Decticini (1)
    - Platycleidini (8 + 1)
  - Conocephalinae (Conocephalini) (2 possible)
  - Odonturinae (Odonturini) (1)
  - Zichyinae (Zichyini) (4)

- Gryllidae (3)
  - Gryllinae (Gryllini) (2)
  - Nemobiinae (Pteronemobiini) (1)
- Tridactylidae (Dentridactyliinae) (1)
- Tetrigidae (Tetriginae) (6)
- Acrididae (66 species + 11 species and subspecies possible)
  - Melanoplinae (Podismini) (6 + 1)
  - Calliptaminae (1)
  - Gomphocerinae (43 + 5)
    - Chrysochraontini (6)
    - Hypernephiini (1 possible)
    - Arcypterini (3 + 1)
    - Aulacobothrini (2)
    - Stenobothrini (17 + 1)
    - Gomphocerini (15 species and subspecies + 2)
  - Locustinae (= Oedipodinae) (16 + 5 species and subspecies)
    - Parapleurini (1 + 1)
    - Epacromiini (2)
    - Locustini (3)
    - Oedipodini (1)
    - Bryodemini (6 + 2 species and subspecies)
    - Sphingonotini (3 + 2).

This list does not include two species (*Glyptobothrus brunneus* (Thunberg) and *Oedaleus infernalis* Saussure), because there are no exact data about their distribution in the Altay-Sayan Mts. Their mentions for NW Mongolia look like based on misidentification.

About the half of known orthopteran species is from the acridid subfamily Gomphocerinae. The number of the species from the subfamilies Locustinae and Tettigoniinae is also significant. At least several tribes, namely Bergiolini, Zichyini, Aulacobothrini, Bryodemini, and Sphingonotini, include a lot of intrinsic species of the semi-arid and arid mountains of Eurasia. This taxonomic composition is more or less typical for the mountain areas of Inner Asia (Sergeev, 1986, 2011; Lockwood & Sergeev, 2000).

In this part of the check-list, two acridid taxa are recorded from the region for the first time, namely *Chorthippus dorsatus orientalis* Bey-Bienko and *Sphingonotus nebulosus* (Fischer de Waldheim). Earlier we also added to the Tuvan fauna *Tettigonia cantans* (Fuessly), *Platycleis albopunctata* (Goeze), *P. affinis* Fieber, *Roeseliana fedtschenkoi* (Saussure), *Poecilimon intermedius* (Fieber), *Acheta domesticus* (Linnaeus), *Tetrix similans* (Bey-Bienko), *Zubovskya koeppei* (Zubovsky), *Podismopsis poppiusi* (Miram), *P. jacuta* Miram, *Stenobothrus nigromaculatus* (Herrich-Schäfer), *S. carbonarius* (Eversmann), and *Omocestus petraeus* (Brisout de Barneville) (Sergeev *et al.*, 2018, 2019).

Besides, there are at least 17 species and subspecies known from adjacent regions, such as the southern parts of the Republic of Khakassia and Krasnoyarsk Region, the Mongolian part of Uvs-Nuur Intermountain Basin, and the western and eastern parts of the Altay-Sayan Mts. Several species of Gomphocerini and Locustinae are among them. For instance, *Aeropedellus chogsomjavi* Altanchinmeg *et al.* may occur in the mountains of south-east Tuva. A few species (*Bryodemella zaisanica fallax* (Bey-Bienko), *Sphingonotus rubescens* (F. Walker), *S. elegans* Mistsnenko, and also the subspecies *Bryodema gebleri mongolicum* Zubovsky) can be found in the stony semi-deserts and deserts of Uvs-Nuur Intermountain Basin.

## GENERAL DISTRIBUTION PATTERNS

Our data allow us to reveal some main trends of Orthoptera distribution over Tuva and adjacent territories. We exclude data concerning the invasive forms [e.g., *Acheta domesticus* (Linnaeus)] and some dubious data based on possible misidentifications or misinterpretations [e.g., *Glyptobothrus brunneus* (Thunberg), *Oedaleus infernalis* Saussure]. However, we analyzed data about species distribution over the nearest parts of adjacent territories (northern parts of the West Sayan Mts., Mongolian part of Uvs-Nuur Basin). In some cases, when the known locality of the species is just near the boundary between two regions, we include this species in both faunas. We also don't consider the orthopteran fauna of the East Sayan Mts. because it is almost unexplored and, besides, the region may be characterized as unfavourable for many Orthoptera.

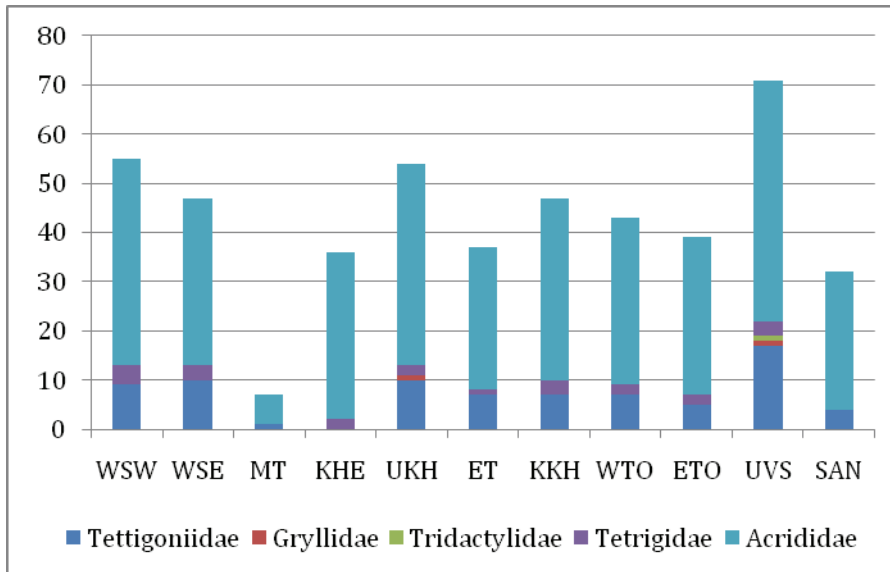


Fig. 1. Distribution of orthopteran species number and families over the main geographic regions of Tuva and adjacent territories. WSW – western and WSE – eastern parts of the West Sayan Mts.; MT – Mongun-Taiga mountain region; KHE – Khemchik Intermountain Basin; UKH – Ulug-Khem Intermountain Basin; ET – Eastern Tuva region (Academician Obruchev Range and Todzha Basin); KKH – Kaa-Khem mountain region; WTO – West Tannu-Ola Mts.; ETO – East Tannu-Ola Mts.; UVS – Uvs-Nuur Intermountain Basin; SAN – Sangilen Mts. (see Sergeev *et al.*, 2018).

The most diverse fauna of Orthoptera is in Uvs-Nuur Intermountain Basin (Figs 1, 2). This region is characterized by high diversity of the semi-desert, desert and steppe ecosystems favourable for the species associated with the arid and semi-arid regions of Eurasia. There are many species from the tribes Bergiolini, Zichyini, Aulacobothrini, Bryodemini, Sphingonotini. Two mountain regions, namely the Sangilen Mts. and especially Mongun-Taiga, are characterized by the relatively low levels of diversity. The members of two widely distributed families, namely Acrididae and Tettigoniidae, are found here. Both territories are mainly at altitudes above 1500 m and are not favourable for many Orthoptera.

All other regions are characterized by the moderate level of diversity. Their species richness varies from 36 to 55. The general composition of their faunas is very similar (Figs 1, 2). They commonly include forms from three families (Acrididae, Tettigoniidae, Tetrigidae) and from 6 subfamilies, namely Tettigoniinae, Tetriginae, Melanoplinae, Calliptaminae, Gomphocerinae, and Locustinae. The only species from the subfamily Odonturinae occurs in the eastern part of the West Sayan Mts. The fauna of Ulug-Khem Intermountain Basin includes one species of Nemobiinae. Some members of the subfamily Zichyinae penetrate into the southern arid parts of the West Tannu-Ola Mts. Besides, there are also several species mainly distributed in the deserts and semi-deserts of Inner Asia [e.g., *Bryodemella orientalis* (Bey-Bienko) and *Eulithoxenus mongolicus* (Uvarov)].

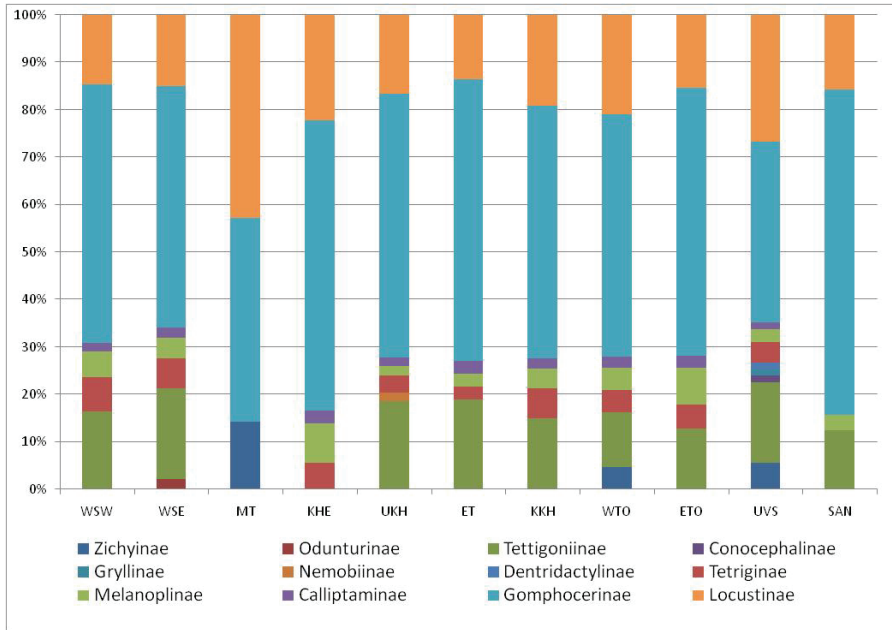


Fig. 2. Ratios of orthopteran subfamilies (species number) in the main regional faunas of Tuva and adjacent territories (abbreviations see Fig. 1).

The orthopteran fauna of Tuva is composed from the species of several ecologo-geographical groups (Sergeev, 1986; Benediktov & Korsunovskaya, 1996). The members of the first group are mainly distributed in the boreal part of Eurasia (Sergeev, 2011) and occur in the mountains of the northern territories of Tuva. Among them are *Metrioptera brachyptera* (Linnaeus), *Zubovskya koeppeni* (Zubovsky), *Podismopsis poppiusi* (Miram). Several species are commonly associated with the steppes of South Europe and Kazakhstan [*Stenobothrus nigromaculatus* (Herrich-Schäffer), *Omocestus petraeus* (Brisout-Barneville)] and some others – with the steppes of Mongolia and South Siberia [*Montana tomini* (Pylnov), *Myrmeleotettix palpalis* (Zubovsky)]. There are also several forms related to the Far East [*Prumna primnoa* Fischer de Waldheim, *Schmidtiacris schmidtii* (Ikonnikov)]. A lot of species are associated with the semi-deserts and deserts of Inner Asia, in Tuva, many of them occur only in Uvs-Nuur Intermountain Basin.



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