

RESEARCH ARTICLE

Areal characteristics of the Leaf beetles fauna (Coleoptera, Chrysomelidae) of Kuznetsk-Salair mountain region (Russia, Siberia)

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In the present work an areal characteristics of the leaf beetles fauna (Coleoptera, Chrysomelidae) of Kuznetsk-Salair mountain region is given. The fauna basically consists of the West-Central-Palaeartic species (39,5%) and the Transpalearctic species (23,8%) with wide habitats. The thirteen Endemic species are registered in the fauna, accounting for 6,2%.

Keywords: Coleoptera; Chrysomelidae; Kuznetzk-Salair mountain region; Leaf-beetles; Siberia; areal

In the recent years (1998–2017) we collected Coleoptera in 108 localities of Kuznetsk-Salair mountain region. As a result, the fauna of Chrysomelidae has been revised quite completely. 210 species belonging to 54 genera of 10 subfamilies have been revealed (Guskova et al., 2016, 2018a, 2018b). Most of the new findings in this region were quite predictable. This refers to such widespread species as *Donacia crassipes* Fabricius, 1775, *Pachybrachis scriptidorsum* (Marseul, 1875), *Gonioctena pallida* (Linnaeus, 1758), *Galerucella nymphaeae* (Linnaeus, 1758), etc. There was an interesting founding of *Coptocephala rubicunda rossica*. The nominative subspecies inhabits Western Europe, while the subspecies *rossica*, described by L.N. Medvedev (Medvedev, 1977), is known from Belarus, Western Ciscaucasia, the Middle Volga region, the Southern Urals, Altai (Pavlov, 2007; Guskova, 2010; 2013) and is an ancient Mediterranean relic. Thus, the boundary of this species habitat was extended to the East, as well as the habitat boundaries of the species *Smaragdina salicina* (Scopoli, 1763), *Chrysolina (Chrysomorpha) cerealis megerlei* (Fabricius, 1801), *Pachnophorus tessellatus* (Duftschmid, 1825), *Longitarsus lycopi* (Foudras, 1860). Two genera, *Sternoplatys* (*S. (Apterocuris) sibiricus* (Gebler, 1830)) and *Colaphellus* (*C. foveolatus* Gebler, 1848) are recorded in the fauna of Kemerovo region for the first time. Both are endemics of Altai-Sayan mountain country, wherein the first is distributed only in the Altai and Kuznetsky Alatau.

Typification of areas is one of the most important and debatable problems in the modern domestic literature devoted to the insects distribution analysis. Currently, a number of areas classification variants has been proposed (Emelyanov, 1974; Gorodkov, 1984; 1992), but there is still no generally accepted classification.

Materials and methods

The article is based on the material of the leaf beetles collections performed during 1998-2017 in 108 localities of Kuznetsk-Salair mountain region. In relation to the structures of the areal complexes, we use the classification by K.B. Gorodkov (1984; 1992).

Results and discussion

The areal analysis has shown that the leaf beetles fauna of the studied territory is formed by species of 7 areal types (fig. 1): Transholarctic, Transpalaeartic, Trans-Eurasian, West-Central-Palaeartic, Central-Palaeartic, Central-East-Palaeartic and American-Euro-Siberian.

Fourteen species of leaf beetles belong to the Transholarctic type, which constitutes 6,7% of the leaf beetles fauna of the region. These species are widely spread in Eurasia and North America.

The Transpalaeartic species constitute 23,8% (50 species), their areal includes Europe, North Africa, the Caucasus, Siberia, the Far East, and at least partly Western and Central Asia.

The Trans-Eurasian group is represented by 20 species, in the fauna structure of the region is makes 9,5%. This areal type differs from the Transpalaeartic one in that leaf beetles from this group are not found in North Africa.

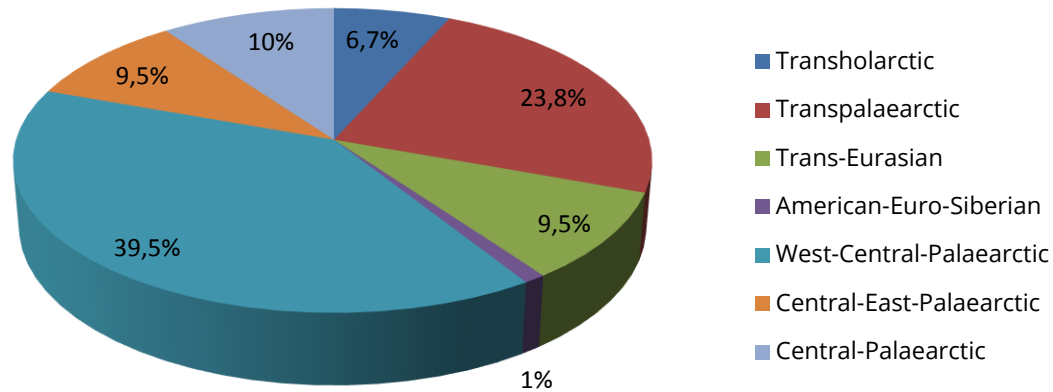


Figure 1. Ratio of areological complexes of leaf beetles (Coleoptera, Chrysomelidae) in Kuznetsk-Salair mountain region

The West-Central-Palaearctic species are distributed mostly in forest and forest-steppe zones of Europe and Siberia, and the southern border of their distribution captures the Caucasus, North Africa, the Middle East, Central and Central Asia, but these species are not found in the Far East. The species of this areal type constitute 39,5% (83 species) of the region fauna. By the nature of these species distribution to the East, the following areal subtypes were identified: Euro-Kuznetsk, Euro-Yenisei, Euro-Baikal, Euro-Lena, Euro-Upper-Amur, East-Euro-Siberian.

The Euro-Kuznetsk species accounts for 10,5% of the region fauna. For the 22 species here is the eastern limit of their habitat. These are: *Donacia dentata* Hoppe, 1795, *Plateumaris (Plateumaris) braccata* (Scopoli, 1772), *Syneta betulae betulae* (Fabricius, 1792), *Crioceris quinquepunctata* (Scopoli, 1763), *Pachnephorus tessellatus* (Duftschmid, 1825), *P. pilosus* (Rossi, 1790), *Cryptocephalus (Cryptocephalus) flavipes* Fabricius, 1781, *C. (Cryptocephalus) octopunctatus* (Scopoli, 1763), *C. (Burlinius) fulvus* (Goeze, 1777), *Smaragdina salicina* (Scopoli, 1763), *Labidostomis lepida* Lefèvre, 1872, *Chrysolina (Chrysomorpha) cerealis megerlei* (Fabricius, 1801), *Gonioctena (Gonioctena) linnaeana* (Schrank, 1781), *Pyrrhalta viburni* (Paykull, 1799), *Altica helianthemis* (Allard, 1859), *Aphthona gracilis* Faldermann, 1837, *A. lutescens* (Gyllenhal, 1813), *Crepidodera aurea* (Geoffroy in Fourcroy, 1785), *Phyllotreta praticola* Weise, 1887, *Chaetocnema (Chaetocnema) aerea* (Letzner, 1847), *C. (Chaetocnema) aridula* (Gyllenhal, 1827), *C. (Tlanoma) breviscula* (Faldermann, 1837). It should be noted that the habitats of many species are not yet completely understood and with the arrival of new faunistic data they can be expanded.

The Yenisei river is the frontier to move east for the following species: *Donacia obscura* Gyllenhal, 1813, *Coptocephala unifasciata* (Scopoli, 1763), *Cryptocephalus (Asionus) apicalis* Gebler, 1830, *C. (Cryptocephalus) flavicollis* Fabricius, 1781, *C. (Cryptocephalus) bameuli* Duhaldedorde, 1999, *Chrysolina (Erythrochysa) polita* (Linnaeus, 1758); the habitats of these species belong to the Euro-Yenisei group and make 2,9% of the leaf beetles fauna of the region.

Euro-Baikal (Euro-South-Middle-Siberian) species are widely spread in Europe; their areal in Siberia is narrowing in the Baikal region, though some of them penetrate east of Mongolia. Euro-Lena (Euro-East-siberian) species make 15,5%, in the leaf beetles fauna structure of Kuznetsk-Salair mountain region, the eastern boundary of their areal passes along the Lena river. One species of the West-Central-Palaearctic group, *Donacia fennica* (Paykull, 1800) spreads up to the upper streams of Amur river.

The Central-Palaearctic leaf beetles are found in the Urals, Siberia, Kazakhstan, Central Asia, Mongolia and North China. In the studied region, leaf beetles of this areal type constitute 10%. In this type, we should distinguish a special group of the Altai-Sayan highlands endemics: *Oreothassa martjanowi* Jacobson, 1901; *Sternoplatys (Apterocuris) sibiricus* (Gebler, 1830); *Chrysolina (Bechynia) substrangulata* Bourdonne, 1986; *C. (Chrysocrosita) jakowlewi* (Weise, 1894); *C. (Heliosstola) gibbipennis* (Faldermann, 1835); *C. (Jeanclaudia) neotibialis* Kippenberg, 2010; *C. (Jeanclaudia) undulata* (Gebler, 1833); *C. (Pleurosticha) sylvatica* (Gebler, 1823); *C. (Timarchoptera) haemochlora* (Gebler, 1823); *Oreina* (s. str.) *sulcata basilea* (Gebler, 1823); *Colaphellus foveolatus* (Gebler, 1848); *Cystocnemis discoidea* (Gebler 1830), and one endemic of Kuznetsky Alatau - *Chrysolina (Pleurosticha) arctoalpina* Mikhailov, 2006.

The areal of Central-East-Palaearctic species covers the Caucasus, Siberia, Mongolia, North China and the Far East. In the studied region, we find 20 leaf beetles species with this areal type, which makes 9,5% of the leaf beetles fauna of the region. The Euro-American areals are currently quite rare, and mostly anthropogenic. On the studied territory, *Chrysolina (Hypericia) hyperici* (Forster, 1771), is of this areal type, besides, it is common in Europe, North Africa, the Western Caucasus, Turkey, Uzbekistan, Kazakhstan, and introduced to America and Australia under the biological control program. The natural range of *Galeruca pomonae* (Scopoli, 1763) covers Europe and goes east to the upper reaches of the Amur river, this species was also introduced to America.

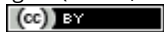
Thus, the leaf beetles fauna of Kuznetsk-Salair mountain region basically consists of the western central palaeartic species (39,5%) and the Transpalearctic species (23,8%) with wide habitats. Together with the Transholarctic and Trans-Eurasian species, they constitute 79,5%. Also, 13 Endemic species are registered in the fauna, accounting for 6,2%.

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