

The psyllid fauna (Hemiptera, Psylloidea) of deserts of the Caucasus: taxonomical composition and refugial centers

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In the framework of the Caucasus biota, psyllid fauna of different biomes, including deserts of the Caucasus, was investigated during 1962-2017. The total number of the region comprises around 210 species. This fauna from various biomes of the region is distributed unequally. For instance, forest element of fauna consists of 82 species (39%), steppes and arid woodlands – 51 (24%), mountainous – 35 (16%), and deserts – 43 (20%) (Gegechkori, 1984). Among others, three main sites of the Caucasian deserts were highlighted: Ciscaucasian (13 species, 30%), eastern Caucasian (21, 48%), and extreme South Caucasian (33, 76%). Fauna of the first two regions is remarkably poor in taxa – represents the version of impoverishment (without endemics) of the adjacent easternward deserts of the Turan. Ciscaucasian and the core area of eastern Caucasus deserts (the Kura-Aras Lowland) was largely influenced by local biogeographic filter for successful colonization of the lowland from Turanian center (mainly as the easternmost edge of deserts of the Irano-Turanian type and the Caspian Sea's frequent level fluctuations in the Holocene).

In the middle reaches of the Aras River gorge 130 species have been determined. This data with 13 new for science species were described by the author and obviously predominates the same data of any other known regions' psyllid fauna of the Caucasus. Therefore, deep river gorge of the Aras River of South Caucasus, where a large area is covered by hammada, phrygana and mountainous xerophytic plants support the richest generic and species richness of native Psylloidea. In addition, the Aras River gorge is believed to be transitional, crossroad area, i.e. a bridge terrain between southern Turan and northern Iran and through this latter region – the Near East. The middle reaches of the Aras River with characteristic phrygana and hammada communities should be exemplified as north-easternmost exclave of the Near East region. Detailed phenological investigations of psyllid fauna of the Aras River valley – patches of sandy and solonchak deserts, very dry rocky habitats and tugai type of rivers – revealed harsh-climate tolerate complex of psyllid taxa. All species from the mentioned complex have their vicariant (allopatric and sympatric) species from adjacent northern Iran. Biogeographical analysis of local separate (insular) fauna obviously shows its undoubtedly relict character. It should be speculated that in this insularity of local fauna from the ancestor clades plays a decisive role in the following abiotic factors: firstly, the Miocene's orogenesis, including Zagros Mountains uplift. It performed an important climatic and flora-faunistic barrier preventing further migration of xerophyllous species; secondly, the Plio-Pleistocene pre-glaciation and glaciation events and Holocene's climatic shifts. As we see, the remnants of the Irano-Turanian complex of fauna, being survived in the Aras River gorge, nowadays are found only in this refugial area.

Reference

- [1] A. M. Gegechkori. Psyllids (Homoptera, Psylloidea) of the Caucasus [Psyllidy Kavkaza]. *Metsniereba*, Tbilisi, 293pp. 1984 (in Russian).