

Salty (solonchak) deserts and semi-deserts of the Caucasus, their peculiarities (chorology) and classification

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In scientific literature flora and vegetation of deserts and semi-deserts of the Caucasus has been a subject of discussion including controversial viewpoints. One group of scholars considers that in this region are represented deserts and semi-deserts (e.g., Gulisashvili et al., 1975), the second group of scientists suggests that all landscapes with poor precipitations belong to deserts (e.g., Lachashvili & Khachidze, 2010), the others (e.g., Grossheim, 1948) refer all deserts and semi-deserts as „steppes”. The main result of this work is based on our detailed and long-time (about 50 years) study of the Caucasus biota (Gegechkori, 1984, 2008, 2019). We consider that landscapes with poor annual precipitations (250-200mm and below) belong to deserts, and less dry sites with annual precipitations (400-200mm) are semi-deserts (Gegechkori, 1984, 2008, 2019).

According to our research, the most xeric floristic complex of eastern Georgia belongs to exclusively semi-deserts. On this semi-arid area, spontaneously, in discrete way, appear some small-size true deserts with characteristic micro-climate, soils and unusual for Georgia species of plants and ecologically coincided to them animals. Desert patch most perfectly is expressed in landlocked Davidgareja Hollow (Kakheti, Georgia) with clay-gypseous deserts, then, south-westernward occur gypseous desert's hills of the vicinity of Aspindza town (Meskheti, South Georgia), and clay desert's hills with semi-oreoxerophilic vegetations growing nearby of Adigeni (Meskheti). Among others most important are ologotypic hyperxerophilic genera: *Halimodendron*, *Nitraria*, *Reaumuria*.

They are derivative taxa of dry climate adapted flora, which have spatially, historically and genetically quite different roots. They belong to the Irano-Turanian Region of the Tethian (Ancient Mediterranean) Subkingdom of the Holarctic Kingdom, famous with its autochthonous xerophylic center of contemporary speciation (Takhtajan, 1997).

It should be noted that among the mentioned three patches is represented largely extended "watershed". For example, terrain with large portions covered by forestless, another semi-arid ecotones: arid open woodlands, shibliak, steppe, sometimes a few broadleaf deciduous forests. These forestless ecotones provide climatic and floristic barrier, preventing further migration of hyperxerophilic species.

Finally, it is notable that the mentioned series of patches (actually, exclaves), embracing the above mentioned and other palaeorelict species are characterized by long-distance disjunct distribution. From biogeographic point of view, such type peculiar disjunctions are typical expression of geographical vicariance event among the closest relative desert-origin species. Historically they have easternward connections with a region of primary center of origin of drylands' adapted living organisms – the Turan Hollow.

According to classification of the solonchak deserts of the Caucasus, we have ranked this largely extended deserts in Irano-Turanian Region in the following way (Gegechkori, 2019):

1. Deserts and semi-deserts (general characteristic)
 - 1.1. Cold-winter deserts and semi-deserts
 - 1.1.1. Biota of the solonchak deserts and semi-deserts of the lowland (flat) area of the eastern Caucasus
 - 1.1.1.1. Floristic composition and classification of vegetation in relation to soil salinity
 - 1.1.1.1.1. The main ecological types of vegetation (shrubs and semi-shrubs) adapted to saline soils
 - 1.1.1.1.1.1. Hyperhalophytes (true, obligate halophytes; e.g., *Anabasis aphylla*)
 - 1.1.1.1.1.2. Euhalophytes (plant communities on high saline dry soils; e.g., *Astragalus turkestanicus*)
 - 1.1.1.1.1.3. Mesohalophytes (facultative halophytes; e.g., *Artemisia fragrans* (subgenus *Seriphidium*))
 - 1.1.1.1.1.4. Hydrohalophytes (e.g., species of relict cane – *Arundo*)

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