

## The succulent flora of the Lower Volga and the Caucasus

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The expedition research of the succulent flora of Lower Volga and Caucasus held by us in 2006 is the part of the project "The Succulent flora of Russia and bordering states", which covers all the territory of the former USSR.

The lowlands of Volga and the North Caucasus are the areas richest in the number of species and genera of the wild, naturalized and cultivated succulents at the territory of Russian Federation and the former USSR. There are many as real succulents and as halophyte-succulents. Among the xerophyte-succulents the most represented is the Crassulaceae family, which includes no less than 9 genera and 40-45 species. Other families are less variable and are represented in 2-5 species (Zygophyllaceae s.l.: 3 genera, 5 species; Portulacaceae: 1, 2; Apiaceae: 2, 2).

The Chenopodiaceae family is the leader in the number of the succulent halophytes in the regions (c. 11 genera and 35 species). They are concentrated in the south, arid regions of Russia in lowlands of Volga and in foothills of the Caucasus (first in the coasts of the Kaspian and the Black seas) and in the Eastern Transcaucasia. The most succulent among them are the representatives of the Salicomieae tribe (c. 10 species). They are stem succulents with reduced leaves. *Salicornia* is met with in saline places on the mainland near the coasts of different seas. But *Halocnemum strobilaceum*, *Halostachys cuspidata*, species of the *Kalidium* genus and others are mainly located in the lowlands of Kaspian sea and low lands of Volga. At the same time representatives of other tribes, e.g the species of the *Sueda* (*Suedeae*), are the typical leaf succulents and morphologically reminiscent of some the annual species of *Sedum*. At the same time they are not so halophytic as Salicomioideae and occupy the intermediate position between the halophyte succulents and real succulent-xerophytes.

There were found not only the native species in the lowlands of Volga and in the Caucasus, but also the run wild and naturalized succulents. These are Crassulaceae — *Sedum reflexum*, *S. sexangulare*, Portulacaceae (*Porzulaca grandylora*) and others.

There are also some cases of naturalization of Cactaceae known in the lowlands of Volga and in the Caucasus. In the N Caucasus some clones of wild *Opuntia humfusa* (as "*O. stricta*") were found by Kos U. (Rotov 1963). This *Opuntia* was discovered in the north-east of Kabardino-Balkaria on the high terrace of the river Terek near the Mayskiy town. According to our data, in the modern days this population is destroyed by the river, which washed out the bank. There's an information that there's a colony of two species of *Opuntia* near Tbilisy. But we don't know the modern day conditions of the plants.

As for the other species of *Opuntia* which have become naturalized in the Caucasus we can mention *Opuntia humfusa* and *O. phaeacantha* var. *camanchica*. Sometimes these run wild in the dry slopes around the resorts and rest houses near Novorossiysk (Zemov 2002) and Kabardinka (our source). Also they sometimes run wild on the coast of the Black Sea in the Western Caucasus (in the region of Big Sochi and in Abkhazia), where are sometimes used as decorative plants in the open ground.

Another successful example of cactus acclimatization is the *O. tartispina* var. *cymochila*. Naturalization in the lowlands of Volga, in Khabarlinsky region of Astrakhanskaya Prov. in Bakshan sands (Kulakova 2004). According to the information of Khabarlinsky forestry, *Opuntia* was planted by the scientist Timoshevskiy I.I. at the period of 1904-1917. In order to introduce it

to defend the forest of the approaching sands, *Opuntia* has been growing here for 100 years as a part of the natural desert sand communities with *Artemisia lercheamz* at the territory of nearly 500 ha, and it blooms and gives seeds and seedlings.