Ecological character

The relief is a plain with absolite hights of 200-250 m above sea level. The major components of the relief are mound sands and saucer-like hollows of various shapes.

These are largely predetermined by extremely continental dry desert climate, availability of a large salt waterbody and the spread of aquatic habitats into the desert ecosystems. All the habitats can be divided into two large groups.

The first group is directly connected with Lake Dengizkul and located in the aquatorium of this lake. This group includes reeds and cat's-tail growing along the coastline in NW part of Lake Dengizkul. They grow in a strip a few meters wide and do not cover large areas. This habitat is notable for the richest species diversity of the hydrophilous complex.

Islands and smaller islands are also situated in NW shallow part of Lake Dengizkul not far from the collectors flowing into it. The islands have sloping shores. The smaller islands are located not far from the coastline and are often covered with reeds. Larger islands situated farther have, as a rule, desert bush vegetation, shrubs of karelinia and some other water-loving plants. In these site cormorants, pelicans and many duck and goose species are concentrated.

Open water space can be in turn divided into shallow bays with submerged aquatic vegetation growing as a rule not far from the shore, and a deep-water area. The formers have high biological productivity where many waterfowl and fish species forage.

The second group of habitats is restricted to the coastal part of Lake Dengizkul and is characterized with both various desert plant associations and poorly developed tugai association. The latter is only restricted to the sloping NW part of the shore and borders on the reed vegetation. The major part of the coast is covered by the desert vegetation, the nature of which is predetermined by the relief. The most part of the coastline is steep. As a result, relatively high numbers of Shelducks are characteristic for Lake Dengizkul. Besides, Eagle Owl and Kestrel are common in this area.

The vegetation is differentiated according to the features of the relief, soil type and water conditions (the list of dominating plant species is enclosed). The following plant communities are distinguished.

The formation of hornwort -- *Ceratophylleta* -- is spread and stable. An association of hornwort - ass. *Ceratophyllum demersum + aquiherbosum* - with other aquatic plants (*Potomogeton pectinatus, P. lucens, Miriophyllum spicatum, Typha angustifolia,* etc.) is encountered at the depth of 0,7 to 1,5 m in highly silted bed. Submerged weeds are highly dense.

The formation of pondweed — *Potamogeteta* — is the association of *P. pectinatus* and *P. lucens*. The former occupies more saline plots in SE part of the lake, and the latter more freshwater NW part. The formation of pondweed grows as deep as 2 to 2,5.

The formation of reed - *Phragmiteta* - is dominating among littoral vegetation. The most often encountered are the following:

- pure reed association - ass. *Phragnites communis purum;*
- reeds with heterogeneous grasses ass. *Phragmites com.+ mixta herbo*
- reeds with cat's-tail - sum ass. *Phragmites* com. +*Typha angistifalia.*

The density of reeds alone is high, the hight of reeds reaches 3 to 3,5 m. The strip of reeds begins immediately at the water edge and expands until the water depth reaches 1 or 2 m.

The association of reeds with cat's tail are distributed through the lake as strips of various widths growing at the depth as low as 1,5 m. The density of the shrubs is not high, the above water height reaching 1,5 m.

The association of reeds with motley grass grows on the shores is distributed on the shores along the water edge. Besides reeds, the vegetation consists of *Acluropus littoralis*, sedge, wood reed, karelinia, and other species. Components of tree-bush tugai are also encountered among them. They are papulus, tamarisk and silvery salt tree.

The formation *Tamariceta* comprises two associations: ass. *Tamaricetum pentandra*--mixta, the edificator of which is *Tamarix pentandra*, and ass *Tamaricetum hispedae*, the edification of which is *Tamarix hispida*. The former association is restricted to lowlands and forms dense shrubs. The floristic composition is rather poor: reeds, karelinia, *Suaeda salsa* and camel's thorn.

The association *Tamaricetum hispedae* is spread on saline meadow-takyr or loamy and sandloamy soils showing medium salinity. Ground water is mineralized. The floristic composition mainly includes of halophytes: karelinia, silvery salt tree, sea blithe, barnyard grass, and reeds.

The formation *Salsaleta richteri* is formed of saltwork, *Salsola richteri*. Two associations: ass *Haloxylon persicum* + *Salsoletum richteri* and *S.richteri* are noted. The former grows on hillock sands and is formed of *H.persicum* and *S.richteri.* The cover is of two storeys, 1 or 2 m high in the form of thinned out thicket and single bushes.

Ass. *Salsoletum richteri* is also restricted to hillock sands. Calligonum and bastard acacia can also be observed in this association.

The formation of acacia *Ammodendreta conolyi* is represented by the acacia association (ass.*Ammodendreta conolyi*). This is the most characteristic association for blown sands based on typical psammophytes: *Ammondendron condi*, calligonum, *Calligonum caput-medusae*, *Haloxylon persicum*, *Astragalus*, ephemerals and ephemeroids.

The formation of *Varcalligoneta* is formed of *Calligonum acanthopterum* and *C. caput-medusae*. It is represented by ass. *Varcalledonetum physxodis* which differs from ass. *Acacia* + *Varcalligoneta* by the availability of *Calligonum acanthopterum*, *Salsoletum richteri* and *Tamarix hispida*.

The vegetation has undergone certain changes connected with either desertification or irrigation.

The general exogenous process has been brought about by man-made impact resulting from the construction of Amu-Bukhara Canal and related processes. The irrigation of this territory has given rise to the emergence of aquatic (submerged), littoral-aquatic and coastal vegetation.

Besides succession of plant communities, also observed is a seasonal succession of plant species, which is typical for the desert zone and in which the aspect of the ephemerals and ephemerids is evident, whose longevity is about 30 or 40 days.

In the floristic composition, there are no strict endemics, but many species (18 out of 47) of this region are endemics to Central Asia. No introduced plant species have been recorded in the area.

Such plants as *Ceratophyllum demersum, Salvinia natans, Potomogeton lucens* and *P.pectinatus, Miriophyllum spicatum*, as well as young shoots of reeds and *Typha angustifolia* are the major source of food for herbivorous fishes. The same plant species are the food for musk-rats. Besides, *Potomogeton lucens* and *P.pectinatus, Ceratophyllum demersum* and *Salvinia natans* are the food for both resident and migrating aquatic and waterside species of waterfowl and animals.

In the past 15-20 years, the number of endemic plants has considerable decreased - they have been included with the list of rare and vanishing plant species.

The cause of their vanishing is in their low plasticity and a significant human impact on their habitats.