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Yuri M. Miroshnichenko  
*Institute of the Academy of Sciences, Russia*

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## Monitoring of production in the steppes Pre-Caspian Area and open wood (non desert!) and forest of Turan (Middle Asia)

Yuri M. Miroshnichenko, Institute of the Academy of Sciences, St.-Petersburg, Russia [rudnya@etu.spb.ru](mailto:rudnya@etu.spb.ru)

**Key words:** Pre-Caspian, Turan, open wood, non desert

**Introduction** Turan is considered deserts without any reasoning. During 55 years I have studied the vegetation of steppes, mountains, and deserts from Algeria to China and in Central America. I studied the processes of succession, the structure of coenoses, the productivity, of superstructures I (trunks, branches, green organs) and roots, the ecological and biological properties of plants, their biochemistry, the contents of macro- and microelements of 200 dominants in various regions.

**Materials and methods** In various countries I created experimental plots of 2-10 hectares and compared the dynamics of vegetation, crops, etc. on fenced and unfenced plots (a fence prevents a plot from being grazed). These and other studies of mine brought me to revisiting the adopted concept that Middle Asia is desert, which turned out to be wrong. Deserts occupy only a small area in Middle Asia to the south of the Aral (80-100 mm of precipitation), 41-44 degrees L.N., 57-62 degrees L.E.

**Results** I arrived at the conclusion that in Kara-Kum and Kysyl-Kum (150-190 mm of precipitation per year) specific types of vegetation prevail rather than desert ones: highly xerophilous open woods with white saxaul (ass. *Haloxylon persicum*). All superstructural phytomass is 2-2.9 tons/hectare (dry), green mass of *Hal.pers.* is 0.3-0.6 and that of shrubs is 0.2, sedge (*Carex physodes*) is 0.15 tons/hectare (dry). The structure of *Hal.pers.* plus shrubs occupies 25-30% of the area, with *Carex* growing among them, which creates a layer of rhizomes 30 cm thick with a mass of 8.3 tons/hectare (dry). In lowlands with the level of subterranean waters 8-12 m black saxauls (ass. *Haloxylon ammodendron* = *H.aphylla*) is well dispersed. After cutting down, with demutation they become sparse (xerophilous open woods) [with shrubs and sedge (*Carex*)]; however/at the phase of climax they become arid woods, the tops of black saxaul (*Hal.amm.*) taking 90-100%. At the climax phase the production of trunks and roots of *Halox.amm.* is 105 tons/hectare (dry), and that of green organs is 4.3-4.6 tons/hectare (dry), that of *Ammodendron argenteum* is 4.2 tons/hectare (dry) near the lake Aral. This is much more than the mass of leaves in the woods of Europe, where it is 2.1-3.2 for oak trees, 2.8-3.3 for conifers, and 2.9-3.7 tons/hectare for pines (dry). In the Sahara deserts the green mass is 0.001-0.03, and in Goby it is 0.01-0.2 tons/hectare (dry).

**Conclusions** I consider that xerophilous open woods with trees *Haloxylon amm.*, *H.pers.*, *Ammodendron con.*, *Amm. argent.* and others and with shrubs in Turan represent extreme arid chains of a specific type of vegetation—sparse woods in ecological series which go from subhumid sparse woods in mountains. Therefore, high productivity, complete density in superstructural and underground spheres, stability of coenoses—all this demonstrate absence of deserts in Turan (except for a small spot) and presence of specific xerophilous open woods and thick arid woods.

However, even absinth (*Artemis*) decreased substantially in 10 years—they were replaced by uneatable plants—spurge *Euphorbia Ceratocarpus arenaria*, then *Peganum harmala* and others. Certain researchers defended the concept that absinth (*Seriphidium*) belong in deserts, that absinth are typically desert kind of plants. This severe error is based on absence of studies of successions, so a border line of deserts was drawn up to Volgograd and to the north, up to latitude 52° North in these deserts" (*Artemisia*) observe 300-450 mm of precipitation per year, hay stations produce hay on hundreds thousands of hectares, and somewhere wheat is cultivated without watering.

The adopted but erroneous statement (that Middle Asia is a desert) should be revisited in the light of existing data on high productivity, complete crown density of coenoses, successions (both rehabilitative and digressive), etc. The geographic maps should be corrected, and the Pre-Caspian area and Northern Turan should be denoted as steppes (original, coming of *Stipa*, *Agropyron*, *Helictotrichon*, *Koeleria*, and secondary ones with *Artemisia*, *Festuca*, and others), and the Southern Turan (Kara-Kum) should be denoted xerophilous open woods rather than deserts.

Productivity in open wood on mountaine = 109 t/hect, in arid mountaine (rain 350 mm) prod. = 44 t/hect, in open wood of Kara-Kum prod. = 105 t/hect.

Descartes wrote: "Refine your terms, and you'll get rid of errors". Kurochkina argues that there are no deserts in Turan (1995, IRC, USA).

### References

- Yu. Miroshnichenko (1986). Dynamic and productivity of vegetation in deserts in Russian. 158 p.  
Yu. Miroshnichenko (1970). Résultats de recherches expérimentales des pâturages. De La Rep. Algérienne on Frans. 120 p.