Short Reports

AEGAGROPILA LINNAEI IN LAKES AND ARAHLEY AREY (EASTERN TRANSBAIKALIA)

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There is a certain disjunction in range of different hydrobionts between Europe and Asia, for example, *Cyprinus carpio* L. For macroseaweeds a significant gap in range is registered for *Aegagropila linnaei* Kütz [10]. Later in their article C. Boedeker и B.F. Sviridenko [9] point out a kind for North of Caucasus (lake Schuchie at the level of 388m above the sea) that partially fills the range gap. According to C. Boedeker and co-authors [10, p. 9] “the disjunct distribution between Japan and Europe could be the result of extinction on the Asian continent east of the Urals... The Siberian landmass was never glaciated during the Weichselian (Würm) glaciations due to its dry continental climate... Accordingly, Siberia was lacking widespread refugial habitats for *A. linnaei*, possibly leading to extinction in this area, in contrast to glaciated Europe which had abundant refugia in the south and west of the ice sheet and in the form of extensive ice-dammed lakes [12; 14]”.

Separate publications that refer to history of relief formation and setting of downfall accumulation in beds of Siberian, study conditions of emergence for a cascade of enormous ice cap lakes with discharge along water-dividing spillways from Yakutiya (bed of river Lena) to the West into water area of Black sea and further to Atlantic during all periods of glaciation in the second half of Neo-Pleistocene [2]. According to Groswald and Kotlyakov [1], total area of these Siberian water bodies could reach up to 3 million km^2. At the territory of over-Baikal a vast over-Baikal ice cap water body was formed during the period of maximum Samarovskoye glaciation in result of iceberg borrage in origin of river Angara when the floating ice cap occupied a significant part of Baikal water area [7]. This ice cap water body emerged 150 thousand years earlier than ice cap water water bodies of Europe. In its maximum level of 1020 m (stabilized – 880–900 m) lake water area far exceeded the boundaries of Eastern over-Baikal area to the South and East. The dump from this water body took its way in direction of the Pacific. In periods of paleolake level drop below the mark of 1000 m it was divided into two water storages – Selengiskaya [5; 6] and Nerchinskaya Dauriya [3; 8]. The former refers to Baikal range of dump, the latter – to water area of Amur river system. Dump of over-Baikal paleolake waters to the East provoked introduction of Amur river system into the area of closed lake basins of over-Baikal and Northern territories of Mongolia and China. During the further glaciations (Tazovskoye, Muruktinskoye, Sartanskoye) ice cap water bodies of regional significance were formed only in the North of over-Baikal territory (paleolakes Vitimskoye, Olekminskoye, Charskoye) [3].

The greatest interest in terms of studying biogeography of *A. linnaei* is drawn for by modern water bodies deeper than 10 m, located in height range of 900–1020 m. To such water bodies we can refer lakes Arey and Arakhley, located in saddles of continental water division. In our opinion, they are what remains of a vast over-Baikal ice cap water body (picture) that existed in the age of maximum Samarovskoye glaciation (picture 1) when a vast glacier surface emerged at the territory of by-Baikal and over-Baikal territory [3; 11]. Nowadays the lakes are described by the following parameters: lake Arey has the area of 4,6 km^2, depth of 13,5 m and mirror level of 996,2 m, it is adjunct to the wide saddle of water division that divides Enisey and Amur districts of dump between Yablonoviy and Malkhanskiy ridge. Lake Arakhley has the area of 58,5 km^2, its maximum depth equals 19,5 m, it is the largest lake in Ivano-Arakhley system of Lena-Enisey water division. During high water periods the lake gives origin to brook Kholoy that runs down to lake Shashkinskoye.

In lakes Arakhley and Arey we discovered *Cladophora aegagropila* (L.) Rabenh [4; 13] that is synonymous to *A. linnaei*. It is known that is widely spread in lakes and rivers of moderate latitudes of Northern hemisphere. Aquarium analysis revealed that optimal parameters are pH 6–7, temperature 18–20 °C. Under water temperature above 22 °C *A. linnaei* begins to grow rapidly and in 2–3 months dissolves into separate parts that give birth to a new green ball in certain time.

Discovering *A. linnaei* in lakes Arakhley and Arey allows us not only to partially fill in disjunction in the range, but also determine ways of introducing the kind into the territory of Europe, Kazakhstan, and Japan. Formation of ice cap water bodies in Europe and Asia, differences in dump direction from over-Baikal ice cap water body requires additional research that will allow us to define place of *A. linnaei* emergence, period and ways of its settlement throughout the territories of Palearctic.

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THE EFFECT OF GRAZING ON THE VEGETATION COVER ON THE STEPPES IN TUVA (RUSSIA)

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Steppe area, occupying only 8% of the land, provide 80% of humanity grain cereals, meat and other livestock products. Today, 90% of the area of the steppes turned into agrocenoses and seminatural pasture, and preserved the virgin steppe are natural pasture land for grazing wild and domestic animals (Titlyanova et al., 2002).

The steppes of Central Asia belong to the steppes of Tuva, was the last person on Earth large steppe habitat, preserving steppe species and ecosystem diversity. These steppes supported human culture for thousands of years and during this period has undergone dramatic climate and social changes. In the past this area was little populated and low productivity of the herbaceous layer is quite security-shaft livestock products local people, leading a nomadic life. On native customs strictly regulate the nature of grazing – its timing, cycles, and duration. Due to the constantly recurring rest periods the state of steppe pastures was good. Currently, however, significant areas of the steppe are under heavy grazing pressure, which can lead to their degradation.

The purpose of the study – to reveal the character of changes of vegetation of the steppe pastures in the intermountain depressions in Tuva, depending from the stage of pasture digression.

The object of study – steppe vegetation grassland of pastures of the intermountain depressions of Tuva. Materials for investigation were collected during 1996–2016.

Study of the grazing influence to species composition of plant communities, the structure of phytocenoses, the productivity of the steppes and their dynamics under the influence of changing grazing regime relevant in theoretical terms in terms of biodiversity conservation, and in practical terms from the point of view of conservation of natural renewable resources.

The detection of patterns enables to determine the period of grazing of the steppes, to develop methods for the regulation of pasture load and activities to keep them in optimum condition, you will serve as the basis of strategy of management of the steppe ecosystems for their rational use, and the global strategy for plant conservation.

Materials and methods of research. The study was carried in geographical region of Central Asia – in the intermountain depressions of Tuva, that located in the southern part of Tuva on the boundary with Mongolia. In Tuva were investigated dry steppes with different grazing impact (Table).

Annual precipitation in Tuva steppes varies from 150 to 170 mm. The seasonal distribution of precipitation is rather constant: 70–80% of the annual total falls during the warm half of the year. The yearly mean temperature at Erzin is – 4,5 °C. The coldest month is January with a mean temperature of – 33 °C. July is the warmest month with 22.0 °C. The growing season, i.e. the period over which the daily mean temperature remains above + 10°, lasts 130–140 days and the period with temperature above 0 °C – 180–190 days. The potential evapotranspiration for the growing season is about four – five times higher that the annual precipitation due to the high wind speed and a lot of very hot days with t° above 30 °C. The steppes of Tuva belong to the ultracontinental grassland type.