Optimization of the pasture resource in boundary environments as a basis for regional nature management

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Introduction In spite of the globalization processes encompassing all spheres of human life and activity, land remains the main resource and provides the feeding source for population and the fodder base for livestock rearing. On the other hand, the activity of local communities can have important global consequences. The study area that includes Lake Baikal's western shore (East Siberia) and the lake's largest island exemplifies the traditional type of nature management, namely, grazing management which was originated by an indigenous population within the context of suitable natural climatic conditions. This investigation furnished an opportunity to make an assessment of the status of this sector and of the district's ecological situation, as well as to propose an optimal nature management scheme.

Materials and methods The work reported here was done using field investigations, documentary and archival materials from the local district administration, photographic and cartographic data of long-term ecological monitoring, as well as the data from case interviews with specialists and representatives of local residents. A method of comparing the above-mentioned materials was used to analyze the district's nature management process and to predict pasture management changes. Based on the traditional regional land use as well as on a careful study of the natural-climatic component, recommendations were formulated with regards to the scheme of eco-friendly nature management practices.
Contact zones of several types of landscapes make for sustainability of the territory's nature management by providing resources of different types. The study district combines steppe, forest and transitional communities (Ryabtsev, 2003). Geographical location determines the main, historically established, types of nature management, fishery, grazing animal husbandry, hunting and forest utilization. Thus the combination of these resources constitutes the district's ethos as discussed by Ragulina (2004). Not only did the nomads and cattle-breeders determine the culture and traditional types of economic relation but they were also responsible for the state of environment..

Results Investigations revealed that the years of human presence in the Prebaikalia have seen an intensification of the processes of steppe formation. However, the highest index of anthropogenic stress took place in the 20th century when in the 15,900 km^2 of the district, the number of livestock reaches 60,000 or more (Kuznetsov *et al*., 2003). The intervening time period has shown that the neglect of the natural climatic factor has led to regression of pastoral lands and to a disturbance of plant communities and soil cover integrity.

Conclusions The above-stated challenges, together with the economic crisis that emerged in the 1990s, have dictated the need to search for concepts of optimal nature management for the territory of Baikal's western shore area. The above-mentioned geographical, historical and ecological factors of influence on boundary landscapes should be taken into account when devising a relevant concept. A key objective of this study was to carry out a detailed calculation of the grazing capacity for this territory and, as the result of the investigation, withdrawing the particular pastoral areas from exploitation for 10-15 years. Such a time-span is required for the re-establishment of soil and vegetation cover under Southern Siberia conditions.

References

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