BOTANICHESKII ZHURNAL, 2021, Vol. 106, N 4, p. 324–335

MONITORING OF VEGETATION COVER CHANGE IN A DRAINED MESOTROPHIC HERB-SPHAGNUM MIRE IN SOUTHERN KARELIA

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The forest and mire research station Kindasovo of the Karelian Research Centre RAS is situated in the middle taiga subzone and is a base for long-term monitoring of mire vegetation. This paper reports the results of 36 years of research on the post-drainage change of the species composition and structure of the vegetation cover in the mesotrophic herb-Sphagnum mire "Blizkoye" (N 61°45'10.28", E 33°28'12.73"). First of all the transformation of a mire drained for forestry purposes involves changes in the hydrological conditions, which trigger vegetation cover successions. Drainage and the ensuing vegetation cover successions in the mesotrophic herb-Sphagnum mire have caused changes in the plant species composition. Comparisons of similarity coefficients for the first year after drainage and for subsequent years revealed a reduction in the flora similarity both within a 30 m drained row from 24% in 1998 to 10% in 2007, and in the middle of a wide row (from 65% in 1972 to 19% in 2007). Because of drainage, the 30-m row experienced not only a change in the vegetation cover, but also a decline in its biodiversity (from 20 species in 1972 to 13 in 2007), with only three of the species shared: *Comarum palustre*, *Galium palustre*, and *Naumburgia thyrsiflora*. In the middle of the wide row, the species diversity has increased over the 36 years from 17 to 22 species, and communities in 1-m^2 sample plots have retained mire-associated plant species as well as acquired forest-dwelling species. Six of the species are shared: *Comarum palustre*, *Galium palustre*, *Epilobium palustre*, *Menyanthes trifoliata*, *Naumburgia thyrsiflora*, and *Thyselium palustre*.

Poor drainage in the middle of the wide row between ditches causes mire communities to be transformed rather slowly. Changes in the species composition follow the same vector as near ditches, but at a far slower rate. The dominance of hygromesophilic and hygrophilic species lasts longer, but continuing exposure to drainage leads to a decrease in the percent cover of mesotrophic wetland forbs. The penetration of forest species started only in 1998, but their contribution to the ground cover was minor.

The drained mesotrophic herb-Sphagnum hummock-water track complex has been replaced by a birch-herbs community after 36 years.

Detrended correspondence analysis was applied to detect the ecological features of plant communities in the permanent 1-m^2 sample plots across the study period and their positions in the ecological space. Moisture was the principal ecological factor accounting for over 2/3 of the vegetation variation in 1-m^2 permanent sample plots, both in the middle of the wide row and in the 30-m row. Detrended analysis revealed four moisture periods, each with its characteristic vegetation cover. The vegetation cover was made up of subshrub-sedge-herb-moss communities of mesooligotrophic, hydrophilic wetland vascular plants and mosses in the first three years after drainage. During the drainage period of 1975 to 1982, the cover was joined by subshrub-forbs communities of mesotrophic, hygrophilic mire plant species. In the period from 1984 to 1997, there formed a tree-herb community which vegetation cover comprised mesotrophic, hygromesophilic mire species, while the 1-m^2 permanent sample plots were already dominated by birch-herb communities with mesotrophic, mesophilic forest-mire or predominantly forest species in the last ten years of our surveys. Changes in the vegetation cover prove that the mire has been experiencing a change in hydrological conditions over these 36 years, and this very factor has been the key determinant of the species diversity and composition of the plant communities in different drainage periods.

Keywords: post-meliorative dynamics, vegetation cover, herb-Sphagnum mire, ordination, Karelia

DOI: 10.31857/S0006813621040050

ACKNOWLEDGEMENTS

The author are grateful to the staff of the Laboratory of Mire Ecosystems, Institute of Biology KarRC RAS Dr. O.L. Kuznetsov and researcher S.R. Znamenskiy for advice and recommendations on writing the article, researcher M.A. Boychuk for identification of mosses, Chief Biologist T.I. Brazovskaya for graphics works, Chief Biologists N.V. Stoikina, E.L. Talbonen and researcher from the For-

est Research Institute KarRC RAS V.A. Ananyev for help with fieldwork.

The study was carried out under state assignment of the Institute of Biology KarRC RAS № AAAA-A19-119062590056-0.

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