

CHANGES OF ORNITHOCENOSES IN FORESTS DISTURBED BY FIRES, BARK BEETLES AND SALVAGE LOGGING

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Abstract. *Background.* The spatial and temporal dynamics of ornithocenoses is associated with a complex of natural and anthropogenic factors, named ecological gradients (terms introduced by R. H. Whittaker). The biodiversity of forest ornithocenoses is formed by disturbances and successions. Natural disturbances in managed forests are economically impractical, but important as factors for the protection of biodiversity and diversity of forest ornithocenoses. Standards for the protection of forest biodiversity are not clearly formulated, and ecological gradients important for birds are erased due to theoretically unfounded methods of forestry often using salvage logging. *The research goal* of the study is to compare the contribution of salvage logging and its preceding natural disturbances to the initiation and course of successions of forest ornithocenoses. *Materials and methods.* The key types of managed secondary hemiboreal Eastern European forests (scots pine and mixed forests) were studied. Birds were counted using the method of mapping nesting territories on model sites. Sites that represent successional shifts after typical natural disturbances (fires, bark beetles) and after rescue logging were selected. The method of nonmetric multidimensional scaling (nMDS) was used to identify succession gradients. *Results.* The patterns of pyrogenic and biogenic successions of ornithocenoses were tracked. Successional changes of bird communities after salvage logging are truncated and slowed down in comparison with natural destructive-demutation processes. The relationships of the avian diversity with the mosaic structure, vertical heterogeneity and the area of disturbance are revealed. The long-term devastating impacts of regular fires, salvage logging, and commercial felling disguised salvage logging on forest bird communities are found. *Conclusions.* Salvage logging in disturbed forests is an additional factor that reduces the diversity of ornithocenoses at all levels and slows down the succession processes. The forests ornithocenoses, naturally recovering after bark beetle invasions or forest fires, possess highly dynamic, unique and diverse character. Preserved natural structure of these forests differs them from salvage logging, populated predominantly by pioneer bird species.

Keywords: hemiboreal ornithocenoses, biodiversity, succession, disturbances, salvage logging, fires, bark beetle

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