

VEGETATION RESPONSE TO DRAINAGE AND FIRE IN SAKLAURA MIRE FROM ZIEMEĻU MIRES NATURE RESERVE

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Fire impact on peatlands has been studied often, as the mire burning is common globally and affects many processes, including vegetation structure and composition, activity of peat-forming *Sphagnum* mosses (Noble et al., 2019), hydrological conditions like water table depth and periodicity (Lukenbach et al., 2017), water repellency of peat, carbon storage amounts (Moore et al., 2017) etc. Vegetation succession in Latvia in post-burned peatlands was surveyed before, e.g. in Bažu Mire (Čičendajeva, 2006) or Ķemeru Mire (Kuciņa, 2003; Čerļenoka, 2014). Still the post-fire trends of species response, survival and recovery in relation to mire drainage are analysed insufficiently.

Saklaura or Oļļa Mire with 2949 ha is the largest of seven raised bogs in Ziemeļu Mires Nature Reserve (Latvijas Universitāte, 2018a). Together with the mires of Nigula Nature Reserve in Estonia, it forms the Transborder Area “North Livonia”. Three fires have been registered in the area during the last 45 years: in 1978 (burned area 2 ha), in 1992 (burned area 100 ha) and in 2018 (burned area 240 ha) (LU ĢZZF, 2020). Additional negative effect to vegetation composition in mire is drainage that was established here in different parts since 1855 (Stašulāne (ed.), 2008). Some of the main ditches were blocked in autumn of 2018 to restore degraded raised bog habitats and protect rare species (Latvijas Universitāte, 2018b).

Vegetation was monitored in four different burn-age categories at Saklaura Mire. Species composition in tree, shrub, dwarf shrub, herb, moss and lichen layer was investigated in 120 plots to find changes over time, and associate them with different burn-age category and drainage impact.

Although the species richness was not very high, 39 species in total, vegetation composition significantly differed among studied burn-age categories. The post-fire succession followed strong trend from the recent burning to almost recovered situation in past burned area. Plots that were affected earlier both by fire and drainage had the largest cover of trees and shrubs, and also of lichens. The total species richness was relatively high in these plots due to occurrence of mixed vegetation – characteristic to active mires (e.g. *Drosera rotundifolia*, *Polytrichum strictum*) or drained peatlands where species composition is more similar to bog woodland (like *Calluna vulgaris*, *Vaccinium vitis-idaea*, *Pleurozium schreberi*). Plots of the

most recently burned category had more bare peat and lowest species diversity, mostly dominated by *Sphagnum* species that were the only fire survivors in moist depressions. Control plots had the highest total bryophyte species cover and cover of *Sphagnum*. Gramionoids were poorly represented and showed no strong relation to any of monitored plot types. Obtained results of given study might help to understand consequences of peatland burning as a potential for carbon storage balance which is strongly related to vegetation composition and species recovery properties after severe impacts.

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