

## CHANGES IN THE FLORA COMPOSITION OF PLANT COMMUNITIES IN THE SOUTHERN ARKHANGELSK REGION IN THE 20<sup>th</sup> CENTURY

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Based on the analysis of floristic data for different periods of time, this work studies the species composition changes in plant communities of the middle taiga in the south of the Arkhangelsk Region. In accordance with the “Flora of the Northern Territory” by I.A. Perfiliev (1934-1936), we compiled a taxonomic list of higher vascular plants of the Ustyansky District, Arkhangelsk Region that were growing there in the early XX century, and then corrected it in accordance with modern taxonomic nomenclature. We also carried out a comparative analysis of the early XX century list and the modern one, compiled for the same territory, and found differences in their taxonomic, ecological, coenotic and geographical compositions, as well as in the groups of species that changed their presence/absence status. The taxonomic changes turned out to be a decrease in the list by 140 species of vascular plants from 95 genera and 41 families, while 69 species from 57 genera and 31 families were registered in the territory for the first time. Although the taxonomic spectra for both periods are generally similar, the study has revealed that Brassicaceae and Fabaceae taxa increased, but Cyperaceae, Ranunculaceae and Orchidaceae decreased. We calculated coefficients of floristic similarity, Spearman and Kendall coefficients of correlation, and the generic coefficient. According to Jaccard similarity coefficient, the correlation coefficients showed a weak relation, while the floristic lists were highly similar, but the generic coefficient has decreased. It may indicate that flora identity and biological diversity decline due to the environmental changes.

An analysis of the ecological and coenotic composition of vascular plants for both studied periods showed an increase of species of disturbed habitats and a decrease of those that were close to indigenous communities, such as nemoral, boreal and wetland.

Climate changes, in particular, the increase of average annual temperature and the sums of active temperatures over the studied period, affected the change in the floristic composition of plant communities. The number of cold-resistant species of a hypoarctic-boreal range decreased, while some heat-loving broad-leaved-forest-steppe and plurizonal species appeared. According to the distribution of the species numbers along the Landolt ecological scales, the number of species with a high need for warmth increased, as well as the number of mesoxerophytes. The proportion of alien species also increased, most of which coming from southerly regions: *Galega orientalis* Lam., *Lupinus polyphyllus* Lindl., *Heracleum sosnowskyi* Manden.

**Keywords:** floristic composition, plant communities, middle taiga, ecological and coenotic elements, ranges, alien species.

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