THE VEGETATION HISTORY OF THE WHITE SEA ISLANDS (PORYA BAY, NORTH RUSSIA)

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The vegetation history of the White Sea islands is an example of a large-scale primary succession. The islands are located on the Baltic Shield, which is experiencing isostatic uplift over the last 10-12 thousand years. The rate of the uplift in the Porya Bay area varied during the Holocene according to the lake sediment studies. Currently, it is about 1 mm/year. There are some paleoecological and paleoclimatic reconstructions for the continental part of Kola Peninsula; for islands such work has not yet been carried out. We selected 45 modern soil samples and 300 samples from peat cuts for palynological and radiocarbon analysis. 13 radiocarbon dates suggest that the onset of peat accumulation in the largest islands began around 4000 BP. The analysis of surface samples showed that the number of plant communities differ significantly by pollen spectra; the main factors that determine the uniqueness of pollen spectra are the openness and the moisture regime. Comparison of the fossil and modern pollen spectra allowed us to reconstruct the history of the local vegetation of the largest island (Bear Island) over the past 4000-5000 years. Two possible successional series were reconstructed. On the open rocky terrace the vegetation developed by "sea type": coastal meadow - open herbal swamp - open sedge swamp – dry dwarf shrubs with dominance of Empetrum - fire - postfire vegetation recovery through the community with the dominance of heather (Calluna) - local waterlogging - sedge-cotton grass-sphagnum bog, surrounded by sparse forest. In the inner part of the island the following stages were revealed ("coastal" type): the edge of sea bay – salt march - end of the connection with the sea and turning into the inner sedge swamp, surrounded by spruce forest - sedge-moss bog, overgrown by spruce and pine. Pollen analysis revealed also two periods of local anthropogenic activity on the Bear Island. One is related to the activities of the first Russian silver mine in the 17th century. The second, more ancient, is probably related to the activities of the early Slavs or Vikings.

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