

Ecological monitoring on the low shores of Estonian islands

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The ecosystems of the Estonian contemporary coasts are young and rapidly changing. Development of the soil - vegetation complexes in the coastal ecosystems is strongly influenced by coastal geological processes, mechanical action (floods, surge, ice) and chemical composition of the seawater and, locally, by sea birds. To evaluate the alteration processes and to predict the tendencies of development of the ecosystems, ecological monitoring of the temporal and spatial changes is required. It includes large-scale mapping of the permanent study areas, recurrent study of the landscape complex profiles, repeated detailed sketching and describing of vegetation on the sample plots and simultaneous study of the other components of geocomplexes, such as soils, ground and soil water etc.

On low shores of the West-Estonian islands two permanent study areas have been established. One of them is situated on a small island of Vesiloo near the western coast of the Saaremaa island. The shore there is formed under the effect of prevailing wave processes and carries an open coastal plant community. The other area is situated on the Saarnaki island near the south-eastern coast of the Hiiumaa island. This is a flat and gently sloping area of the prograding shoreline, where wave action is negligible even during strong surges. It carries an established coastal meadow with individual microbelts. The area on the Vesiloo island has been studied by the method of permanent plots. In 1981, the coastal strip of ca 25x200 m was mapped (1:500), its vegetation and soils described in detail on four sample squares (1x1 m). The area has been thoroughly revised in 1986 and 1991. The recorded changes in soil - vegetation complexes have been caused mainly by the mechanical destructive action during the strong winter storms and on-carrying of the sediments. The area on the Saarnaki island has been studied by the method of complex profile. The length of the profile line is 150 m inshore. In the selected points of the line (in different microbelts) vegetation has been described and chemical composition of the soils studied. Within three years the samples of subsurface water and soil were taken four times during vegetation period for studying the dynamics of the elements of marine origin.