



Aeolian Coastal Landscapes in changes (a study from Tahkuna, Estonia)

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The openness of the coast to the winds and storm waves has an important part in changing aeolian coastal landscapes as well as anthropogenic factor. The aeolian coastal landscapes are probably the most dynamic areas. Occurrence of aeolian coastal landscapes in Estonia is limited. They consist of sandy beaches, sandy beach ridges and dunes. The coastal ecosystems are strongly affected by their topography, based on the character of deposits and moisture conditions. The majority of their ecosystems are quite close to the specific natural habitat. These ecosystems are represented in the list of the European Union Habitats (Natura 2000). In recent decades human influence has changed the landscape over time in different activities (recreation, trampling, off-road driving) and their intensities, which has led to destruction or degradation of various habitats. Previously coastal landscapes were used for forestry and pasture. Nowadays one of the most serious threats to open landscape is afforestation.

This study examines the relationships between landscape components during last decades. Trying to find out how much aeolian coastal landscapes are influenced by natural processes or human activities. The results are based on cartographic analysis, fieldwork data. The method of landscape complex profile was used. The profiles show a cross-sections of landforms and interrelationships between landscape components, most frequently describing the relations between soils and vegetation. In each sample point the mechanical composition of sediments, vegetation cover and soil is determined.

Results show that changes in landscapes are induced by their own development as well as changes in environmental factors and human activities. Larger changes are due to increase of coastal processes activity. These processes can be observed in sandy beaches, which are easily transformed by waves. Higher sea levels during storm surges are reaching older beach formation, causing erosion and creating berms. Erosion can cause loss of some habitats. Changes of landforms can also be due to human activities (construction of roads, buildings, harbours), which affect sediment transportation along the coast. Changes in habitats are caused by their own development and also invasion of non-indigenous species.

Aeolian coastal landscapes are unique, but easily altered ecosystems in Estonia. Therefore it is essential to improve the strategies for preserving these valuable areas. Aeolian coastal landscapes require greater attention and more complex scientific studies that contribute to the maintaining of natural values.