



## **Development of coastal accretion forms in the Eastern Gulf of Finland coastal zone as a peculiarity of its evolution in Holocene**

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Series of coastal Holocene accretion bodies located in the Eastern Gulf of Finland coastal zone are represented by coastal bars, sand spits, dunes and can be divided on three groups: modern formations (Repino village, Lautaranta cape), complex of relict but still developing accretion bodies (Ermilovskii bay, Bolshaya Izhora village, Chernaya Lakhta village) and palaeo- spits and bars (Narva Luga Klint Bay, Sestroretsk lowland, Vysokinskoe lake, Lgovskaya spit). Most of the relict and palaeo elements were formed due to involving in sediment transport products of erosion of fluvioglacial deposit bodies. Sufficiency of the sediment material led to generation of several massive accumulative bodies (up to 10 bars and spits in systems, bodies parameters: length up to 6 km, width up to 2.5 km, relative elevation up to 5 m). Growth directions of relict and palaeo bodies fit with modern conception of sediment transport processes that can be explained by similarity of driving forces of litho- and morphodynamic processes in the coastal zone of post-glacial water basins since early Holocene. Investigations revealed that after formation of accumulative spits and bars and due to changes of sea levels during the Baltic Sea evolution in Holocene and coastal uplift and preservation of huge fluvioglacial and glaciolacustrine deposits a sediment budget was declined as well as size parameters of accumulative bodies. All three groups of coastal accretion forms are distinguished by grain size characteristics of sediment material: recent bars of the Narva bay consist of fine grain sand (So 0.80-1.38, 7.53-8.25), nearshore zone of Ermilovskii bay (source of material is a fluvioglacial body) is composed of sand of varied grain sizes (So 3.70-4.60, 2.27-4.03). The modern spits have significantly smaller morphological parameters (bodies parameters: length up to 300 m, width up to 3-5 m, relative elevation up to 2 m), other sources of material – erosion of underwater slope and terraces. Orientation of spits coincides with general exposition of modern coastal line and main direction of waves and sediment transport. Evolution of the Eastern Gulf of Finland coastal zone takes place under condition of deficiency of sediments, high rate of coastal erosion and limited areas of accumulation in the coastal zone.

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