

Sea level rise following deglaciation and recent and gradual subsidence associated with foreland bulge migration has exposed these islands to marine influence. A historical airphoto survey established long term erosion rates of > 0.46 m/yr. A suite of marine physical parameters (bathymetry, fetch, swell) were studied to constrain energy transfer processes. Site investigation involved documenting the sedimentology and stratigraphy of eroding surfaces as well as the hydrological conditions (water table elevation, permeability) that might contribute to headland instability.

The palimpsest stratigraphy coupled with variable till lithology and permeability contribute to the development of a complex suite of conditions (glide planes, loading) that contribute to failure of exposed surfaces. Exposures of heterogeneous lodgement till that are overlain by coarse grained, permeable ablation till are particularly prone to mass wasting. Rotational and translational failure occurs in response to oversteepening and loading associated with an elevated water table. If the exposed basal till is underconsolidated, erosion is expedited. This research demonstrates that an assessment of vulnerability to external (marine) conditions coupled with an understanding of the mass wasting processes active at each site is required to develop effective erosion management strategies for these islands.

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### **Influence of hydrostratigraphy on erosion of drumlin islands in Mahone Bay, Nova Scotia**

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The processes that influence the erosion of drowned drumlins in coastal Atlantic Canada are not particularly well understood. Consequently, management strategies and engineering practices focussed on limiting erosion have had limited success and in some cases have resulted in shoreline modifications that have significant ecological and social impacts. This study focuses on determining the relative importance of the hydrostratigraphic, geomorphological and physical parameters that contribute to headward erosion of seven drowned drumlin islands in Mahone Bay, southwestern Nova Scotia.

The islands studied are palimpsest drumlins formed during Wisconsinan ice advance from 30 ky to 17 ky BP.