
Holocene stratigraphy and micropaleontology of an urban lake, Dartmouth Nova Scotia

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Lake Banook in central Dartmouth, Nova Scotia, has been one of the major waterways for local transportation in the past, as Halifax and Dartmouth developed; however, little work has been done on the geological history of this body of water. Here, reflection seismic, multibeam bathymetry, and sediment cores have been used to investigate the late glacial and Holocene history of the lake. Interpretations of high-resolution seismic data (10 kHz profiler) and six short sediment cores (maximum 1.2 m) are presented together with preliminary data on thecamoebian assemblages. Six seismic facies have been defined in the 12 m thick sediment column, interpreted from the base up as glacial till, two glaciolacustrine units, mass failures, and two Holocene units. Lowstands are identified from unconformities, and the cores are correlated using the seismic interpretations. The cores sampled the upper glaciolacustrine unit and both of the Holocene units, generally across the unconformity. The glaciolacustrine (varve-like) unit is locally unconformably overlain by a reddish-brown, poorly stratified sandy diamict, overlain in turn by a series of dark brown post-glacial muds. Thecamoebians, freshwater protozoan microfossils, provide the opportunity to develop a viable paleoenvironmental interpretation since they can be indicators of former eutrophication, water depth, terrigenous influence, and brackish water influence, all of which could have occurred since the end of the last glaciation.