Correlation and development of the Pineo Ridge–Sheldon Point Moraine Complex, northern Bay of Fundy, New Brunswick, Canada

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In 2006 the Geological Survey of Canada at the Bedford Institute of Oceanography in conjunction with the Canadian Hydrographic Service and the Ocean Mapping Group at the University of New Brunswick commenced a three-year program to map the Bay of Fundy. A total of 427 sub-bottom lines representing over 6 500 km of seismic track lines, were examined. This data and recorded depth, multibeam bathymetry and backscatter, enabled the authors to delineate the character and thickness of stratigraphy and landforms for the northern Bay of Fundy sea bottom between Eastport, Maine and Saint John, New Brunswick.

Several landforms were clearly identified including, drumlins, flutes, end moraine, eskers, deltas, slump deposits, glacifluvial valleys, and outwash channels. Holocene material was delineated as marine sediments overlying a pervasive unconformity at depths up to 89 m. The Holocene sediments demonstrate scouring from grounded icebergs and pockmarks due to escaping gas, the latter attributed mostly to decay of organic matter buried by post-glacial sediments.

From these data we correlate the Pineo Ridge moraine of eastern Maine and the Campobello Island kame moraine, with the Sheldon Point moraine, located 70 km east-northeastward at Saint John. The Pineo-Sheldon moraine complex represents an ice terminal position that was buttressed midway across the Bay of Fundy by The Wolves islands. These associations are correlative with a moraine ridge that extends along the sea bottom approximately 10 km westward from Maces Bay and eastward along the coast to Sheldon Point. Sections of the moraine ridge are missing in deeper water surrounding The Wolves. It is likely that in areas of concentrated water flow, outwash from glacier melting removed sections of the Pineo-Sheldon end moraine, facilitating glacier retreat to a more stable grounded position where it constructed the St. George moraine and Pennfield–Pocologan delta complexes. The Sheldon Point moraine has been radiocarbon dated as 13 400 yBP with a calibrated date estimated to exceed 15 000 CalBP.

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