

***Quaternary mapping and stratigraphic studies in northern mainland
Nova Scotia***

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In the Carboniferous-Triassic lowland terrane of Nova Scotia south of the Minas Basin, two and sometimes three tills are found in superposition. The basal till unit (East Milford Till) is generally 2 to 10 m in thickness and contains basaltic and granitic erratics derived from the North Mountain and Cobequid Highlands to the north and northwest. Striated rock underneath this till records a southeastward flow and the till fabric is aligned with the striation trend. Overlying the East Milford Till are the Hants, Bennett Bay and Rawdon Tills. The Hants Till has an upper and lower unit; unit I has a high percentage of basaltic erratics succeeded by unit II in which local clasts and granitic and granodioritic erratics transported from the south become abundant. These data suggest that the Hants Till was formed during a period of changing ice divides from

ice flowing directly south, to ice flowing north and northeast from mainland Nova Scotia. The Bennett Bay Till was formed by the northward ice flow across the North Mountain cuesta into the Bay of Fundy. It is correlative with unit II of the Hants Till. Westward trending striations, fluting, and eskers attest to a late westward flow of ice into the Minas Basin from a centre east of Truro. The Rawdon Till was formed during this flow and it overlies the Hants Till along the Minas Basin.

The Cobequid Highlands are mantled by thin, autochthonous tills. In the western part bedrock is generally weathered, showing few signs of glacier erosion. The eastern half, however, is extensively scoured. Two predominant directions of flow have been mapped, southward and north-northeastward. The northeastward flow has been

traced from the lowlands south of the Highlands onto the lowlands north of the Cobequids.

The reference section for the northern lowlands is a 25m bluff near Joggins. Three till units are exposed; the lowest till (McCarron Brook Till) is characterized by reddish hues, New Brunswick-derived clasts and an east-southeast striking fabric, which is concordant to underlying bedrock striations. The immediately overlying Joggins Till has a greyish cast, and is dominated by local lithologies, including coal and limestone whose sources are to the north and northeast. The Joggins Till exhibits a strong southwest-striking fabric aligned with the main southwest striation trend in this area. The Shulie Lake Till, at the

top of the sequence, is yellowish in colour and has a high percentage of local grey sandstone clasts. The Shulie Lake Till has been traced to its apparent limit south of the Cobequid Highlands.

The east-southeast ice movement that formed the East Milford and McCarron Brook Tills affected all of northern mainland Nova Scotia. This ice flow has not been dated directly, but tills formed during this event overlie nonglacial beds dated at >50,000 years B.P. The subsequent till-forming events are believed to encompass Middle to Late Wisconsinan time. Marine deposits, that overlie the Bennett Bay and Shulie Lake Tills relate to an extensive phase of marine submergence dated elsewhere at 14,000 years B.P.