

indicating that the overlying till was formed during the subsequent Younger Dryas cold period. Till fabric measurements in the discovery trench and at a second section nearby suggest that the Younger Dryas till was deposited by a northwest, flowing glacier. The results of till geochemistry investigations carried out in 2004 suggest that these sites lie within but near the northern limits of an area characterized by northward to northwestward glacial dispersal.

To the southwest, in the Napadogan Brook area, till of eastern provenance has been tentatively attributed to westward ice flow during the Younger Dryas. To the southeast, the till in the area to the northwest of Grand Lake commonly exhibits chaotic intermixing of material of two differing shades. This suggests that an older till, probably of Late Wisconsinan age, was remobilized by a later till but not completely intermixed. A till fabric measurement at a site in this area revealed a generally diffuse fabric with a small peak suggesting ice-flow toward the northwest. At a second till site, near the western shore of Grand Lake, westward ice flow is suggested by the presence of an angular clast of maroon rhyolite, probably derived from the Cumberland Hill Formation to the east.

The current interpretation is that the Gaspereau Ice Centre was active during the Younger Dryas, rather than during the main Late Wisconsinan glaciation. Its exact extent during the Younger Dryas is unknown, however, as no ice-marginal features have yet been identified. It may have been contiguous with a proposed late-stage ice cap over the Caledonian Highlands of southeastern New Brunswick. To the west and southwest, geological and palynological data restricts it to the area to the east of the Nashwaak River. It almost certainly occupied the Grand Lake basin, blocking southward drainage in the Saint John River valley and thereby creating Glacial Lake Acadia in the central part of this valley.

The Gaspereau Ice Centre and the Younger Dryas glaciation of central New Brunswick

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The Gaspereau Ice Centre, centred over the western part of the New Brunswick Lowlands, was originally defined as one of several local ice centres that interacted during the earlier part of the Late Wisconsinan glaciation of New Brunswick. Subsequent investigations have suggested that the main Late Wisconsinan glaciation of New Brunswick was effected by a single migrating ice centre or ice divide of regional extent, rather than by multiple independent ice centres. However, the results of recent till geochemistry investigations in the western part of the New Brunswick Lowlands and adjacent parts of the Miramichi Highlands, to the northwest, suggest that the Gaspereau Ice Centre was active in this area during the Younger Dryas.

In 1986, a Geological Survey of Canada trenching program uncovered organic materials beneath 2+ m of surface till at a site near Todd Mountain, in the southern Miramichi Highlands in central New Brunswick. ^{14}C dating of the organic material revealed that it was formed during the warm Allerød oscillation,