Glacial dispersal in west-central New Brunswick

Allen A. Seaman
New Brunswick Department of Natural Resources and Energy, Geological Surveys Branch, P.O. Box 6000, Fredericton, New Brunswick E3B 5H1, Canada

The glacial erosion record for west-central New Brunswick reveals a complex sequence of erosional events with trends ranging from east-northeastward clockwise through to southwestward. Cross-cutting relationships suggest an early east-southeast ice flow, followed by flows gradually shifting clockwise through to southwestward and then counter-clockwise through to east-northeastward.

In contrast, evidence collected during regional till sampling (2-km grid) reveals a comparatively simple glacial dispersal pattern. Early dispersal toward the east-southeast is indicated by scattered small areas of reddish-coloured basal till, and pebbles of this till encountered as clasts in the regional yellowish-brown till, in the area to the east-southeast of the red clastic sedimentary rocks of the Carboniferous Carlisle Formation. However, seven lines of evidence indicate that the dominant glacial dispersal direction in the area was toward the south-southeast. These are: 1) a 23 km long dispersal train of detectable gold (2 ppb or greater) extending from the Poplar Mountain deposit; 2) a dispersal train of mafic to intermediate volcanic clasts extending 20 km from the Oak Mountain volcanic complex; 3) a fossiliferous limestone boulder from the Scott Siding area found 33 km to the south-southeast; 4) a dispersal train of reddish-coloured till (7.5 YR or redder) extending 27 km from the southern margin of the Carlisle Formation; 5) an antimony and arsenic dispersal train lying within the above reddish till dispersal train, and extending at least 13 km from an unknown source; 6) discontinuous dispersal trains of anomalous antimony and arsenic extending up to 15 km from known occurrences in the Gravel Hill – Howland Ridge – Taffy Lake area; and 7) a

dispersal train of anomalous antimony extending at least 7 km from the Lake George mine.

The ice flow responsible for the glacial dispersal and till deposition is deduced to have occurred early in the sequence of glacial erosion events. A flow event sufficiently powerful to entrain and transport material over several tens of kilometres would be expected to erode most pre-existing glacial erosion marks. The preservation of up to a dozen sets of striae on a single bedrock surface indicates that actual bedrock erosion was minimal throughout much of the area subsequent to the early southeast to east-southeast ice flow events. It is suggested that the later flow events shifted the previously deposited till only enough to generate new erosion marks, but not enough to obliterate most earlier erosion marks, or to significantly alter the glacial dispersal trend.