Heavy mineral dispersal in till: Todd Mountain, New Brunswick

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Drift prospecting surveys in New Brunswick have previously experienced limited success in recognition of dispersal plumes defined by geochemical or mineralogical analyses of tills. A study was undertaken in the Todd Mountain area of central New Brunswick to define possible constraints on glacier dispersal and related prospecting activities. Dispersal patterns for specific heavy minerals in the silt-fine sand size-fraction of till was investigated over a 12 km x 25 km area. Sixty-three sub-samples were obtained from samples previously collected by a Geological Survey of Canada investiga-

tion of regional till geochemistry and considered to represent basal till deposited during the late Wisconsinan. Twelve mineralogies, confirmed by SEM, were selected for study on the basis of local geology and ease of recognition.

Results indicate that in this area of New Brunswick, eastward-trending dispersal plumes can be distinguished only over short distances (<5 km) for rare minerals that are highly characteristic of a specific source (e.g., coticules or zircon grains). When sampled at intervals of 100 m the mineral dispersal patterns more clearly identify nature and orientation of underlying bedrock. Correlations between mineral content and geochemistry are poor and mineralogical relationships are confused. Poor correlations among heavy minerals may be due to glacier mixing of variable source materials which can confuse genetic relationships and obscure correlations, and/or because samples were not uniformly collected from basal till. Some poor chemical correlations may also be due to weathering and hydromorphic dispersal. In this area, prospecting programs utilizing the fine-grained basal till fraction require close sample-spacing and accurate identification of till facies.