
**Physical evidence of a late-glacial (Younger Dryas?)
impact event in southwestern Nova Scotia**

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An oval structure in southwestern Nova Scotia measuring 350 × 420 m has been identified as a possible Late-Glacial age impact crater. Evidence for an impact origin is based on integrated analysis of geomorphic, magnetic, petrographic, ground penetrating radar and stratigraphic data. A magnetic survey of the site indicates that the regional linear magnetic pattern in granitic rock is interrupted and distorted within the raised crystalline crater rim, due either to shock remagnetization or reorientation of broken blocks. Probable shock-metamorphic features in rim rocks, not present in unaltered rocks outside the structure, include common single and multiple sets of closely spaced (~4–15 µm) planar microstructures in quartz and feldspar, kink-banded feldspar and biotite, reduced mineral birefringence, rare diaplectic feldspar and rare melt veinlets with flow textures. Fresh grain comminution, grain mosaicism and other lattice distortion features are pervasive.

Ground penetrating radar shows that the crater has a depressed inner floor that is sharply ringed by a 10-m-high buried scarp. Heterogeneous material under the floor, interpreted as ejecta fallback or slumpback deposits, is overlain by stratified and faulted lacustrine sediment. A Late-Glacial age is inferred through similarities in sedimentation rates to nearby bogs with well-constrained ages and the lack of any evidence of ice-sheet reworking and associated glacial deposits. Strata within the structure appear to be wedge-shaped, indicating post-glacial differential subsidence and compaction. In addition to the main crater, a cluster of arcuate, rimmed scarps 1 km north of the structure may record additional smaller impact sites, suggesting the impactor fragmented upon entry into the atmosphere producing a crater field. The oval shape of the main crater may also indicate an oblique impact or impact doublet. Continuing research focuses on identifying ejecta material in lake sediments from southwestern Nova Scotia in order to elucidate any potential link to Late-Glacial environmental change.