

# Preliminary Results from an Ongoing Study of Acritarchs in Cambrian and Lower Ordovician Rocks of Nova Scotia and New Brunswick<sup>1</sup>

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Acritarchs have been used as biostratigraphic tools in the study of Cambrian and Ordovician successions in Newfoundland, but in contrast have been largely neglected in the study of rocks in this time span in Maritime Canada. Hence, we have initiated an ongoing collaborative study of acritarchs in classic Avalonian Cambrian and Lower Ordovician sequences in Nova Scotia and New Brunswick, as well as in age-equivalent units in the Meguma terrane. Most of the more than 200 samples collected from these areas have yielded acritarchs, and preliminary results indicate that these microfossils have potential to make significant contributions to stratigraphic comparisons and regional and global correlations.

Particularly well-preserved material was obtained from the upper part of the MacLean Brook Formation (early Late Cambrian) in the Mira River area of southeastern Cape Breton Island, including new species of *Stelliferidium* and the first record in Maritime Canada of the age-diagnostic *Pireia orbicularis*. These finds suggest that any stratigraphic gap between the MacLean Brook Formation and the overlying MacNeil Formation is smaller than previously interpreted. In the same area, the type section of the MacCodrum Formation (Early Cambrian) yielded a low-diversity acritarch assemblage typical for the basal Cambrian *Asteridium tornatum-Comasphaeridium velvetum* Acritarch Zone in Poland and elsewhere. In New Brunswick, the classic Lower to Middle Cambrian Hanford Brook section yielded acritarchs throughout the sequence. The upper half of the Ratcliffe Brook Formation (Early Cambrian) contains *Archaeodiscina umbonulata* and abundant *Skiagia ornata*, *S. orbiculare*, and *S. scottica*. This assemblage of acritarchs has a first appearance close in time to the rise of trilobites, conflicting with the established view that all of the Ratcliffe Brook Formation is pre-trilobitic. The upper part of the Hanford Brook Formation (late Early Cambrian) yielded well-preserved material of *Comasphaeridium silesiense*, *Heliosphaeridium notatum*, *Eliasum llaniscum*, and *Liepania plana*, taxa with a first appearance close to the base of the Middle Cambrian. Further studies of the Hanford Brook section promise to help constrain the age and regional correlation of the *Protolenus elegans* Trilobite Zone, which at present are problematic.

In the Meguma terrane of southern Nova Scotia, acritarchs have been recovered from various levels of the Halifax Group in sections at Bear River and Black River. Preliminary identifications include several species of *Acanthodiacrodium*, *Veryhachium*, and probable *Stelliferidium trifidum*, consistent with the Tremadocian age for this unit inferred from the sparse graptolite record, but the study of acritarchs offers the possibility for better constraints on the age of the upper part of the Halifax Group.

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<sup>1</sup>In Atlantic Geoscience Society 35th Colloquium and Annual General Meeting, Program and Abstracts, February 6-7, 2009, Moncton, New Brunswick, p. 25.

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