

Stratigraphic constraints on Cambrian stratigraphy, Mira and Bras d'Or terranes, Cape Breton Island, Nova Scotia, Canada

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Cambrian sedimentary rocks of Cape Breton Island, Nova Scotia, contain generally well preserved acritarchs recovered from the majority of the sampled levels. The data provide considerable additional age constraints to the largely siliciclastic successions from which earlier age constraints are sparse. Because the majority of acritarchs likely were cysts of planktic organisms they do not provide new insights into ongoing arguments on the paleogeographical configuration (and number) of terranes present within the Cape Breton Island. On the other hand, the recovery here of characteristic acritarchs that are also found in Baltica, and other regions enables fossil-based correlation for much of the succession, and a better control of the age correlation between different parts of Cape Breton Island. In fact, Cape Breton Island provides an exceptionally complete succession of Cambrian acritarch zones.

In the Avalonian Mira terrane, a low diversity assemblage with leiosphaerids, *Granomarginata*, and small ornamented acritarchs (*Asteridium*) have been recovered from the MacCodrum Formation north of Mira River. Although not age-diagnostic, this association and the absence of taxa indicating a younger age are consistent with an early Early Cambrian age. A late, but not latest, Early Cambrian association including *Globosphaeridium cerinum* and *Skiagia ornata* was recovered from the Canoe Brook Formation west of the Mira River. East of Mira River acritarchs are found in the Trout Brook Formation and are particularly well-preserved and diverse in the MacLean Brook and MacNeil Formations, including various species of *Cristallinium*, *Stelliferidium*, *Timofeevia*, and *Vulcanisphaera*. Our samples cast doubt on the existence of an Ordovician unit (McAdams Brook Formation) in the Coxheath Hills, which was erected based on an earlier report of Ordovician acritarchs. The recovered acritarchs rather suggest that these strata belong to the MacMullin Formation as was originally suggested.

In the Indian Brook area (part of the Ganderian Bras d'Or terrane) acritarchs were recovered from the Middle Cambrian Eskasoni, Dugald, and MacMullin formations in the south, and from the otherwise fossil-poor MacMullin Formation in the north. Our results support earlier evidence that the MacMullin Formation is largely contemporaneous with the MacLean Brook Formation, but indicate that the Dugald-MacMullin Formation transition is somewhat younger than previously interpreted, and potentially contains a hiatus.