

***Cruziana* stratigraphy of the ?Cambro-Ordovician Bell Island and Wabana Groups, Conception Bay, eastern Newfoundland**

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Unfossiliferous or poorly fossiliferous sedimentary sequences can potentially be dated and correlated by detailed examination of contained trace fossils. Such an approach has been widely applied to many such sequences in England, Wales, southwest Europe and the Mediterranean region, particularly those of Cambro-Ordovician age. In particular, these sequences have been dated by perhaps the most useful of all trace fossils in stratigraphy, trilobite-produced species of *Rusophycus* and *Cruziana*. To date, however, the ichnostratigraphic paradigm developed in Europe has not been successfully applied to any coeval succession in North America.

On Bell Island, Conception Bay, eastern Newfoundland, the ?Cambro-Ordovician sequence (Bell Island and Wabana Groups) of shallow subtidal siliclastics, contains a diverse, abundant and well-preserved trace fossil assemblage. Amongst

this assemblage are spectacularly-preserved trilobite-produced trace fossils - *Cruziana* (furrowing traces), *Rusophycus* (resting traces), *Diplichnites* (walking tracks), *Dimorphichnus* (sideways grazing traces) and *Monomorphichnus* (swimming grazing traces). Detailed examination of the distribution of *Cruziana* species within the sequence has enabled a more accurate definition of the Tremadoc-Arenig and Lower-Upper Tremadoc boundaries than previous paleontological studies have permitted. The former is based on the final occurrence of *C. simplicata*, which is an Upper Cambrian-Tremadoc species, and the latter on the initial occurrence of *C. furcifera* and *C. goldfussi*, previously only reported from Upper Tremadoc and younger strata. It is suggested that the Tremadoc-Arenig boundary be placed at the 1200 m level within the sequence and the Lower-Upper Tremadoc boundary at 1020 m.