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Paleoecology of the Early Cambrian fauna, Smith Point,  
Western Trinity Bay, Newfoundland

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The Early Cambrian Smith Point Limestone was studied at Harcourt, Western Trinity Bay, Newfoundland. It is composed of bedded red-nodular limestone, with persistent interbedded mud laminae that can be traced for up to seven meters. The Smith Point Limestone consists of the Fosters and Brigus formations of the Bonavista Group. These sediments have been interpreted as a lower energy environment overlying the high-energy tidal Random Formation. The Brigus Formation marks a diachronous onlap of the trilobite-bearing Lower Cambrian. Previous work has demonstrated a faunal turnover between these two formations, including extinction of many small shelly fossils, evolution of the first trilobites and first appearance datums of some molluscan taxa. The succession also yields some of the earliest known small shelled metazoans, known as the small shelly fauna. The current study identifies the context of paleoecology of those organisms during the Tommotian – Atdabanian Stages; a time of sedimentation and growth faulting in Avalonia.

Data acquisition included two days of field work, measuring section and collecting a total of twenty-five samples from beds throughout the succession. Samples were then digested in acid to remove carbonaceous material, followed by sieving and hand-picking of fossil samples, under a stereographic microscope. Rock samples were cut and processed for thin-sections.

Preliminary investigations reveal significant paleontologic and petrographic variations throughout the succession. Changes can be seen on a smaller-scale (i.e. bed-to-bed) and on a larger-scale (i.e. top to bottom through the entire sequence). These changes are in fossil abundance, taxonomy, and morphology and mineralogy. Moldic *Hyolithilus* appear to be dominant until the middle of the section, where phosphatic forms become dominant. Tommotiids are common, along with brachiopod shell fragments and whole shells of *Obolella* sp., *Micromitra philipsii* and *Paterina* sp. Also, *Rushtonia*, *Torelrella*, *Protohertzina* Protoconodonts, Hyoliths, and agglutinated foraminifera have been observed throughout the succession.