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**Microbially mediated sedimentary structures and siliciclastic stromatolites in the Upper Devonian to Lower Carboniferous Horton Bluff Formation, Nova Scotia**

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Over the past decade, microbial mats have been identified as major players in sedimentology. They are thin crusts of bacteria and form rubbery mats on sediment surfaces, protecting these surfaces from erosion. Dromal stromatolites, which are also microbial in origin, are often linked to the algal mats that are on the bedding surfaces. These features have been recognized as far back as 3.5 billion years. Until recently, they have been difficult to identify and have been overlooked. These features were discovered at Blue Beach, Horton Bluff last summer by Dr. Martin Gibling. To confirm that these features are correctly identified, an honours project has been set up. Understanding the physical sedimentary parameters that control the formation and preservation of microbial structures in siliciclastic regimes can facilitate exploration for biological signatures in early sedimentary rocks on Earth.

Through field work and lab work the outcrop will be examined in detail by accurately locating each occurrence with GPS and get the specific measurements. Samples will be collected for future lab work where thin sections will be made to determine if there is any organic material actually preserved and what the internal structure looks like. By completing this work, the goals of this project are to: (1) determine how they formed and contributed to the Horton Bluff strata; (2) determine the specific environment that controlled the growth of these algae mats and stromatolites; and (3) how the growth of algal mats stabilize sediments.