

Ichnological Significance of the Jurassic Aklavik Formation, Mackenzie Delta and Richardson Mountains, Northwest Territories: A Frontier Basin Outcrop Study

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The dominantly arenaceous facies of the Jurassic Bug Creek Group (Sinemurian through early Oxfordian) are situated in the southeastern basin margin of the Brooks-Mackenzie Basin. This group of rocks can be found in the subsurface in the region of the modern day Mackenzie Delta, Northwest Territories, and located in outcrop to the west in the northern Richardson Mountains, straddling the border between the Yukon and Northwest Territories. Facies identified from outcrop exposures of the Aklavik, the upper-most formation of the Bug Creek, suggest that the strata represent deposition within a complex, wave-dominated, prograding siliciclastic shoreface environment.

Previous investigators of the Bug Creek Group have described the ichnology of the rocks using general, non-descript terms. After detailed examination of the different burrow types, the identified trace fossil assemblages support the shoreface interpretation, as well as portray the many ecological stresses present on the burrowing organisms. Key trace fossil assemblages, such as the *Glossifungities* suite, can delineate not only a specific set of burrowing conditions, but may also establish discontinuities in the rock record confirmed to have stratigraphic significance.

With the renewed interest in the frontier region of the Mackenzie Delta as a hydrocarbon rich basin, a significant demand is present for the advance of geological knowledge. An integrated approach of sedimentology and ichnology of the Aklavik Formation can provide the foundation that is necessary for environmental reconstruction.