
**Sedimentology and paleobiological importance of
the Campbellton Formation, New Brunswick**

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The Emsian Campbellton Formation of New Brunswick has been widely studied for the exceptional fossil record of early plants, arthropods, and fishes. Strata containing both terrestrial and aquatic organisms are rarely observed elevating the significance of this site for research regarding ancient palaeoecology. However, current research lacks the necessary detailed sedimentary sequence that would facilitate paleobiological or paleoecological assessments. In this study an integrated approach will be used in which the sedimentary record described herein is supplemented by the established fossil record to infer paleoenvironmental conditions at the time of deposition. 312 m of section exposed from an estimated formation thickness of ~1300 m was measured and described. Outcrops were situated along the southern bank of the Restigouche River and Chaleur Bay in two separated belts. The western belt contains the basal contact with the underlying Val d'Amour Formation rhyolites as well as all aquatic fossils including chondrichthyans, acanthodians, placoderms, ostracods and eurypterids. Several of the vertebrate fossils were found in the mudstone matrix of a rhyolite breccia, with rhyolite clasts derived from the Val d'Amour Formation. Further aquatic fossils in this belt were discovered in cross-stratified sandstone and shale. The eastern belt shows a dramatic overall coarsening upwards sequence from fine-grained deposition in quiescent environments allowing horizons of stromatolite formation, to a range of fluvial regimes, to very coarse alluvial boulder-cobble conglomerates with paleoflow from the north. Dips also increase

stratigraphically upwards from 18° to 45°. The majority of the coarse sandstone and conglomerates are composed of re-worked clasts of extremely immature volcanic lithologies with a paleoflow from the southwest. It is this eastern belt in which the majority of terrestrial fossils are found, including primitive lycopsids, trimerophytes, zosterophylloids, terrestrial scorpion cuticle, *Eoarthropleura*, the millipede *Gaspestria genselorum*, and newly discovered possible root traces.