

tentatively interpreted to represent a shallow, near shore, low energy embayment, likely under local fresh water conditions. Based on their modern biology, limulid activity reveals a periodic distant marine connection.

Discovery of a new ichnofossil assemblage from the Bloomfield Formation in Bloomfield, New Brunswick

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A new ichnofossil assemblage has been discovered within the Lower Carboniferous, Moncton Subbasin, near Bloomfield, New Brunswick. An array of small-scale invertebrate trackways was identified from six stratigraphic intervals within the Lower Bloomfield Formation. Stratigraphic logs have been produced for the Lower Bloomfield Formation (LBF) and the Upper Bloomfield Formation (UBF). The LBF is exposed as outcrops within the Midway quarry and from adjacent roundcuts. The UBF is exposed along Mitchell Brook. Their assignment is based on palynology and lithostratigraphy. Three sedimentary facies are identified within the LBF: the lower reduced grey-bed facies interpreted as poorly drained-submerged sediments, a middle transitional facies, and an upper oxidized red-bed facies interpreted as well-drained alluvial/fluvial sediments. The UBF contains a forth alluvial/fluvial sedimentary facies of a cobble conglomerate at its base which fines upward into fine-grained red beds. A fluvial grey bed unit sits gradationally at the formation top which contains abundant commuted plant fragments. Trackways are preserved on shaly siltstone beds of the LBF. Ichnofossil assemblages represent both aquatic and terrestrial conditions. Trace fossil assemblage 1 within the lower reduced sedimentary facies contains surface traces of Kouphichnium, Diplichnites, Cruziana, Dendroidichnites, Diplopodichnus, and Rusophycus, all tentatively interpreted to be produced by limulids, tealiocarid shrimp, and branchiopod crustaceans.

Trackway assemblage 2 is dominated by walking traces Paleohelcura, Diplichnites and double tailed Diplichnites that are tentatively interpreted to be produced by scorpions, myriapods, and branchiopods crustaceans respectively. Kouphichnium trackways are evidence of limulid activity in the Maritimes Basin during late Tournasian times. Modern day limulids are marine animals with a high salinity tolerance for brackish and fresh water conditions. The depositional setting for these sediments and traces is