Fish trace fossils from the Horton Bluff Formation (Lower Carboniferous) of Nova Scotia

Donald Wood and Barry Cameron
Department of Geology, Acadia University, Wolfville, Nova Scotia B0P 1X0, Canada

The Blue Beach Member of the Horton Bluff Formation (Horton Group) has yielded a variety of fish trace fossils from Tournaisian nearshore lacustrine sandstones and shales. Two basic types of marks were left by fish swimming close enough to the bottom to leave traces: (1) isolated and discontinuous drag marks of fin spines, possibly made by acanthodian fish and (2) sinusoidal trails left by fins and tails of unidentified osteichthyans. These fish trace fossils are associated with arthropod trace fossils, amphibian footprints, coprolites, and fish scales. Most of our work to date has concentrated on the sinusoidal trails which consist of two identified species of *Undichna* Anderson, up to three possible new ichnospecies of the same genus, and several forms in need of further study. Their description is being augmented by an attempt to model their form with formulas for simple harmonic motion. The sizes of these fish can also be estimated. All of the sinusoidal trails are attributable to *Undichna* Anderson and are preserved as hypichnial ridges (hypichnial groove casts) except for *U. bina* which is an epichnial groove. *U. britannica* Higgs is represented by two unpaired waves with different amplitudes but similar wavelengths that are attributable to the caudal and anal fins. *U. bina* Anderson is represented by one set of paired waves produced by pelvic fins. The additional trails are not attributable to any known ichnospecies. *Undichna* sp. 1 is a solitary wave that may represent an anal or caudal fin marking. *Undichna* sp. 2 consists of two discontinuous waves 180 degrees out of phase that may represent scallop-like marks of pectoral fins. *Undichna* sp. 3 consists of two sets of paired asymmetric waves bounding an unpaired medial wave. These markings were probably made by paired pelvic fins and an anal fin.