

The Oldest Tetrapod Footprint Ichnofauna, from the Lower Mississippian Horton Bluff Formation, Nova Scotia, Canada¹

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At Blue Beach, Nova Scotia, Canada, the Blue Beach and Hurd Creek members of the lower Mississippian (Tournaisian) Horton Bluff Formation yield an extensive assemblage of tetrapod footprints that is the oldest known fully terrestrial (exclusive of ichthyostegalians) tetrapod ichnofauna. Four ichnotaxa were previously reported from Blue Beach (*Baropezia*, *Hylopus*, *Palaeosauropus* and *Anticheiropus*) but new, extensive collections indicate that six footprint morphotypes are present: (1) abundant tracks (“*Palaeosauropus*”) that are wider than long (pes width/length ~ 50-70/30-40 mm), with clear manus and pes sole impressions, and tetradactyl manus and pentadactyl pes with relatively short, clawed digits; (2) common tracks (“*Hylopus*”) that have long, thin and sometimes curved digits (pes width/length ~ 40/40 mm) in which relative digit length is well differentiated; (3) common tracks (“*Pseudobradypus*”) that have a long, narrow pes (pes width/length ~ 30/50 mm) and thin, pointed and forward-directed digits and a narrow trackway width, some with a median drag; (4) several very large (pes width/length ~ 80/70 mm) tracks (“*Attenosaurus*”), which have long, thin scratch-like digit impressions; (5) rare, large (pes width/length ~ 120/100 mm) tracks (“*Baropezia*”) in which a large pes sole impression and five short, rounded digits are evident; and (6) rare, small (pes < 20 mm long) tracks with short, blunt digits (“*Batrachichnus*”). These tracks are consistent with reptiliomorphs (1), captorhinomorphs (2-3), anthracosaurs (4-5) and temnospondyls (6). None of the Horton Bluff tracks show evidence of polydactyly, and thus they are not those of ichthyostegalians. They indicate that a major revolution had taken place in tetrapod evolution at approximately the Devonian-Mississippian boundary, with the replacement of the ichthyostegalian chronofauna of the Late Devonian by the reptiliomorph/anthracosaur chronofauna of the Mississippian. Almost all the Horton Bluff footprints are subaerial tracks of quadrupeds that have forward directed digits and lack median body or tail drags. They thus indicate a pentadactyl tetrapod fauna capable of fully terrestrial locomotion early in the Mississippian.

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