Nonmarine invertebrate ichnocoenoses from the Carboniferous of western Cape Breton Island, eastern Canada

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A relatively diverse assemblage of trace fossils has been identified from mid–Carboniferous strata (Hastings, Pomquet, and Port Hood formations) of the western Cape Breton subbasin in Nova Scotia. They can be grouped into numerous associations (ichnocoenoses) representing the work of particular benthic communities within various fluvio–lacustrine to fluvio–deltaic sub–environments.

At least six ichnocoenoses are recognised. In the older Hastings and Pomquet formations, they include the Rusophycus ichnocoenosis, a low–diversity suite of trace fossils from the lower portions of ephemeral channels comprising *Rusophycus carbonarius*, *Cruziana problematica*, *Helminthopsis* isp. and *Didymaulichnus* isp., and the Circulichnis ichnocoenosis which contains a more diverse ichnofauna of *Circulichnis montanus*, *Rusophycus carbonarius*, *Kouphichnium* isp., *Monomorphichnus* isp., ?*Beaconichnus*, surface trails, arthropod tracks and arthropod resting traces characteristic of probable thin, distal sheetfloods emptying into shallow lakes. *Ophiomorpha irregulaire*, *Taenidium* cf. *geniculata*, *Skolithos* isp., *Rusophycus carbonarius*, *Diplichnites* ispp., *Stiaria intermedia*, *Gordia marina*, arthropod tracks, U–burrows and ?vertical burrows are encountered in thin, non–channelised, ripple cross–laminated fine–grained sandstones of shoreline to shallow–water lacustrine origin. They are grouped together under the Diplichnites ichnocoenosis, although more than one discrete association may ultimately be represented. *Rusophycus carbonarius* and *Lockeia amygdaloides* are representative of more offshore, deeper lacustrine environments and are included within the Lockeia ichnocoenosis.

In younger strata (Port Hood Formation), trace fossils are much less common. However, the Cochlichnus ichnocoenosis, a unique suite consisting of *Cochlichnus anguineus*, *Cochlichnus* isp., *Undichna consulca*, and ?*Margaritichnus*, occurs in a thin shallow–water ?crevasse–splay deposit; and *Taenidium barretti*, Planolites isp. and branched burrows representing the Planolites ichnocoenosis, are present in several coarse–grained fluvial–bar sandstones.