Stratigraphy and Sedimentology of Early Pennsylvanian Red Beds at Lower Cove, Nova Scotia, Canada: the Little River Formation with Redefinition of the Joggins Formation[1]

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The coastal cliffs along the eastern shore of Chignecto Bay, Nova Scotia contain one of the finest Carboniferous sections in the world. In 1843, Sir William Logan measured the entire section, as the first project of the Geological Survey of Canada, and defined eight stratigraphic divisions. We have re-measured a section, corresponding almost exactly with Logan's Division 5 in bed-by-bed detail. The strata are exposed in the wave-cut platform and low-relief bluffs of a two kilometre- long section at Lower Cove, near Joggins, north and south of Little River. This 635.8- metre-thick succession until now has been included within the basal part of the Joggins Formation, and overlies the Boss Point Formation. However, the studied strata are lithologically distinct, and are formally recognized as the new Little River Formation. This formation is bounded by regionally important surfaces and is traceable inland for 30 kilometres from its Lower Cove type section. Facies analysis indicates that it represents the deposits of a well- drained alluvial plain dissected by shallow, rivers characterized by flashy flow. It can be clearly distinguished from the underlying Boss Point Formation (Logan's Division 6) by its much smaller channels, and from the overlying Joggins Formation (Logan's Division 4) by lack of coal seams and bivalve-bearing limestone beds. Palynological assemblages indicate that the Little River Formation is of probable late Namurian to basal Westphalian (basal Langsettian) age, and is a likely time-equivalent of the informal Grand-Anse formation of southeast New Brunswick.

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