

Carboniferous strata of the famous Joggins fossil cliffs hold a unique place in the history of geology. Made famous by the fossil discoveries of Lyell and Dawson in the mid 1800s, the cliffs continue to yield important information about paleobiology. The Joggins Formation (of probable Langsettian age) has been completely remeasured for the first time since Logan and Dawson’s pioneering studies, and a visual log and a map of the foreshore illustrate the 915.5 m of strata along Chignecto Bay. Formation boundaries are formally described, and two informal members are abandoned. The formation is divided into 14 cycles, most of which commence with major transgressions represented by the open water facies assemblage, some faunal elements of which show a restricted-marine affinity. Higher in the cycles, the re-advance of coastal and alluvial systems yielded poorly and well drained facies assemblages, respectively. The main levels of standing trees, dominated by lycopsids, were entombed where distributary channels brought sand into coastal wetlands. Some trees contain tetrapods and invertebrates, which may have sought refuge or become trapped in hollow trees. Cordaitalean (gymnosperm) forests covered the alluvial plains and basin-margin uplands, and were periodically swept by wildfires. The predominance of flooding surfaces and the apparent absence of lowstand exposure surfaces reflect the rapid subsidence of the Cumberland Basin controlled by active basin-margin faults and salt withdrawal. The cycles may reflect tectonic events, glacioeustatic sea-level fluctuations, and/or variations in sediment flux.

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