

Tectonostratigraphic subdivisions of Cape Breton Island, Nova Scotia

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Cape Breton Island has traditionally been considered to be part of the Avalon Terrane but until recently scarcity of detailed field studies and radiometric age data made regional correlations difficult. A new geological map of Cape Breton Island now includes most of the pre-Carboniferous rocks, generally mapped on a scale of 1:20,000, and is supported by detailed studies of petrology, geochemistry, metamorphism, structure, and geochronology, thus providing a much clearer picture of the complex geology. The data suggest a division into four zones (Southeastern, Central, Highlands and Northern Highlands). Boundaries between the first three zones may be gradational, but major fault/mylonite zones separate the Northern Highlands and Highlands Zones. The entire island is much affected by major faulting and shearing of Devonian to Carboniferous age.

Southeastern Cape Breton Island is characterized by typical "Avalonian" geology - large epizonal dioritic to granitic intrusions of late Hadrynian to Early Cambrian age intruded into mainly calc-alkalic metavolcanic and metasedimentary rocks (Fourchu Group) of similar age, and overlain by essentially unmetamorphosed Cambro-Ordovician sedimentary and bimodal vol-

canic rocks. Crossing the Bras D'Or Lakes into the Central Zone, the Fourchu Group is replaced by the George River Group, a shelf sequence of mainly marble, quartzite, slate and other metasedimentary rocks, intruded by granitoid rocks similar in petrology and age to the southeast. To the north in the Highlands Zone, gneissic units are widespread and the metamorphic grade increases in other metasedimentary rocks. However, correlation between the George River Group and any of the various metasedimentary and meta-volcanic units of the Highlands appears tenuous and, at best, marble and quartzite-bearing units in the Highlands may represent deeper water, more argillaceous equivalents of the George River group. A characteristic feature of the Highlands Zone is the abundance of granitoid rocks which cover more than two-thirds of the area and display a wide range in composition and age. Many are Devonian and Early Carboniferous, but Siluro-Ordovician and Late Hadrynian to Early Cambrian intrusions are also numerous. The Northern Highlands is underlain by the "Blair River complex", an assemblage of quartzo-feldspathic gneiss, syenitic gneiss and amphibolite, intruded by anorthosite, monzodiorite, and syenite.