
**Geology of the Washabuck Peninsula,
central Cape Breton Island, Nova Scotia**

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Geological mapping on the Washabuck Peninsula in central Cape Breton Island confirmed the presence of pre-Carboniferous rocks with lithological similarities to other Neoproterozoic rocks in the Bras d'Or terrane. These older rocks are unconformably overlain by Carboniferous sedimentary rocks of the Horton Group and in faulted contact with Carboniferous sedimentary rocks of the Windsor Group.

The oldest rocks are termed the Maskells Harbour formation (MHf), and occur in two separate areas. In the northeast, the formation consists of interbedded quartzofeldspathic metasandstone and metasiltstone with thin minor quartzite and marble; however, the area in the southwest consists dominantly of calcitic to dolomitic marble interbedded with minor quartzite. The MHf in the northeastern area is intruded by unfoliated, medium-grained diorite, quartz diorite, and hornblende-biotite granodiorite of the Washabuck pluton. Associated with the pluton are late-stage coarse-grained hornblende dykes. The MHf in the southwestern block is intruded by unfoliated medium- to coarse grained hypidiomorphic granular hornblende-biotite granite and associated aplitic dykes named the Grass Cove pluton. Similar granite occurs in the northeastern block as large dykes in the MHf

and Washabuck pluton. The plutonic units contain metasedimentary xenoliths derived from the MHf, and like the MHf, are cut by numerous mafic dykes.

Regional metamorphism in the MHf reaches only biotite grade; however, close to the margins of the plutonic units, grade has increased to produce cordierite-biotite assemblages. This increase in grade has imparted a gneissic appearance to the metamorphic rocks by accentuating the bedding but it is clearly related to contact metamorphism.

Analyzed samples from the Washabuck pluton range in SiO₂ content from approximately 50% to 62%, whereas the Grass Cove pluton has higher SiO₂ concentrations, ranging from about 68% to 77%. Mafic dykes show variable compositions, but some have compositions similar to the Washabuck pluton and may be related to it. A “rhyolitic” unit in the Maskells Harbour formation is chemically similar to the intermediate rocks of the Grass Cove pluton.

Because of lithological similarity to the Blues Brook and Malagawatch formations, the MHf is considered to be part of the Neoproterozoic George River Metamorphic Suite. The similarity of the Washabuck pluton and Grass Cove pluton to dated igneous units in the Creignish Hills and North Mountain suggest similar late Neoproterozoic ages for these units.