
**Petrology, petrogenesis, and economic potential
of the Landry Brook and Dickie Brook plutons,
northern New Brunswick**

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The Dickie Brook and Landry Brook intrusive suites cover a combined area of approximately 40 km² in the northeastern part of the Silurian-Devonian Tobique-Chaleur tectonostratigraphic belt (Chaleur Bay Synclinorium) in northern New Brunswick. The host rocks are the Wenlockian-Ludlovian Bryant Point, New Mills and Benjamin formations. Based on field interpretation, drill core, preliminary petrography and previous literature, four different units have been recognized in the Landry Brook suite: an early gabbro unit, a granodiorite unit, a quartz monzonite unit and a late intrusive unit composed mainly of quartz monzonite and quartz diorite. The granodiorite occurs only in the southwestern part of the Landry Brook pluton and is possibly genetically linked to the porphyry copper mineralization in that area. In the case of the Dickie Brook suite, two main units have been recognized: an early gabbro unit, a quartz monzonite to quartz monzodiorite unit and late basaltic to granitic dykes. The relationship of the Dickie Brook suite to REE-bearing apatite-rich feldspar porphyry reported in the area is as yet unclear. These plutons are part of widespread magmatism in central and northern New Brunswick and adjacent Maine, for which the petrogenesis and tectonic setting are still debated. Post-collisional delamination is a hypothesis that has been proposed for other granitoid complexes in Ganderia in New Brunswick and Newfoundland, but the models needs further testing for the Dickie Brook and Landry Brook plutons. Major and trace element geochemistry and isotopic analysis (e.g., Sm-Nd) of the rocks will help to understand the processes of petrogenesis and determine what relationship, if any, exists between the two suites and with others in the same tectonostratigraphic belt. An age of 400 ± 1 Ma (U-Pb zircon) has been reported previously for the granodiorite in the Landry Brook suite, but the exact age of the Dickie Brook suite is not yet known