

mylonitization during the Neoacadian orogeny, followed by exhumation and subsequent deposition of the Taylors Island Formation in the Carboniferous. West of Saint John, in the Lorneville area, the Partridge Island block consists of variably deformed alkali-feldspar granite and plagiogranite, both of which contain tectonic inclusions of thinly laminated quartzite and quartz-chlorite-muscovite schist. The alkali-feldspar granite consists of porphyroclasts of K-feldspar and aegirine in a matrix of K-feldspar, quartz, and opaque minerals, and displays a metamorphic texture ranging from protomylonitic along the coast to ultramylonitic and phyllonitic approaching the steeply faulted contact with the Taylors Island Formation. The rocks in this area are also extensively mineralized by numerous hematite and quartz-siderite veins, with previously unreported IOGC-type mineralization present in some places.

Structure and petrology of the Partridge Island block and adjacent rock units, Saint John area, southern New Brunswick

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The Partridge Island block consists of three areas of highly deformed metasedimentary and metaplutonic rocks, informally named the Tiner Point formation and Seaview plutonic suite, which are located in and near the city of Saint John in southern New Brunswick. During the summer of 2010, detailed geological and structural mapping was conducted in and around the Partridge Island block in order to better elucidate its relationship to adjacent Carboniferous, Cambrian, and Neoproterozoic units, as well as to characterize the rocks of the Partridge Island block itself. On Partridge Island and east of Saint John in the Red Head area, these rocks are diorite to quartz-diorite gneiss and plagiogranite. The gneiss contains variably altered plagioclase, K-feldspar, and hornblende porphyroclasts in a matrix of quartz, chlorite, sericite, and opaque minerals; the plagiogranite consists of quartz and plagioclase porphyroclasts in a matrix of quartz, plagioclase, and muscovite. In some areas, quartz-chlorite-muscovite schist is also present, likely the product of local retrograde metamorphic conditions. East of Saint John, around Red Head, these rocks occupy the core of a syncline as a fault-bounded block, thrust on top of a Carboniferous sedimentary sequence. Some of these Carboniferous units were deformed during overthrusting, and later deformation involved northwest-directed folding around the more competent material. The gneiss and plagiogranite are structurally overlain by variably deformed basalt and red and grey siltstone of the Taylors Island Formation and yielded a ⁴⁰Ar/³⁹Ar muscovite cooling age of 332 ± 3 Ma. This suggests