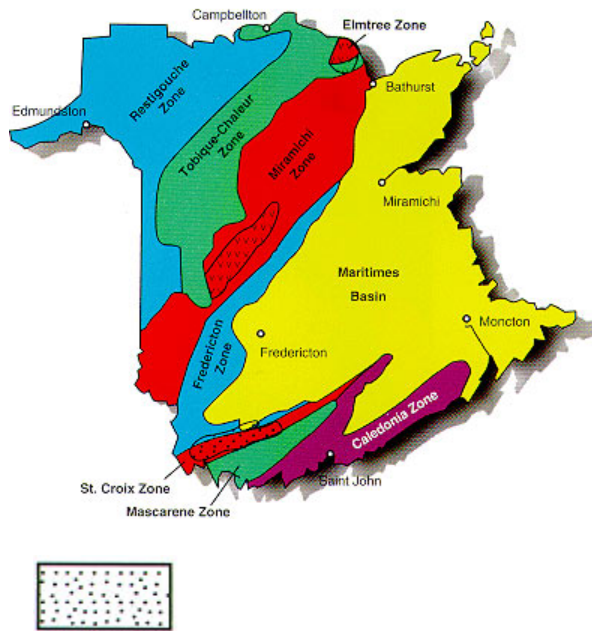


Tin, Tungsten, Indium and Bismuth Deposits



St. Croix Zone

Sn, W, In, Bi, (Mo, Zn, Cu, Pb) Deposits

- Host Rocks: Late Devonian silica-rich, and slightly peraluminous, subalkaline granite stocks and their contact aureoles
- Tectonic Setting: Magmas formed by adiabatic melting of continental crust immediately after the Acadian Orogeny
- Genetic Model: Silica- and potash-rich magmas generated F- and/or B-rich fluids or vapour phases. Deposits were emplaced in faults, fractures and breccias within the intrusions or their contact aureoles.
- Ore Controls/Guides to Exploration: (1) Associated with the younger phases of multi-phase granite intrusions. The rocks are characterized by very high K₂O/Na₂O, Rb/Sr and Rb/Ba and low Fe, Mg, Ti and Eu. (2) Deposits are concentrated in zones of intense fracturing. (3) Mineralization is associated with quartz-muscovite-topaz and fluorite alteration of feldspars and biotite (greisen). (4) The deposits are telescoped and invariably zoned.
- Examples: Mount Pleasant: 5 100 000 t averaging 0.79% Sn and 0.01-0.02% In and 9 000 000 t averaging 0.79% WO₃ and 0.1% Bi. Indium reserves at Mount Pleasant are estimated to exceed 1000 t of contained indium metal (not including narrow veins that assay up to 0.6% In).; Pleasant Ridge: Channel sample with 0.98% Sn and 9% Zn over 2 m; one grab sample assayed 0.157% In.



Miramichi and Elmtree Zones

Sn, W, In, Bi, (Mo, Zn, Cu, Pb) Deposits

- Host Rocks: Middle Devonian silica-rich, and slightly peraluminous, subalkaline granite stocks
- Tectonic Setting: Magmas formed by adiabatic melting of continental crust immediately after the Acadian Orogeny
- Genetic Model: Silica- and potash-rich magmas generated F- and/or B-rich fluids or vapour phases. Deposits were emplaced in faults, fractures and breccias within the intrusions or their contact aureoles.

- Ore Controls/Guides to Exploration: (1) Associated with the younger phases of multi-phase granite intrusions. The rocks are characterized by very high K₂O/Na₂O, Rb/Sr and Rb/Ba and low Fe, Mg, Ti and Eu. (2) Deposits are concentrated in zones of intense fracturing. (3) Mineralization is associated with quartz-muscovite-topaz and fluorite alteration of feldspars and biotite (greisen). (4) The deposits are telescoped and invariably zoned.
- Examples: Burnthill: 1360.8 t grading 0.75% WO₃; Todd Mountain: one drill hole intersected 0.67% Sn over 1.5 m.

A.A. Ruitenberg & S.R. McCutcheon, 1994