
**Paragneiss, migmatite, and anatectite of the central
Miramichi Highlands: a distinct Ganderian
basement block?**

REGINALD A. WILSON AND SEAN H. McCLENAGHAN
*Geological Surveys Branch, New Brunswick Department of
Natural Resources, P.O. Box 50, Bathurst, New Brunswick E2A
3Z1, Canada <reg.wilson@gnb.ca>*

The central Miramichi Highlands are underlain mainly by metasedimentary rocks of the Miramichi Group, Ordovician to Devonian felsic and mafic intrusions, and a dismembered belt of high-grade rocks referred to as the Trousers Lake Metamorphic Suite (TLMS). The TLMS consists mainly of thinly banded paragneiss and lesser volumes of amphibolite, and is intruded by intensely foliated plutonic rocks, including the Moose Lake Gabbro and the 451 ± 15/-1 Ma Fox Ridge (augen) Granite. In places, the paragneiss is observed to grade into migmatite, or alternatively into a granitoid anatectite locally containing nebulitic, partially assimilated “rafts” of paragneiss and/or a relict foliation inherited from the paragneiss. Large pods, veins, and lenses of unfoliated, muscovite-rich, locally garnetiferous granite and pegmatite have commonly intruded the paragneiss/migmatite.

It is generally held that the TLMS is a higher grade equivalent of Cambrian to Early Ordovician sedimentary rocks of the Miramichi Group; however, preliminary observations and comparisons suggest that this may not be the case. The Miramichi Group has experienced high-grade metamorphism (garnet, andalusite, or sillimanite are commonly present), but primary bedding in the form of alternating psammitic (quartzite) and pelitic beds is easily identified. In contrast, the paragneiss is homogenous and displays no relict primary bedding; in particular, the thick quartzite beds that characterize the lower part of the

Miramichi Group are absent from the paragneiss. Semi-quantitative analyses by XRF (although lacking accuracy in absolute terms) show significant geochemical differences between shales and siltstones from the Miramichi Group, and paragneisses from the TLMS. Amphibolites in the TLMS have been shown to be chemically analogous to Ordovician mafic volcanic rocks of the Tetagouche Group in the northern Miramichi Highlands, but the amphibolites are considered to be dykes or sills, most likely cogenetic with the Moose Lake Gabbro, hence their occurrence in the paragneiss does not imply any age correlation between the latter and the Tetagouche Group. Similarly, the age of the Fox Ridge Granite sheds no light on the age of the paragneiss. Preliminary geochronological work on the TLMS (M.L. Bevier, unpublished data) indicates the presence of inherited zircons ranging in age from 850 Ma to 1.2 Ga; concordant ages of ca. 434 Ma from monazite in the leucosome probably date peak metamorphism in the Silurian, very similar to the peak date established in Newfoundland. Considerable study, including detrital zircon profiles for the TLMS and Miramichi Group, is required to evaluate the possibility that the TLMS may represent a distinct Ganderian basement block, perhaps correlative with basement gneisses in the Hermitage Flexure area of Newfoundland.