

# The Meguma Supergroup of Southern Nova Scotia: Insights on Stratigraphy and Tectonic Setting<sup>1</sup>

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The easternmost tectonic element of the northern Appalachian orogen, the Meguma terrane, includes the Cambrian-Ordovician Goldenville and Halifax formations (Meguma Group) and the younger White Rock and Torbrook formations, intruded by mainly Devonian plutons and overlain by Carboniferous and younger rocks. Based on recent mapping in the Meguma Group, combined with petrographic and chemical studies, the lower metasediment-dominated Goldenville Formation and upper slate-dominated Halifax Formation should be formally elevated to “group” status. Thus, the Meguma Group will be elevated to a “supergroup”, as has been previously proposed. The redefined Goldenville Group consists of massive metasediment with minor interbeds of metasediment and slate (Church Point, Moses Lake, Green Harbour, Tangier and Taylors Head formations), and grades upwards into thinly bedded metasediment, metasediment, and silty slate (Government Point Formation). The uppermost unit (Moshers Island and equivalent Beaverbank formations) is characterized by numerous Mn-rich laminations and concretions. Units in the overlying slate-rich Halifax Group include the lower Acacia Brook/Cunard formations and the upper Bear River/Feltzen/Glen Brook formations. The Church Point Formation of the Goldenville Group contains a distinctive metasediment unit (High Head member) with abundant trace fossils, including the early Cambrian deep-water ichnofossil *Oldhamia* and a distinctive trace fossil assemblage characteristic of the boundary between the Neoproterozoic and Phanerozoic. This occurrence suggests that the Goldenville Group below this member extends into the Neoproterozoic. The upper part of the Government Point Formation of the Goldenville Group has yielded early Middle Cambrian Acado-Baltic trilobite fossils. In the overlying Halifax Group, the upper part of the Bear River and Feltzen formations locally contains the graptolite *Rhabdinopora flabelliformis* and acritarch species that are both Early Ordovician. The gap in age between this formation and the overlying late Ordovician - Early Silurian White Rock Formation indicates that a major unconformity exists between the Halifax Group and White Rock Formation. Protoliths of the metasediment units in the Goldenville and Halifax groups were predominantly feldspathic wacke to arenite. Preliminary whole-rock geochemical data from this clastic material suggest that the Meguma Supergroup was deposited near an active or recently active continental margin, and not at an Atlantic-style passive continental margin as previously assumed. This interpretation is further supported by the presence of numerous syn-depositional mafic sills of within-plate chemical character along the northwestern section of the Meguma Supergroup, suggesting that deposition was in a rift environment, possibly related to late Neoproterozoic to early Paleozoic separation of the Meguma terrane from Gondwana.

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