New geological maps of the Pocologan - Saint John area, southern New Brunswick: implications for terrane interpretation

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A series of 1:20,000 scale geological maps have been generated, based on data from new mapping in 1998–2000 in the Pocologan–New River area, combined with previously published data from the Kingston Peninsula (NBDNRE Map Plate 98-16) and previously unpublished data from the Saint John area. The maps include part of the Caledonia terrane in the coastal strip from Saint John to Lepreau, but most of the area covered by the maps is part of the Brookville and Kingston terranes. Map details for the New River terrane to the northwest of the Kingston terrane, and for Carboniferous and younger units in the map area, mainly were compiled from the New Brunswick Department of Natural Resources and Energy map data base.

In the map area, the Caledonia terrane is represented by deformed (in part mylonitic) Late Neoproterozoic volcanic and granitoid rocks of the Coldbrook Group, overlain by sedimentary rocks of the Saint John Group, and by Devonian-Carboniferous volcanic and sedimentary rocks in the Taylors Island - Lorneville areas. The Brookville terrane extends from northeast of Saint John to southwest of the Seelys Cove area. It is represented mainly by varied calc-alkalic plutons ranging in composition from gabbro and diorite to tonalite, granodiorite, and granite. The plutons are mainly ca. 550–530 Ma in age, and have been subdivided into approximately 25 separate units based on rock type. The plutons intruded the Green Head Group (Ashburn and Martinon formations, dominated by marble and metasiltstone, respectively). They also intruded the Brookville Gneiss, a distinctive low-pressure, high-temperature paragneiss unit previously shown to have a maximum depositional age of ca. 640 Ma, and to have been intruded by granitoid rocks (now orthogneiss) at ca. 605 Ma, and metamorphosed at ca. 564 Ma.

The Kingston terrane is dominated by ca. 440–430 Ma arc-related intermediate to felsic metavolcanic rocks of the Kingston Group and co-magmatic granitic plutons, both intruded by abundant amphibolite sheets. Metasedimentary and mafic metavolcanic rocks are a minor component. The Kingston terrane narrows to the southwest, where the granitic rocks and amphibolite sheets form most of the terrane. A fault-bounded belt of distinctive high-grade metamorphic rocks of as yet uncertain age and terrane affinity occurs between the Brookville and Kingston terranes in the Pocologan area.