

## Stratigraphy and geochronology of backarc oceanic rocks of the Fournier Supergroup, northern New Brunswick

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In northern New Brunswick, the main elements of Ganderia are Early Paleozoic rocks of the peri-Gondwanan Popelogan arc and associated Tetagouche backarc basin. Late Ordovician to mid-Silurian closure of the Tetagouche backarc culminated with the piecemeal accretion of Ganderia to composite Laurentia (Salinic orogenic cycle) and led to formation of the Brunswick subduction complex. The latter comprises volcanic and sedimentary rocks that represent successive stages of backarc extension, arc rifting and seafloor spreading. Formerly, these rocks were all assigned to the Bathurst Supergroup, consisting of four groups (California Lake, Tetagouche, Sheephouse Brook, and Fournier) juxtaposed as major thrust nappes. The lower parts of the first three groups comprise thick sequences of felsic volcanic rock that reflect the presence of Ganderian continental substrate and were emplaced during arc rifting and backarc extension. The stratigraphic succession within each nappe represents the same temporal range and exhibits consistent younging to the north. In contrast, the Fournier Group, which includes a partial ophiolite sequence, contains virtually no felsic volcanic rocks (solely represented by ash beds) and represents deposition that occurred in the oceanic domain during seafloor spreading. Thrust faults and mélanges define a series of nappes within which younging is consistently north and, as shown by recent geochronological work, represent coeval time intervals. A distinct parallel with the Bathurst Supergroup is thus demonstrated; hence, the Fournier Group is upgraded to Supergroup status and the various formations assigned to different groups and complexes. The newly erected Fournier Supergroup consists, from structurally highest to lowest, of the Devereaux (ophiolitic) Complex, the Pointe Verte Group and Sormany Group. The Devereaux Complex comprises, from base to top, the Black Point Gabbro (including minor pyroxenite and trondhjemite), the Belledune Point sheeted dikes, and pillow basalt of the Turgeon Road Formation. The tectonic contact between the Devereaux Complex and the structurally underlying Pointe Verte Group is marked by a zone of mélange. The Pointe Verte Group comprises the Prairie Brook Formation (a generally fining-upward sequence of sedimentary rocks) and the overlying Madran Formation (high-Cr alkalic pillow basalt). The Sormany Group is separated from the overlying Pointe Verte Group by the Belledune River mélange and comprises the Armstrong Brook Formation (pillow basalt), Millstream Formation (turbiditic wackes, fine-grained sedimentary rocks and limestone) and Val Michaud Formation (quartzofeldspathic sandstone) in the northern Miramichi Highlands and the Elmtree Formation (fine-grained sedimentary rocks) in the Elmtree Inlier.