

Most of the area is a smoothly undulating, upland surface that slopes gently from an average elevation of 1,250 feet north and south of Napadogan to about 550 feet in the southeast near McCallum Brook. The easterly flowing Nashwaak and Taxis Rivers drain about equal parts of the area. The Southwest Miramichi River drains a small area around Miramichi Lake and north of Parker Ridge. These rivers and the lower few miles of their tributaries are deeply incised. Local relief varies from about 400 feet along the lower parts of the main rivers to about 100 feet along the headwaters of the tributaries. Nearly all rock exposures occur on rivers, streams, and roads.

Glacial till several feet thick mantles most hills and is thicker in many valleys. A few glacial striae and the distribution of erratics indicate a southeasterly direction of Pleistocene ice movement.

A series of parallel belts of strongly deformed Ordovician (?) and Silurian rocks (1-5) are the oldest known rocks in the area. Calcareous argillite (1a) containing deformed Ordovician (?) brachiopods occurs on a tributary of Rocky Brook in structural conformity with underlying (?) slate and quartzite (1) to the west. Nearby, a glacially smoothed outcrop of iron-formation (1b) was found on a bulldozed road.

Greywacke and slate (2) comprise most of the pre-Carboniferous rocks, some of which are Middle Silurian if the graptolitic slate about a mile south of the map-area¹ continues northward between Limekiln and Fredericksburg. Some greywacke (2) along and north of Taxis River is harder than greywacke elsewhere in map-unit 2. Dark grey slate is common along Ryan Brook.

Rocks of map-units 3 and 4 are apparently intercalated in the greywacke and slate of map-unit 2. Their contacts are drawn to include red to maroon slate. Along the northwest contact of map-unit 3, the rocks grade westerly from red and green slate (3) to green and finally to grey slate and greywacke (2). Along the southeast contact of map-unit 3, red and green slate passes eastward abruptly into grey slate and greywacke (2). A different and narrower belt of grey greywacke and slate outcrops along parts of McPherson Brook, where red slate forms the tops of some graded beds.

Biotite schist (5) borders a granitic batholith that lies west of the area mapped².

The regional structure and stratigraphic thicknesses of map-units 1 to 5 are unknown. Cleavage in slate commonly strikes more northerly than the bedding. In the eastern part of the area, cleavage generally dips steeply to the southwest, and some beds and folds are overturned to the southeast. In the western part of the area, cleavage generally dips steeply to the southeast. Minor folds, drag-folds, and minute crenulations on cleavage planes plunge in various directions at various angles, but locally many are nearly parallel.

Red beds (7), which lie on pre-Carboniferous rocks (2, 3) with marked angular unconformity, are mainly unsorted, relatively quartz-poor conglomerates that are cemented in some places with silt and sand and in others with calcite. For as much as 20 feet below the unconformity, the older rocks (2, 3) have been weathered to red and green greywacke and slate, probably during Carboniferous time. Those red beds (7) with a calcite cement commonly contain limestone nodules. Where these calcite-cemented rocks occur at the base of the formation the underlying greywacke and slate (2, 3) here and there contain similar nodules for a few inches below the unconformity, and calcite veins for as much as 10 feet below the unconformity. Evidently, most if not all of the limestone and calcite was formed by ground-water action after burial. The red beds (7) vary in thickness from zero near Cross Creek settlement and north of Taxis River to about 50 feet on the lower parts of Nashwaak and Taxis Rivers.

Three and possibly four distinct basalt flows (8), each varying from zero to perhaps 50 feet in thickness, occur at the top of the red beds (7). In one locality east of the map-area, a basalt flow (8a) overlies more than 8 feet and less than 45 feet of red sandstone and grit (7), which in turn overlies a second basalt flow (8b). A few feet of red beds (7) may overlie other flows (8a, 8c, 8d). Relations of map-units 8b, 8c, and 8d are not known. Basalt (8d) of the isolated outcrop near Clearwater Brook may lie directly on pre-Carboniferous rocks (2). An aeromagnetic anomaly³ on Cross Creek possibly indicates basalt buried beneath rocks of map-units 9 and 10. The outcrop of basalt (8) about a mile south of Stanley appears to be a volcanic neck.

Everywhere southwest of McGivney, about 10 feet of siltstone, sandstone, grit, and conglomerate (9) overlie the red beds (7); the contact appears to be gradational in some places and sharp in others. Pennsylvanian coal-bearing rocks (10), some of which are of Pictou age, lie with structural conformity on rocks of map-unit 9. The contact is abrupt, and in one place along Cross Creek, grit at the base of the formation slightly channels hard siltstone of map-unit 9. Pyrite nodules and coaly partings are common in sandstone a few tens of feet above and below the coal seam at Cross Creek coal prospect. These rocks (10) are probably several hundred feet thick in the southeast.

Strata of map-units 9 and 10 overlap the red beds (7) and basalt (8) north of Taxis River and near Cross Creek settlement, and there lie unconformably on pre-Carboniferous rocks (2, 3). The Carboniferous rocks (7 to 10) are apparently undeformed. Between Ward settlement and the covered bridge across the Nashwaak River to the southeast, map-unit 9 dips about 2°SE, but northwest and southeast of these two points, respectively, it is flatter. Crossbedding in the Carboniferous rocks (7, 10) indicates deposition from water flowing southeasterly.

The only known metalliferous prospect occurs on Winding Hill where narrow quartz veins contain small amounts of galena, pyrite, and sphalerite⁴. The iron-formation (1b) near Rocky Brook consists of magnetite, siderite, and chlorite with thin stringers and disseminations of pyrite; a semi-quantitative X-ray spectrographic analysis of a specimen indicated Fe 40% to 70%, Mn 1% to 5%, Cu 0.1% to 1%, and Co, Ni, Pb, and Zn not detected (i.e., less than 0.5%). Gelatinous iron oxide occurs along much of the tributary of Rocky Brook below the outcrop of calcareous argillite (1a). A coal seam exposed in an open-cut at the Cross Creek coal prospect pinches in thickness from 14 inches to 7 inches in about 15 feet.

¹ Poole, W. H.: Burtis Corner (West half), York County, N. B.; Geol. Surv., Canada, Map 7-1957, 1957.

² Anderson, F. D.: Coldstream, Carleton and York Counties, N. B.; Geol. Surv., Canada, Paper 55-29, 1956.

³ Geol. Surv., Canada: Aeromagnetic Map, Napadogan, York County, N. B.; Geophysics Paper 135, 1953.

⁴ Young, G. A.: Burnthill Brook Map-area, N. B.; Geol. Surv., Canada, Sum. Rept. 1917, pt. F, 1918.

- LEGEND
- CARBONIFEROUS
PENNSYLVANIAN (9, 10)
- 10 Grey to green and brown sandstone, grit, and conglomerate; minor siltstone, shale
- 9 Hard and soft, buff, green, and red mottled siltstone, sandstone, grit, and conglomerate; 9a, quartz pebble conglomerate and grit at base
- MISSISSIPPIAN AND/OR PENNSYLVANIAN (7, 8)
- 8 Basalt; 8a, basalt with feldspar phenocrysts; 8b, slightly vesicular grey basalt; 8c, black basalt; 8d, black basalt with olivine phenocrysts
- 7 Red conglomerate, grit, and sandstone; minor siltstone; rare green conglomerate; in places, with calcareous cement and limestone nodules
- DEVONIAN (?)
- x6 Diorite sills, dykes (?)
- ORDOVICIAN (?) AND SILURIAN (Mainly; not in order of age)
- 5 Biotite schist (metamorphosed equivalents of 1 and 4)
- 4 Thick-bedded grey greywacke, grey and red slate
- 3 Thin-bedded green and red slate, green and grey greywacke, grey slate
- 2 Thick-bedded grey to green-grey, fine- to coarse-grained greywacke, grey and dark grey slate; minor grit; 2a, dark green volcanic rock
- 1 Grey slate, grey quartzite; minor greywacke; 1a, calcareous argillite; 1b, iron formation

- Rock outcrop x
- Geological boundary (defined, approximate, assumed)
- Limit of geological mapping
- Bedding, direction of top known (horizontal, inclined, vertical, overturned)
- Bedding, direction of top unknown (inclined, vertical, dip unknown)
- Cleavage in slate (inclined, vertical, dip unknown)
- Schistosity (dip unknown)
- Lineation, fold with plunge of axis
- Lineation, minute crenulation with plunge of axis (inclined, horizontal)
- Drag-fold (arrow indicates plunge)
- Glacial striae
- Fossil locality
- Gravel pit

Geology by W. H. Poole, 1957

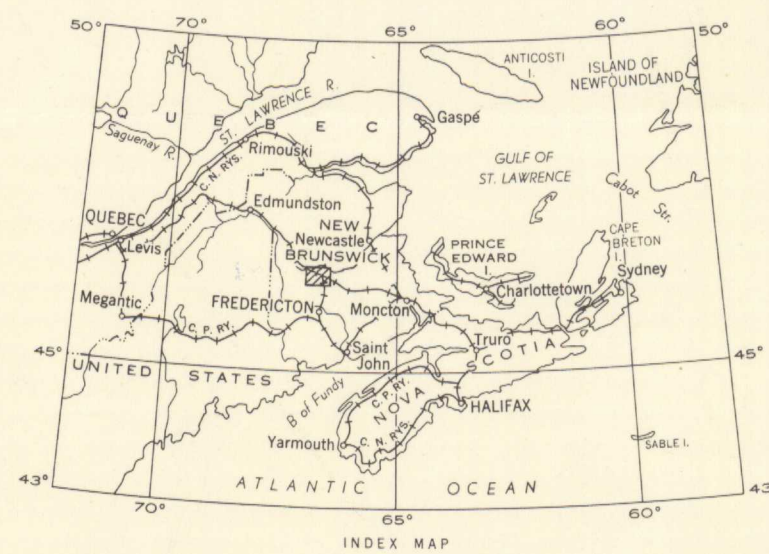
- Main highway
- Secondary roads
- Cart track, wagon road
- Trail
- Parish boundary
- Intermittent stream
- Marsh

Approximate magnetic declination, 22° 29' West

Cartography by the Geological Cartography Unit, 1958

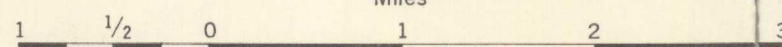
Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario

In response to public demand for earlier publication, Preliminary Series maps are now being issued in this simplified form, thereby effecting a substantial saving in time. There is no loss of information, but the maps will be clearer to read if all or some of the map-units are hand-coloured.



MAP 11-1958
NAPADOGAN
YORK COUNTY
NEW BRUNSWICK

Scale: One Inch to One Mile = $\frac{1}{63,360}$ Miles



MAP 11-1958
NAPADOGAN
NEW BRUNSWICK
SHEET 21 $\frac{1}{2}$