Revisions to geological unit names in New Brunswick, Canada, to address culturally offensive or inappropriate nomenclature

Dustin R.L. Dahn[1], Erin A. Smith[2], and Philippe Page[3]

1. New Brunswick Geological Survey, New Brunswick Department of Natural Resources, South Tetagouche, New Brunswick E2A 7B8, Canada
2. New Brunswick Geological Survey, New Brunswick Department of Natural Resources, Fredericton, New Brunswick E3C 0B5, Canada
3. Direction de l'Information Géologique et de la Promotion, Géologie Québec, Ministère des Ressources naturelles et des Forêts, Québec G1H 6R1, Canada

Corresponding author: <dustin.dahn@gnb.ca>

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ABSTRACT

Recent amendments to the North American Stratigraphic Code enable the renaming of offensive or inappropriate unit names. Although the Province of New Brunswick has commenced the identification and renaming of culturally inappropriate geographic features, the use of offensive toponyms presents a problem in the naming of geological units. Names of eight geological units and structures in New Brunswick are culturally inappropriate or offensive. Following the guidelines in the amended Stratigraphic Code, replacement names for these problematic units and structures are proposed herein.

RÉSUMÉ

Les modifications récemment apportées au Code stratigraphique nord-américain nous permettent de renommer les unités géologiques portant des noms offensants ou inappropriés. Le gouvernement du Nouveau-Brunswick a commencé à identifier et à renommé certaines entités géographiques aux noms culturellement inappropriés, mais l'utilisation de toponymes offensants dans la désignation des unités géologiques demeure un problème. Huit unités et structures géologiques du Nouveau-Brunswick ont des noms considérés comme culturellement inappropriés ou offensants. Les présentes proposent des noms de rechange pour les unités et les structures problématiques suivant les directives du Code stratigraphique modifié.

[*Traduit par la redaction*]

INTRODUCTION

The North American Stratigraphic Code of the North American Stratigraphic Commission on Stratigraphic Nomenclature describes "explicit practices for classifying and naming all formally defined geologic units" (NACSN 2021, p. 162). Nomenclature guidelines recommend compound unit names consisting of a local geographic name plus a rank term (e.g., Jacquet River Formation) or descriptive term (e.g., Ramsay Brook Gabbro) with the goal of clear communication within the geological literature (NACSN 2021; MacNaughton *et al.* 2022). Recent amendments to the North American Stratigraphic Code ("the Code"; MacNaughton *et al.* 2022, 2024) enable and encourage the replacement of offensive or culturally inappropriate unit names.

Continued use of problematic names could be interpreted as hurtful, offensive, and disrespectful. Hadlari *et al.* (2020), White andWaldron (2022), and Waldron *et al.* (2022) provide examples of renaming geological structures that are culturally inappropriate. Although the naming of geological structures is not formalized under the Code, these instances provide examples of renaming geological features with offensive and culturally inappropriate names. For geological units, the problem of offensive unit names relates to the geographic toponym. The Province of New Brunswick has begun the process of identifying and renaming geographic features that are culturally inappropriate (Government of New Brunswick 2023a, b); however, problematic toponyms are still in use. Providing geological units and structural features with appropriate alternatives incorporating Indigenous place names is an action toward reconciliation between Indigenous and settler communities of New Brunswick.

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Many problematic terms for Indigenous peoples of North America are commonly used, yet considered offensive (e.g., Yellowbird 1999). The term Indian continues an inaccurate, oppressive, and colonially imposed identity (McCue 2020; MacNaughton *et al.* 2022) and homogenizes the diverse and distinct cultures, identities, and nations of Indigenous communities (Yellowbird 1999). The term s***w is considered a deeply offensive, derogatory, and inappropriate racial slur (Yellowbird 1999).

Eight geological units and structures have been identified in New Brunswick as culturally inappropriate or offensive. They include: Indian Point Formation; S***w Cap Felsite; S***w Cap Fault; S***w Lake Granodiorite; Indiantown Gabbro; Indian Lake Fault; Indian Mountain Formation; and Indian Mountain Deformed Zone (Fig. 1). This contribution documents the current problematic geological units and structures and proposes replacement names as outlined in the amended North American Stratigraphic Code (MacNaughton *et al.* 2022, 2024).

INDIAN POINT FORMATION

Background

The Indian Point Formation was designated as the uppermost unit of the Chaleurs Group in the Port-Daniel area of the Gaspé Peninsula by Schuchert and Dart (1926). The current name of this formation does not align with the toponym from which it is derived, which is Pointe de l'Indien located in the Gaspé region of Québec. Bourque (1975a, b; 1977) extended the Indian Point Formation into northeastern Gaspé and included four members previously included in the Saint-Léon Formation. In the type section, Bourque and Gosselin (1986) introduced three informal members. Along the south shore of Chaleur Bay in Restigouche County, New Brunswick, Wilson (2002) assigned all upper Silurian and Lower Devonian rocks underlying the Val d'Amour Formation southwest of Campbellton to the Indian Point Formation. Wilson *et al.* (2004) reassigned many of the limestone and associated calcareous rocks with late Silurian fossil ages to the underlying West Point Formation. Wilson and Kamo (2012) reassessed the Silurian stratigraphy of northern New Brunswick, removing many formations from the Chaleurs Group. However, it was recommended that sedimentary rocks contiguous with the West Point and Indian Point formations in Gaspé remain in the Chaleurs Group. The general location of this formation is shown in Figure 1 (box number 1) and the current distribution and extent in New Brunswick are shown in Wilson (2013a). The current distribution and extent of this formation in the Gaspé Peninsula are shown in Brisebois *et al.* (1992) and Ministère des Ressources naturelles et des Forêts du Québec (2020).

Proposed replacement name

The type section for this formation is defined along the north shore of Chaleur Bay between Pointe de l'Indien (National Topographic System (NTS) 22 A/2W) and Pointe aux Loups Marins (NTS 22 A/3E), west of Port-Daniel, Gaspé Peninsula, Québec (Schuchert and Dart 1926; Globensky 1993). A detailed description of the type section is provided by Bourque and Lachambre (1980). A replacement name of **Pointe aux Loups Marins Formation** (en français: **Formation de la Pointe aux Loups Marins**) is proposed, as this toponym applies to the western extremity of the reference section. The name Pointe aux Loups Marins Formation replaces *Indian Point Formation* without changing its definition, description, or limits as outlined by Schuchert and Dart (1926), Globensky (1993), and New Brunswick Bedrock Lexicon (2025).

S***W CAP FELSITE AND S***W CAP FAULT

Background

Intrusive rocks southwest of Campbellton were first mapped by Alcock (1941). These intrusive rocks were referred to as the Mount S***w Cap Stocks by Whalen (1993), who conducted geological, petrographic, and geochemical investigations of intrusive rocks in New Brunswick. Regional mapping in the Restigouche area was carried out by Greiner (1974) and Wilson (2002). Wilson *et al.* (2004) formally defined the unit. The S***w Cap Fault is located in northern New Brunswick (NTS 21 O/15 and O/14), extending from Adams Gulch to its intersection with the Sugarloaf Fault, south of Campbellton. The fault offsets Ordovician and Devonian stratigraphy of the Grog Brook, Matapédia, Chaleurs, and Dalhousie groups (Carroll 2003; Wilson 2013a). The Province of New Brunswick officially renamed the source toponym as Meto'mqwijuig Mountain (pronounced Meh-*tum*-ka-jig; Cox 2023; Government of New Brunswick 2023b), which provides a solution to rename the geological unit and nearby fault. The general location of this unit is shown in Figure 1 (box 2) and the current distribution and extent are shown in Wilson (2013a), with additional references therein. The general location of the fault is shown in Figure 1 (line A) and the current extent is shown in Wilson (2013a) and Carroll (2003).

Proposed replacement name

The type locality is defined in a quarry on the southeast side of Route 17 at Evergreen, 5 km northeast of the bridge over Upsalquitch River, Restigouche County, New Brunswick (NTS 21 O/15W; Wilson *et al.* 2004). The quarry is located on the northern slope of Meto'mqwijuig Mountain and therefore, the name **Meto'mqwijuig Mountain Felsite** (en français: **Felsite de Meto'mqwijuig Mountain**) is proposed as a replacement.

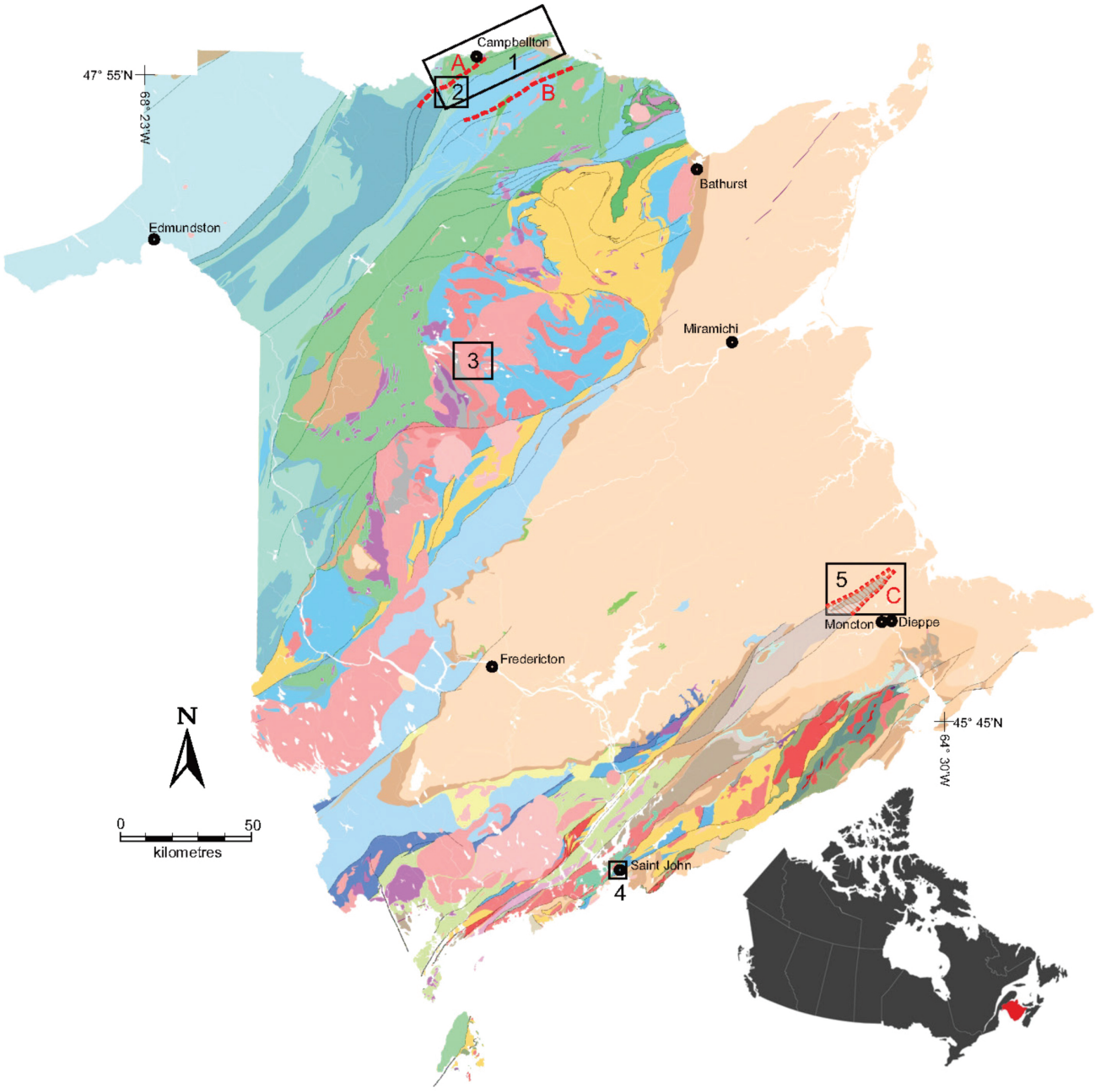

Figure 1. Simplified bedrock geological map of New Brunswick showing the general location of geological units where new names are proposed (black box and numbers 1–5) and structural features (red lines and letters A–C). Inset map showing the location of New Brunswick within Canada. 1 = Pointe aux Loups Mains Formation (formerly Indian Point Formation); 2 = Meto'mqwijuig Mountain Felsite (formerly S*w Cap Felsite); 3 = Island Lake Granodiorite (formerly S***w Lake Granodiorite); 4 = Spar Creek Gabbro (formerly Indiantown Gabbro); 5 = Maple Hills Formation (formerly Indian Mountain Formation); A = Meto'mqwijuig Mountain Fault (formerly S***w Cap Fault); B = Basket Lake Fault (formerly Indian Lake Fault); C = Shediac River Deformed Zone (formerly Indian Mountain Deformed Zone).**

The fault mapped in the same quarry is proposed to be renamed the **Meto'mqwijuig Mountain Fault** (en français: **Faille de Meto'mqwijuig Mountain**).

The name Meto'mqwijuig Mountain Felsite replaces *S***w Cap Felsite* without changing its definition, description, or limits as outlined in Wilson *et al.* (2004) and Wilson (2013a); see also New Brunswick Bedrock Lexicon 2025).

The name Meto'mqwijuig Mountain Fault replaces *S***w Cap Fault* without changing its definition, description, or limits as mapped in Carroll (2003) and Wilson (2013a).

S***W LAKE GRANODIORITE

Background

Regional mapping projects by Skinner (1975), Crouse (1977), and Fyffe (1979) identified granodioritic rocks in the area near Island Lake but did not assign a formal name. These rocks were interpreted as part of the North Dungarvon River Granite by Crouse (1977) and Fyffe *et al.* (1981). Fyffe (1982) differentiated these rocks from the North Dungarvon River Granite and Fyffe and Pronk (1985) recognized the granodioritic rocks as a separate distinctive pluton and defined the S***w Lake Granodiorite type locality on exposures near Island Lake in Victoria County, New Brunswick. Whalen (1993) provided regional geological, petrographic, and geochemical investigations of granitic rocks in central New Brunswick and interpreted these granodioritic rocks as part of the North Pole Stream Granitic Suite. Work is ongoing to identify a replacement name for this lake (Government of New Brunswick 2023b). The general location of the S***w Lake Granodiorite is shown in Figure 1 (box number 3) and the current extent of the pluton is shown in Smith and Fyffe (2006).

Proposed replacement name

The type section is defined as exposures around the margins of Island Lake and along the road between Island Lake and S***w Lake, Victoria County, New Brunswick (NTS 21 J/15W; Fyffe and Pronk 1985; New Brunswick Bedrock Lexicon 2025). The name **Island Lake Granodiorite** (en français: **Granodiorite d'Island Lake**) is proposed as a replacement. The name Island Lake Granodiorite replaces *S***w Lake Granodiorite* without changing its definition, description, or limits, as defined by Fyffe and Pronk (1985; see also New Brunswick Bedrock Lexicon 2025).

INDIANTOWN GABBRO

Background

The Indiantown gabbro was first described and named in an unpublished Ph.D. thesis by Cumming (1916). Hayes and Howell (1937) formalized the unit. Many workers have followed this definition, e.g., Alcock (1938), Leavitt and Hamilton (1962a, b), Ruitenberg *et al.* (1979), and Currie *et al.* (1981). Detailed work by White *et al.* (1990) and White (1995) redefined and modified the extent of the gabbro. The City of Saint John, New Brunswick, has abandoned the use of Indiantown and work is ongoing to have a new name assigned to this neighborhood (Urquhart 2021). The general location of the gabbro in the City of Saint John, New Brunswick is shown in Figure 1 (box number 4) and the current distribution of the pluton is as shown by White and Barr (2007) and Johnson *et al.* (2005).

Proposed replacement name

The type locality is defined at Indiantown on the east shore of the Saint John River in the City of Saint John, Saint John County, New Brunswick (NTS 21 G/08E; Cumming 1916; White 1995). The name **Spar Creek Gabbro** (en français: **Gabbro de Spar Creek**) is proposed as a replacement.

The name Spar Creek Gabbro replaces *Indiantown Gabbro* without changing its definition, description, or limits, as revised by White (1995; see also New Brunswick Bedrock Lexicon 2025).

INDIAN MOUNTAIN FORMATION

Background

Stratigraphic units later assigned to the Indian Mountain Formation were included in the Moncton Group by Norman (1941), Gussow (1953), and Carr (1968), and in the Moncton Formation by St. Peter (1989). Abandonment of the Moncton Group and Moncton Formation is described by Park and St. Peter (2005) and Hinds and St. Peter (2006). St. Peter (2006) formally defined the Indian Mountain Formation. The toponym Indian Mountain is still in use for the topographic feature, community, and road located in Westmorland County, southeastern New Brunswick. The rural community of Maple Hills, incorporated January 1, 2023, is located north of the City of Moncton and includes Indian Mountain. The general location of the Indian Mountain Formation is shown in Figure 1 (box number 5) and the current distribution of the formation is shown by Smith (2007).

Proposed replacement name

Intermittent exposures of this formation along an unnamed brook that flows southward into the North River southeast of Indian Mountain, Westmorland County, New Brunswick (NTS 21 I /02) define the type section. The name **Maple Hills Formation** (en français: **Formation de Maple Hills**) is proposed as a replacement.

The name Maple Hills Formation replaces *Indian Mountain Formation* without changing its definition, description, or limits, as outlined by St. Peter (2006; see also New Brunswick Bedrock Lexicon 2025).

INDIAN LAKE FAULT

Background

The general location of the Indian Lake Fault is shown in Figure 1 (line B). It extends from 6 km east of the Upsal-

quitch River where it intersects the Chouinard Brook Fault to its intersection with the Reid Brook Fault, south of Charlo. The fault offsets Ordovician stratigraphy of the Popelogan Inlier and late Silurian volcanic rocks of the Bryant Point Formation. A fault was first identified and mapped at Indian Lake by Greiner (1974) but not named. Subsequent 1:20 000-scale series maps by Wilson (2012a, b, c) and Langton and Wilson (2012) assign the name Indian Lake Fault, and regional compilations by Wilson (2013a, b) show the current extent of the fault. Wilson (2017) provides estimated dextral offsets between 700 and 900 m and infers that faulting was associated with Acadian orogenesis.

Proposed replacement name

The naming of geological structures is not formalized under the Code; however, a new name is proposed for the Indian Lake Fault, located in Restigouche County, New Brunswick (NTS 21 O/15 and O/16). The surface trace of the fault follows short segments of the Charlo River and Narrows Brook and Basket Lake (NTS 21 O/15W). The name **Basket Lake Fault** (en français: **Faille de Basket Lake**) is proposed as a replacement because the full length of Basket Lake follows the trace of the fault. The name Basket Lake Fault replaces *Indian Lake Fault* without changing its definition, description, or limits, as mapped by Wilson (2013a, b and references therein; Wilson 2017).

INDIAN MOUNTAIN DEFORMED ZONE

Background

The general location of the Indian Mountain Deformed Zone is shown in Figure 1 (line and hatched area C). The Indian Mountain Deformed Zone (IMDZ) is a zone of deformed Carboniferous and older rocks bounded to the north by the Smith Creek Fault and to the south by the Berry Mills Fault, positioned between the Cocagne subbasin (to the NW), Moncton subbasin, and Westmorland uplift in southeastern New Brunswick (NTS 21 I/02 and I/07). Several faults are contained within the zone, namely The Gorge, Salt Springs Brook, North River, and O'Neil faults. The IMDZ was described but not named by Gussow (1953). The first explicit use of the term *Indian Mountain Deformed Zone* was by St. Peter (2006), followed by St. Peter and Johnson (2009), and the zone was described in detail by Park and St. Peter (2009). Park *et al.* (2024) described the stratigraphy and structural history of the southern domain of the IMDZ as a major dextral strike-slip fault active during early Carboniferous sedimentation.

Proposed replacement name

The naming of geological structures is not formalized under the Code; however, a new name is proposed for the IMDZ. The surface trace of the northeastern portion of the deformed zone parallels the Shediac River. The name **Shediac River Deformed Zone** (en français: **Zone déformée de Shediac River**) is therefore proposed as a replacement for the IMDZ. The name Shediac River Deformed Zone replaces *Indian Mountain Deformed Zone* without changing its definition, description, or limits, as described by St. Peter (2006) and Park and St. Peter (2009).

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Editorial responsibility: Sandra M. Barr