

3.4.6 TAIGA SHIELD HIGH BOREAL (HB) ECOREGION



Uplands of exposed bedrock or discontinuous till veneers are typical landforms across much of the Taiga Shield High Boreal (HB) Ecoregion. Dense to open black spruce and jack pine forests with bog cranberry, common Labrador tea, lichen and moss understories are widespread; deep soils and adequate moisture promote diverse communities. Paper birch is the dominant deciduous species. White spruce and aspen are generally restricted to warm, moist well-drained sites where nutrients are not limiting. Lichen communities, open lichen woodland or shrubby woodlands prevail on exposed bedrock or thin till or outwash veneers. Bogs and fens with black spruce, larch, paper birch, Labrador tea, bog cranberry, red bearberry, cloudberry, sedges and peat mosses occupy cold, wet, poorly drained sites. Shore fens, such as the one surrounding the pond in the midground, are common. Brunisols and Regosols are common soils on imperfectly- to well-drained sites. Organic Cryosols and Gleysols are associated with poorly-drained wet sites.



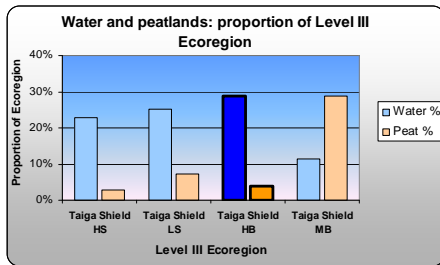
Closed-canopied black spruce and jack pine forests with scattered stands of white spruce and paper birch are typical of the Taiga Shield HB Ecoregion. Areas of exposed bedrock (foreground) with little or no soil are characterized by patchy lichen, moss, grass and low shrub communities.



The bog or mountain cranberry (*Vaccinium vitis-idaea*) is a low, mat-forming evergreen shrub that favours sunny, acidic, and dry to moist sites. It is common throughout the Taiga Shield.

3.4.6 TAIGA SHIELD HIGH BOREAL (HB) ECOREGION

Overview: *The Taiga Shield HB Ecoregion occupies the eastern third of the Taiga Shield; it is bedrock-dominated with jack pine and mixed spruce forests on rock outcrops, thin bouldery till, and outwash.*



Total area: 84,767 km² (26% of Taiga Shield).
Ecoregion shown in red.

General Description

The Level III Taiga Shield HB Ecoregion extends south from 64° N latitude to the Alberta – Northwest Territories border, a distance of about 650 km, and includes five Level IV ecoregions. North of Great Slave Lake, the Ecoregion is about 80 to 100 km wide from its western boundary with the Level II Taiga Plains Ecoregion to its eastern boundary with the Level III Taiga Shield LS Ecoregion, and occurs at elevations of 300 mASL or less. South of Great Slave Lake, the Ecoregion is about 150 to 200 km wide; the land rises gently to the east and reaches elevations of over 500 mASL in the southeast corner. Exposed bedrock plains and undulating to hilly bedrock uplands are the dominant landscape feature, with thin bouldery till veneers mainly in the lowland areas between Great Slave Lake and Great Bear Lake. Jack pine stands occupy large areas with high fire frequency; black spruce – shrub – lichen stands are dominant where fires are less frequent. White spruce and trembling aspen forests are common in low-elevation areas to the west where nutrient and water supplies are adequate. Peat plateaus and shore and floating fens are scattered throughout.

Climate

Yellowknife is the only station from which climate data have been collected over long periods within the Taiga Shield HB Ecoregion, and climate statistics are therefore determined through interpolated models using the limited available data. The extensive occurrence of jack pine, the development of mixed-wood stands along the western third of the Ecoregion, the absence of polygonal peat plateaus and the presence of more extensive shoreline and aquatic vegetation communities provides supporting evidence for comparatively warm conditions. Climate models (Agriculture and Agri-Food Canada 1997) provide the following general statistics. The mean annual temperature ranges from –3 to –6°C. The mean temperature in January, the coldest month, ranges from –26 to –28°C, and from 15 to 16°C in July, the warmest month. Mean annual precipitation is between 280 and 360 mm, with the wettest period in June through November; about 50 percent falls as rain and 50 percent as snow. The mean annual daily solar input (refer to Section 1.4.1 for further explanation) ranges between 10.5 and 11.0 mJ/m²/day, with low values of 1.0 to 1.5 mJ/m²/day in December and highs of 21.5 to 22.0 mJ/m²/day in June.

Topography, Geology, Soils, and Hydrology

South of Great Slave Lake, the land rises from about 200 mASL along the western boundary to over 500 mASL in the southeast corner. North of Great Slave Lake, elevations range from about 100 mASL to 300 mASL. Nearly level to rolling and hilly Precambrian granitoid, intrusive and metamorphic crystalline bedrock is the dominant landform, with thin bouldery coarse-textured till veneers over much of the area and somewhat deeper till deposits in the southeast. Eskers and outwash deposits occur mainly in the southeast on higher terrain and are not widespread elsewhere. Fine-textured, relatively nutrient-rich lacustrine deposits have accumulated in low-lying areas between bedrock exposures at lower elevations along the west side of the Ecoregion. Brunisols are the most common soils, with Regosols and Gleysols near streams and lakes. Peatlands cover less than five percent of the Ecoregion, but lakes account for nearly one-third of the area, and Great Slave Lake is the largest water body.

Vegetation

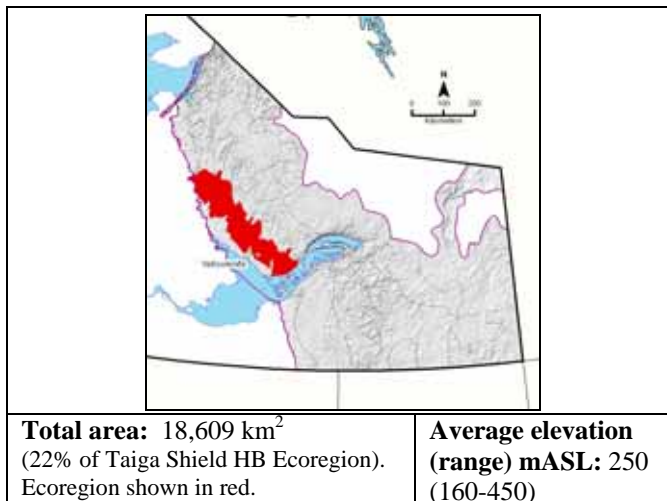
Bradley *et al.* (1982) describe two major upland vegetation types associated with bedrock and discontinuous glacial deposits in the High Boreal ecoclimatic region on the Taiga Shield – lichen woodland and moss forest. Lichen woodland/rock lichen woodland with jack pine, black spruce and paper birch occurs on thin soils over bedrock, in bedrock fractures and on well-drained coarse-textured outwash deposits. Moss forest, typically with a moderately dense black spruce canopy that favours the development of a feathermoss understory, occurs on deeper, moister soils; mixed or pure forests of white spruce, trembling aspen and paper birch also occur on moderately moist sites. Fire has had a major influence on the Taiga Shield HB Ecoregion. Large expanses are forested with closed canopy conifers and young jack pine and paper birch stands. Black spruce stands occur on areas that have longer fire-return intervals; stand size is determined by the extent and depth of till deposits on bedrock. Mixed-wood stands of white spruce and aspen are common on lacustrine and fluvial materials in the low-elevation areas. Rock lichen communities colonize bare bedrock and include several species of lichens and a few dryland mosses. Black spruce and jack pine occur in shallow depressions or in fractures that hold water and together with lichens and low shrubs form sparsely treed rock lichen woodland. The bright green hues of shoreline and floating fens and the abundance of variegated pond lily colonies in shallow water are characteristic of this Ecoregion. Appendix 2 summarizes the major plant community types.

3.4.6.1 Great Slave Upland HB Ecoregion

Overview: *The Great Slave Upland HB Ecoregion is a nearly level bedrock plain with thin discontinuous till veneers, scattered outwash and lacustrine deposits, and a mosaic of black spruce woodlands and jack pine and paper birch regeneration on burned areas.*

Summary:

- Bedrock dominated landscape, mostly level with a few hill systems
- Black spruce and jack pine forests grow in rock fractures and on discontinuous till and lacustrine deposits between bedrock exposures



General Description

The Great Slave Upland HB Ecoregion is a gently southwest-sloping bedrock plain between about 200-300 mASL. It extends northeast from the shores of the East Arm to the more rugged terrain of the Great Slave Upland LS Ecoregion and the Calder Upland LS Ecoregion. Its southwestern boundary is defined by the lower elevation bedrock plains of the Great Slave Lowland HB Ecoregion. The dominant landscape type is a fractured bedrock plain with subdued topography, but there are a few local prominences that reach elevations of 450 mASL between Faber and Basler Lakes in the northernmost part, and more pronounced rolling terrain along the border with the Great Slave Upland LS Ecoregion and in a small area just east of Strutt and Slemon Lakes. Most of the Ecoregion was covered by Glacial Lake McConnell, and discontinuous wave-washed bouldery till or variable-textured lacustrine and glaciofluvial materials have been deposited in rock fractures and between rock outcrops. Trembling aspen, jack pine paper birch and spruce occur as forested patches separated by rock exposures. Small peat plateaus, shore fens and floating fens are common throughout the Ecoregion in wet depressions and along lakeshores.

Geology and Geomorphology

The southeastern third of the Ecoregion is underlain by Precambrian sedimentary rock, but the remainder is mainly fractured and dissected granite. Glacial Lake McConnell reached a maximum elevation of about 280 mASL (Kerr and Wilson 2000) and a combination of wave-washed tills, variable-textured glaciolacustrine sediments and glaciofluvial materials occur as thin, discontinuous deposits between rock outcrops and in fractures over much of the Ecoregion.

Soils

Variable-textured Brunisols are the dominant soils on glacial deposits between bedrock exposures and in fractures, but there

is no soil development on bare bedrock exposures. Organic Cryosols occur with peat plateaus and Organic soils and Gleysols in wet depressions with shore fens and floating fens.

Vegetation

Forests are discontinuous and occur between or on rock outcrops where there is a sufficiently thick mineral or organic substrate. Lichen woodland/rock lichen woodland with jack pine, black spruce and paper birch occurs on thin soils over bedrock, in bedrock fractures, and on well-drained coarse-textured outwash deposits. Moss forests, typically with a moderately dense black spruce canopy that favours the development of a feathermoss understory, occur on deeper, moister soils; mixed or pure forests of white spruce, trembling aspen and paper birch also grow on moderately moist sites. Peat plateaus have open black spruce – low shrub – lichen communities on the palsas and sedge – moss fens in the collapse scars. Shore fens and floating fens include sedges, cotton-grasses, shrubs and mosses.

Water and Wetlands

Numerous large lakes (Faber, Zinto, Saddle, Basler, Kwejinne, Mazonod, Labrishe, Bigspruce, Slemon, Wheeler, Awry, Duncan, Desparation, Harding, Campbell, Watta, Buckham, Mystery and Blatchford Lakes) occupy over 30 percent of the area. Several major rivers (Snare, Wecho, Yellowknife, Cameron and Beaulieu Rivers) all drain south across the Ecoregion into Great Slave Lake. Peat plateaus and fens are common in lowlands and around shallow lakes. Lakes in this Ecoregion are transitional between those occupying the former basin of Glacial Lake McConnell and higher elevation areas. Lakes within the basin are shallow and silty, whereas lakes at higher elevations are deep and clear.

Notable Features

A small outlier population of Harlequin Ducks, a species normally associated with Cordilleran (mountainous) areas far to the west, breeds in this Ecoregion.



This image from the approximate centre of the Great Slave Upland HB Ecoregion is typical. The incised bedrock plain supports a mosaic of discontinuous patchy black spruce, jack pine, paper birch and white spruce forests.



Bedrock hills to 450 mASL occur in the northern part of the Ecoregion. Lower slopes with deeper till blankets support spruce and feathermoss forests, and lakes tend to be deep and clear.



Bouldery till and sandy outwash support open, shallow-rooted stands of jack pine, white spruce and paper birch with sparse low shrub and lichen understories. Common bearberry is the main species in the light green forest floor mats.



The transition to lower-elevation warmer High Boreal climates is marked by the increasing occurrence of bright green shore and floating sedge fens on shallow, silty lakes, and the improved growth of trees such as the white spruce stands in the midground.

3.4.6.2 Great Slave Lowland HB Ecoregion

Overview: *The Great Slave Lowland HB Ecoregion borders Great Slave Lake, and is a low-elevation, nearly level bedrock plain with silty discontinuous till and lacustrine deposits between outcrops and a diverse array of forest types and wetlands.*

Summary:

- Nearly level low-elevation granitic bedrock plain with discontinuous till and lacustrine deposits between outcrops.
- Mixed conifer and conifer – deciduous forests on and between rock outcrops.
- Shore and floating fens and peat plateaus in wet depressions.



Total area: 11,040 km²
(13.0% of Taiga Shield HB Ecoregion). Ecoregion shown in red.

Average elevation (range) mASL: 175
(160-200)

General Description

The Great Slave Lowland HB Ecoregion occupies the low-elevation level terrain adjacent to the North Arm of Great Slave Lake and the Level II Taiga Plains Ecoregion. The slightly higher and more rugged Great Slave Upland HB Ecoregion surrounds it to the east and north; a line across the western tip of the islands in East Arm forms the southeastern boundary. The dominant landscape is a level plain composed of low-relief Precambrian granites that were glaciated and subsequently flooded by Glacial Lake McConnell, leaving behind discontinuous till and lacustrine veneers and blankets between bedrock outcrops and in rock fractures. Patchy conifer, mixed-wood and deciduous forests with relatively diverse understories occur between rock exposures, on thin soils over bedrock, and in fractures; jack pine and aspen stands are widespread, indicating the influence of High Boreal climates. Wetlands are common.

Geology and Geomorphology

Low-relief Precambrian granites are the dominant terrain feature throughout the Ecoregion, with some sedimentary deposits around Russell Lake in the north and Hearne Lake in the south. The entire area was once covered by thick ice and later flooded by Glacial Lake McConnell to a depth of about 100 m. A combination of wave-washed tills, variable-textured glaciolacustrine sediments, and glaciofluvial materials occur as thin, discontinuous deposits between rock outcrops and in fractures over much of the Ecoregion and surrounding areas (Kerr and Wilson 2000).

Soils

Variable-textured Brunisols are the dominant soils on glacial deposits between bedrock exposures and in fractures. Organic Cryosols occur with peat plateaus and Organic soils and Gleysols in wet depressions with shore fens and floating fens.

Vegetation

Forests are discontinuous and occur between or on rock outcrops where there is a sufficiently thick mineral or organic substrate. The influence of the milder High Boreal ecoclimate across this Ecoregion is indicated by the widespread occurrence of jack pine and aspen, the relatively vigorous growth of white spruce and birch in moist areas, locally extensive shrubby and sedge fens, dense variegated pond lily colonies on shallow ponds, and peat plateaus with large collapse scars.

Water and Wetlands

Great Slave Lake is a major influence on the Great Slave Lowland HB Ecoregion. It meets the bedrock uplands along a complex shoreline with deep shallow bays and surrounds numerous small, mostly treeless islands. Russell, Mosher, Marian and Stagg Lakes are the largest lakes to the northwest; Prosperous, Jennejohn, Defeat and Hearne Lakes are the largest lakes to the south. The lower portions of the Marian, Snare, Stagg, Yellowknife and Beaulieu Rivers flow through the Ecoregion and drain into Great Slave Lake. Peat plateaus, shore fens and floating fens are common throughout but become a prominent feature closer to Great Slave Lake.

Notable Features

Shallow bays, marshes and lakes with rich and diverse aquatic and shoreline vegetation are common features of this Ecoregion and provide excellent habitat for numerous aquatic bird species. The waters of the inshore bays and islands of the North Arm are ice-free here earlier than elsewhere on Great Slave Lake, allowing birds to nest sooner and improve breeding success. Early-season open water also makes the area particularly important as a spring staging area for numerous migrating aquatic birds that nest further inland, especially waterfowl.



The low-relief bedrock plains, bright green floating and shore fens, pond lily colonies and mixed conifer – deciduous forests in this image are typical of the Great Slave Lowland HB Ecoregion. The grayish-white patches are exposed bedrock.



Along the shores of Great Slave Lake, extensive floating sedge fens often develop in shallow bays. The pinkish-gray hummocks are exposed bedrock.



Active beaver colonies are common throughout the Ecoregion, and encourage the development of extensive ponds and wetlands. The two gray dome-shaped structures at the edge of the central sedge island are large beaver lodges.



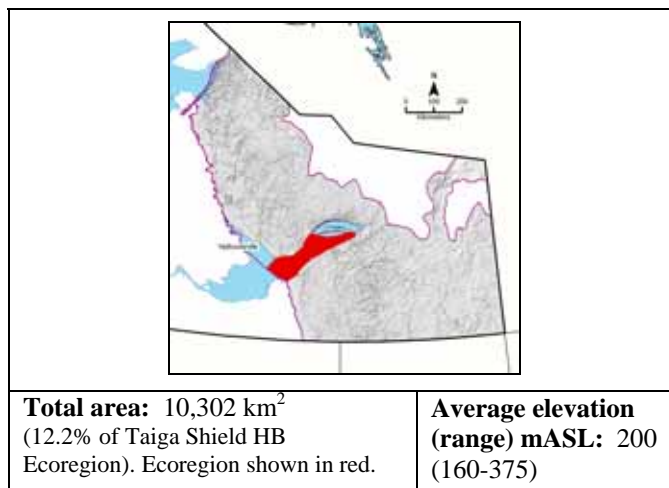
Jack pine can take root in very small crevices or in shallow pockets of soil on bedrock, where growth is limited by available water. Lichens and drought-tolerant mosses are abundant on bare rock.

3.4.6.3 East Arm Upland HB Ecoregion

Overview: *The East Arm Upland HB Ecoregion is a complex of nearly flat to hilly bedrock islands and peninsulas blanketed by discontinuous lacustrine deposits and supporting a diverse mosaic of plant communities.*

Summary:

- There are two main terrain types within the Ecoregion – the islands to the west and a hilly peninsular landmass extending north from the prominent McDonald Fault to the east.
- Bedrock, silty lacustrine deposits and scattered outwash plains provide diverse growing conditions that support a variety of forest and wetland types.



General Description

The East Arm Upland HB Ecoregion²⁹ includes the Simpson Islands of Great Slave Lake and a complex hilly peninsula containing many shallow bays and lakes in the eastern half of the Ecoregion. The southern boundary of the Ecoregion is clearly defined by the McDonald Fault and the southern shoreline of East Arm. To the north, Christie Bay separates it from the East Arm LS Ecoregion. Fine-textured lacustrine deposits blanket many of the low-lying areas, especially on the eastern peninsula. Coniferous, mixed-wood, and deciduous forests, rock lichen communities on bedrock, and scattered wetlands occur across the Ecoregion.

Geology and Geomorphology

An undifferentiated complex of mixed-origin Precambrian bedrock is the dominant feature, with granitic exposures along the prominent McDonald Fault to the south and the rugged Simpson Islands. Bedrock layers often tilt down to the southeast within the East Arm and break along vertical fractures producing tall cliffs such as those on the north side of Redcliff Island. Glacial Lake McConnell covered almost the entire East Arm to an elevation of 280 mASL (Kerr and Wilson 2000), leaving behind fine-textured glaciolacustrine blankets that are most extensive on interior lowlands of the larger islands and across the eastern peninsula. Outwash deposits are not widespread but can be locally extensive, such as those that form large terraces and plains in the Snowdrift River valley.

Soils

Soils on lacustrine materials belong to the Redcliff Island association (Bradley *et al.* 1982) and are moderately well- to poorly-drained, noncalcareous, clay loam to clay-textured permafrost-affected Orthic and Gleysolic Turbic Cryosols.

Soils on thin till deposits over bedrock belong to the Nonacho Lake association; they are well-drained, sandy loam-textured noncalcareous Brunisols (Bradley *et al.* 1982). There is no soil development on exposed bedrock.

Vegetation

Fine-textured lacustrine deposits interspersed with bedrock exposures, topographic variability, and a High Boreal ecoclimate together provide suitable conditions for the development of diverse plant communities. Spruce – lichen woodlands, jack pine communities, and low-growing shrubs and lichens occur in fractures, on thin tills over bedrock and on outwash plains. Spruce – shrub – moss communities or regenerating jack pine – paper birch – shrub stands occupy locally extensive areas on lacustrine materials. The occurrence of jack pine, trembling aspen and broad sedge-dominated fens on lakes indicates a Mid-Boreal ecoclimatic influence on the western part of the Ecoregion.

Water and Wetlands

The most important water body is Great Slave Lake. Large lakes occurring within the eastern peninsula include McDonald, Fairbairn, Wilson, Stark and Murky Lakes and Lac Duhamel. Some of these lakes are turquoise-coloured because of suspended lacustrine silts. The Snowdrift River flows into the Ecoregion from the south. Peat plateaus are small and scattered. Horizontal sedge fens, shore fens and floating fens can be locally extensive in shallow bays and around lakes.

Notable Features

The East Arm of Great Slave Lake contains very deep water areas where warm upwellings may remain ice-free during winter. The islands of the East Arm provide key nesting sites for several species of colonial nesting gulls, terns and jaegers. Cliffs are common and provide optimal nesting sites for birds of prey.

²⁹ This Ecoregion is included within the East Arm Ecodistrict of Bradley *et al.* (1982), from which some of the descriptive information is derived.



Exposed bedrock and thin lacustrine veneers on the eastern tip of Blanchet Island support black spruce – shrub – moss forests and peat plateaus. Terrain and vegetation patterns shown in this image are typical of many of the islands found in the western portion of the Ecoregion.



The eastern peninsulas are a complex of bedrock plains and hills, with lacustrine blankets on the lower-elevation plains. In this image taken northeast of McDonald Lake, mixed-wood stands, jack pine, black and white spruce, and sedge fens are all visible.



Cliffs are common throughout much of the Ecoregion. Spectacular exposures, such as these along the southeast side of Redcliff Island, occur on some of the islands and peninsulas.



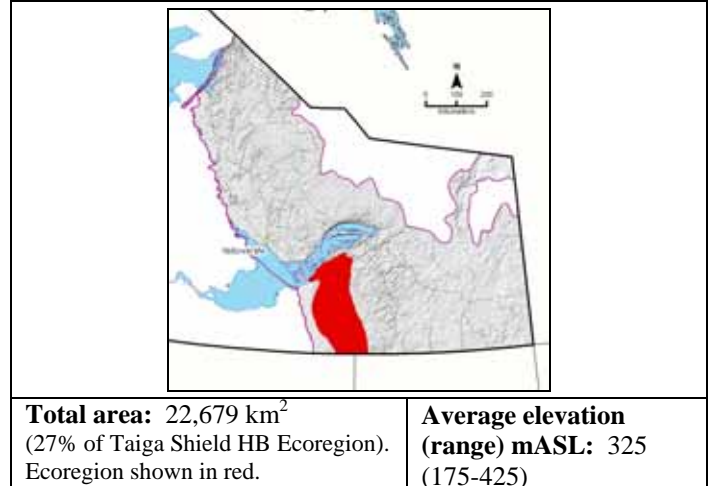
The Snowdrift River flows across the Ecoregion and into Great Slave Lake; the light-coloured area in the foreground is sparsely treed white spruce – black spruce – jack pine lichen woodland on a sandy outwash terrace that was deposited thousands of years ago by glacial meltwaters.

3.4.6.4 Rutledge Upland HB Ecoregion

Overview: *The Rutledge Upland HB Ecoregion includes hummocky bedrock ridges and plains with thin, discontinuous bouldery till veneers; almost the entire area has burned in the recent past, resulting in extensive areas of jack pine regeneration.*

Summary:

- Gently sloping hummocky bedrock upland with thin discontinuous till deposits is typical over most of the Ecoregion.
- Very extensive fires have produced a landscape that is dominated by jack pine regeneration.



General Description

The Rutledge Upland HB Ecoregion is a southwest-sloping hummocky bedrock landscape.³⁰ Its eastern border with the higher-elevation Nonacho Upland HB Ecoregion is defined by metamorphic rock ridges that parallel the Taltson River and by a transition to deeper till deposits over bedrock. Its western boundary with the lower-elevation Slave Plain MB Ecoregion is at the approximate inundation limits of Glacial Lake McConnell.³¹ The steep bedrock hills above the shoreline of the East Arm Upland HB Ecoregion form its northern boundary. Thin bouldery till deposits occur in fractures, bedrock depressions and low areas between extensive bedrock outcrops. Jack pine and black spruce stands occur as discontinuous stands on shallow soils on and between bedrock knobs. To the west, pockets of lacustrine materials underlie locally extensive wetlands and black spruce – moss forests. Till veneers mantle bedrock in the southeastern corner and allow the development of more continuous forest cover. Wetlands are more common in this Ecoregion than in other Taiga Shield High Boreal ecoregions.

Geology and Geomorphology

The western two-thirds of the Ecoregion is dominated by hummocky Precambrian intrusive bedrock, and the eastern third is mainly ridged to hummocky metamorphic rock. Bouldery till deposits are found only in fractures, bedrock depressions and between bedrock exposures. Till veneers overlie bedrock in the southeast corner. Lacustrine deposits occur in pockets along the western border of the Ecoregion at elevations below about 300 mASL, corresponding with the approximate maximum elevation of Glacial Lake McConnell.

Soils

Soils on till materials belong to the Nonacho Lake association (Bradley *et al.* 1982) and are well-drained, noncalcareous, sandy loam lithic phase (thin over bedrock) Brunisols. Weakly

calcareous sandy to loamy Brunisols of the Fort Smith association are likely to occur with lacustrine deposits along the western border. Organic soils are assigned to the Taltson River association and are poorly drained Organic Cryosols.

Vegetation

Rock lichen, rock lichen woodland and moss forest communities are the main upland plant communities (Bradley *et al.* 1982; refer to Appendix 2). Vast areas are pine-dominated because of recent fires. Moss forests with a moderately dense black spruce, white spruce or jack pine canopy occur in areas with deeper, moister soils such as the thicker till deposits in the southeast and lacustrine pockets along the western boundary; these forests usually have a shrubby or feather moss understory.

Water and Wetlands

Lakes in the Rutledge Upland HB Ecoregion occupy rock fractures and tend to be long and narrow; the largest water bodies are Rutledge, Gagnon, Lady Grey, Thekulthili and Hill Island Lakes. The Taltson, Tazin and Rutledge Rivers drain the Ecoregion towards the west and south. Horizontal fens are common and locally extensive on areas where till veneers or lacustrine deposits are present. Peat plateaus with large collapse scars occur more often in the northeast and east at higher elevations.

Notable Features

This Ecoregion has a higher proportion of wetlands and exposed bedrock relative to Taiga Shield HB ecoregions. Bradley *et al.* (1982) suggest that dry bedrock upland terrain is susceptible to lightning-caused fires; extensive jack pine stands and recent burns attest to the active fire history of the Ecoregion. Although it has been used extensively by wintering barren-ground caribou in the past, use in years appears to have been intermittent. Recent fire history may have been a factor.

³⁰ This Ecoregion is identical to the Rutledge-Pilot Ecodistrict of Bradley *et al.* (1982).

³¹ The Uranium City Upland Landscape Area in Saskatchewan, described in *Ecoregions of Saskatchewan* (Acton *et al.* 1998), is its southern extension.



This typical landscape in the Rutledge Upland HB Ecoregion shows exposed hummocky bedrock, sparse jack pine and black spruce forests, rock-walled lakes, and scattered wetlands.



In the southeast corner of the Ecoregion, thicker till deposits mantle the bedrock and allow the development of more continuous jack pine and black spruce forests and horizontal fens (light green patches in the left midground).



Ice-polished bedrock knobs have fractures and shallow bowl-shaped depressions that hold enough lichen and leaf litter or thin bouldery till deposits to allow the development of patchy jack pine and black spruce forests.



The Taltson River flows west and southward across hundreds of kilometres of Shield bedrock to the Slave Plain MB Ecoregion, where it turns north to parallel the bedrock boundary between the Taiga Shield and Taiga Plains and empties into Great Slave Lake.

3.4.6.5 Nonacho Upland HB Ecoregion

Overview: *The Nonacho Upland HB Ecoregion is a hummocky, gently sloping bedrock landscape mantled by bouldery till veneers and outwash deposits and forested by extensive and continuous black spruce and jack pine stands.*

Summary:

- Gently sloping hummocky bedrock upland with a bouldery till blanket mantling the bedrock; sandy eskers and outwash deposits are common in the eastern half.
- Continuous till blankets allow the development of extensive jack pine and black spruce forests.



Total area: 22,137 km²
(26.1% of Taiga Shield HB Ecoregion). Ecoregion shown in red.

Average elevation (range) mASL: 425
(250-500)

General Description

The Nonacho Upland HB Ecoregion is a southwest-sloping hummocky bedrock landscape blanketed by bouldery sandy-textured tills and outwash.³² Its western border with the lower-elevation Rutledge Upland HB Ecoregion is defined by metamorphic rock ridges that parallel the Taltson River, and by an increasing proportion of exposed bedrock and patchy forest cover. To the east, reduced jack pine occurrence and an increase in esker and outwash landforms mark the boundary with the Porter Upland LS and Wignes Plain LS Ecoregions. The McDonald Fault forms its northern border.³³ Relatively continuous mineral soils have promoted the development of extensive, unbroken black spruce and fire-successional jack pine stands.

Geology and Geomorphology

Most of the Ecoregion is underlain by Precambrian metamorphic bedrock, but there is a band of sedimentary bedrock across the northern third that underlies all of the larger lakes. The terrain over most of the Ecoregion is hummocky to hilly, but the north central portion is more subdued. Till veneers and blankets mantle the bedrock over most of the Ecoregion, and some drumlinized till forms occur in the southeast portion. Sandy outwash plains and a few eskers along the eastern half of the Ecoregion mark the western boundary of an extensive network of eskers and outwash deposits that are prominent landscape features further to the east and north.

Soils

Soils on till materials belong to the Nonacho Lake association (Bradley *et al.* 1982) and are well-drained, noncalcareous, sandy loam Brunisols. Organic soils are assigned to the Taltson River association and are poorly drained Organic Cryosols.

Vegetation

Moss forest communities are dominant across the Ecoregion on till veneers and blankets (Bradley *et al.* 1982) and are characterized by a black spruce canopy of variable density and a shrubby or feather moss understory. Young jack pine and paper birch are frequent associates in recently burned areas. Rock lichen and rock lichen woodland communities are also present (see Appendix 2). Outwash deposits and eskers support a mix of black and white spruce, jack pine, paper birch, low shrubs and lichen.

Water and Wetlands

The largest water bodies are associated with sedimentary bedrock across the northern third of the Ecoregion, and include Nonacho, Hjalmar, Taltson, Halliday, Thekulthili, Sparks and Powder Lakes. Whirlwind Lake is the only large lake that occurs in the south. The largest rivers include the Snowdrift, Taltson, Thoa and Abitau Rivers that flow westerly through the Ecoregion. Wetlands are small and cover only about two percent of the total upland area.

Notable Features

The fire interval of this Ecoregion is conducive to the development of extensive jack pine forests. Muskoxen have recently expanded their range from the northeast into the northern end of the Ecoregion, an area for which there is no historical record of their occurrence.

³² This Ecoregion is identical to the Nonacho-Whirlwind Ecodistrict of Bradley *et al.* (1982), from which most of the descriptive information is derived.

³³ It extends into Saskatchewan for a short distance as the Territories Upland Landscape Area, described in *Ecoregions of Saskatchewan* (Acton *et al.* 1998).



Hummocky to rolling low till-covered bedrock hills in the southern part of the Nonacho Upland HB Ecoregion are typical landforms; the light green tones are regenerating jack pine, and the dark green tones are black spruce.



Mainly level to gently rolling till plains occur south and west of Nonacho Lake; black spruce forests dominate this landscape, with some paper birch and locally extensive jack pine stands where there have been more frequent fires.



The Snowdrift River flows north along steep-walled valleys defined by rock fractures; the valley walls are forested by sparse black and white spruce woodlands with scattered paper birch.



Sandy outwash terraces south of Nonacho Lake near the eastern border of the Ecoregion support a very open woodland with jack pine (foreground), stunted trembling aspen, white spruce, common bearberry, bog cranberry and lichens.