

ECOLOGICAL REGIONS OF THE NORTHWEST TERRITORIES TAIGA PLAINS



Ecosystems play an important role to produce oxygen, clean water and enhance our environment with numerous forests, wetlands, peat bogs, lakes and rivers. The different combinations of climate, soils and terrain in the Northwest Territories create a variety of landscape ecosystems, ranging in size from a city block to the size of Great Bear Lake. To better understand, monitor and manage the unique biological patterns of these ecosystems, scientists subdivide the landscape into smaller ecological regions, or 'ecoregions'.

The Northwest Territories requires an ecologically based landscape classification for environmental assessment, cumulative effects management, biodiversity monitoring and reporting, forest resource analysis and planning, wildlife habitat evaluation and conservation, and protected area identification. Such a classification is essential for responding to local, regional, national and international enquiries. Earlier national classifications that covered the Northwest Territories have had limited application for resource management. Other provinces are currently revising their own classifications by using new information. The Northwest Territories also recognizes a need for an updated ecosystem classification. Given the increasing pace and scale of development, especially in the Mackenzie Valley, the **Taiga Plains** was selected as the first region to be reclassified.

Methods to classify and map ecoregions look at how physical and biological features such as climate, geology, landforms, soils, vegetation and wildlife differ across the landscape. The Northwest Territories has revised its ecological classification and mapping for the Taiga Plains within a framework for continental North America that includes four levels of ecoregions, from very large Level I ecoregions to relatively small Level IV ecoregions. The Northwest Territories contains three Level I ecoregions: *Tundra*, *Taiga* and *Northwest Forested Mountains*. Eight Level II ecoregions, including the *Taiga Plains*, are nested within the Level I ecoregions, and 17 Level III ecoregions are within the Level II ecoregions. There are four Level III ecoregions within the Taiga Plains: the *Northern Great Bear Plains High Subarctic (HS)*, the *Central Great Bear Plains Low Subarctic (LS)*, the *Great Slave Uplands High Boreal (HB)*, and the *Mackenzie and Slave Lowlands Mid-Boreal (MB)*. Level III ecoregions are identified primarily by regional climate differences that can be seen in the soils and vegetation unique to each ecoregion. Within the Level III ecoregions, 45 new Level IV ecoregions have been identified. These smaller Level IV ecoregions are typically recognized by their physiographic characteristics.



This poster accompanies the ENR technical report:
"Ecological Regions of the Northwest Territories – Taiga Plains"

Additional copies of the poster and report may be obtained from:
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Northern Great Bear Plains High Subarctic (HS) Ecoregion

The *Northern Great Bear Plains High Subarctic (HS) Ecoregion* occupies 170,000 km² in the northern portion of the Taiga Plains and includes 14 smaller ecoregions. Higher elevation areas within some of these ecoregions share similar climatic and vegetation characteristics with Low Arctic areas to the north. The landscape is a mix of rolling to hummocky glacial plains, rolling and rocky glacial uplands, and active permafrost features such as raised peat mounds and earth hummocks. Slow-



Stunted white spruce grow very slowly on permanently frozen soils near the treeline on the Mackenzie River delta within the *Northern Great Bear Plains High Subarctic (HS) Ecoregion*. The largest trees here are over 300 years old and only a few meters tall. Willows, lichens, northern Labrador tea and arctic bearberry grow in patches underneath the sparse tree canopy.



This vast hummocky till plain in the Travallant Uplands of the *Northern Great Bear Plains High Subarctic (HS) Ecoregion* shows the harsh effects of climate on tree growth. Trees grow only in sheltered locales and on coarser-textured soils around lakes and along creeks, where the growing season is just long enough to allow their survival.

growing white and black spruce forests occur across the region. Extensive fires have resulted in large areas of regenerating ground birch. Lichen-ground birch communities cover much of the region's peatlands. The region contains Canada's largest delta – the Mackenzie, and Great Bear Lake – the largest lake entirely within Canada. Aside from the Mackenzie River, other major rivers that flow into or out of the region include the Great Bear, Mountain, Arctic Red, Peel and Anderson.

Narrow spires of widely-spaced white and black spruce with an understory of ground birch, willow, northern Labrador tea and lichens in the Travallant Uplands are typical of the *Northern Great Bear Plains High Subarctic (HS) Ecoregion*. Soils are frozen for much of the year and only a thin surface layer thaws during the short summer.



Muskoxen were formerly restricted to tundra areas east and northeast of the *Northern Great Bear Plains High Subarctic (HS) Ecoregion*, but have expanded their range westward considerably in recent years. Small populations of muskoxen now occur throughout the eastern and southern portions of the ecoregion wherever suitable habitat can be found. Upland areas with shallow snow depths close to lush sedge and shrub lowlands provide optimal habitat. Muskoxen have recently extended their range into the adjacent *Central Great Bear Plains Low Subarctic (LS) Ecoregion* as far south as Norman Wells.

Boreal caribou are found throughout most of the Taiga Plains, with the exception of the Mackenzie River delta and the lowlands of the Slave River. These elusive mammals generally occur at low density and most often as small groups or solitary individuals. Boreal caribou prefer open mature coniferous forests and associated bogs during winter, where ground and tree lichens are abundant. In spring and summer they favour wetter areas such as fens, marshes, river and lake shorelines. The *Northern Great Bear Plains High Subarctic (HS) Ecoregion*, as well as other ecoregions within the Taiga Plains, provides important habitat needed to sustain viable boreal caribou populations.



A view to the northwest across the Mackenzie River delta within the *Northern Great Bear Plains High Subarctic (HS) Ecoregion* shows an area of relatively large white spruce on a sheltered slope in the foreground, behind which is a complex of stunted white spruce on frozen river-laid soils, active and abandoned river channels, and shallow ponds. The HS climate gives way to more arctic conditions about 20 km north, where the last few trees struggle to survive on windswept river flats.



Central Great Bear Plains Low Subarctic (LS) Ecoregion

The *Central Great Bear Plains Low Subarctic (LS) Ecoregion* contains 14 smaller ecoregions that cover the central 160,000 km² of the Taiga Plains, along with one outlying ecoregion along the Northwest Territories-Alberta border. The region spans approximately 650 km in a north-south direction; towards the north and at higher elevations, harsher climates result in permafrost features such as peat plateaus and slow-growing upland forests. Glaciers have left gently sloping,



The willow ptarmigan is a common winter resident of the Taiga Plains. Areas with abundant willows, the principal diet of ptarmigan during the winter months, tend to be favoured. Although willow ptarmigan generally breed in the tundra areas north of treeline, some sporadically summer on the Horn Plateau in the *Central Great Bear Plains Low Subarctic (LS) Ecoregion*. Small numbers may breed elsewhere, especially in the *Northern Great Bear Plains High Subarctic (HS) Ecoregion* wherever suitable summer habitat conditions exist.



Sparse tree growth is typical of the alvar terrain that occurs along the Mackenzie River near Fort Good Hope. Alvars occur on thin soils over flat limestone bedrock with a generally sparse vegetation cover of mosses, lichens, herbaceous plants and stunted shrubs. Plants that can survive on these bedrock barriers need to be adapted to extreme conditions of windswept, freezing cold in winter and hot, dry conditions in summer. These unique areas often contain rare or unusual plants. This area of the *Central Great Bear Plains Low Subarctic (LS) Ecoregion* contains what is likely the most northerly occurrence of alvars in North America.

undulating and level deposits of rock and soil throughout the region. Large areas have been burned at various times, resulting in a mosaic of low-canopy black or white spruce and successional shrub lands and regenerating forests. Extensive peatlands form where drainage is poor. Mixed-wood, deciduous or conifer forests grow only on warm and well-drained sites. There are several large lakes in this region, including Lac la Martre, Keller and Blackwater.

Great Slave Uplands High Boreal (HB) Ecoregion

The *Great Slave Uplands High Boreal (HB) Ecoregion* occurs generally at higher elevations in the southern Taiga Plains. It contains 6 smaller ecoregions totalling over 42,000 km². It is surrounded by or lies immediately north of the lower elevation *Mackenzie and Slave Lowlands Mid-Boreal (MB) Ecoregion*. Permafrost and colder conditions result in slow-growing forests. Low-canopy open black spruce, treed bogs, horizontal



The black bear is one of many wide-ranging wildlife species that are found throughout the *Great Slave Uplands High Boreal (HB) Ecoregion*. The diverse assemblage of fruit-bearing shrubs and forbs within the ecoregion provides good habitat for this ubiquitous omnivore.



A large complex of cold-sulphur springs occurs at the eastern end of the Horn Plateau within the *Great Slave Uplands High Boreal (HB) Ecoregion*. Salt and gypsum deposits produce sparsely vegetated mineral plains that harbour uncommon and rare plant species.

fens and peat plateaus are common on wet, poorly drained sites. More diverse mixed-wood, deciduous and conifer stands are locally abundant on warmer and better-drained slopes, on hummocky and ridged landforms, and on sites with coarse-textured materials. With the exception of Trout Lake, there are few named lakes and no major rivers in the region.

A mossy spring, mid-slope on a hillside within the Ebbutt Hills, *Great Slave Uplands High Boreal (HB) Ecoregion*. Groundwater seepage, together with south-facing aspects supports diverse mixed-wood forests on the slopes.



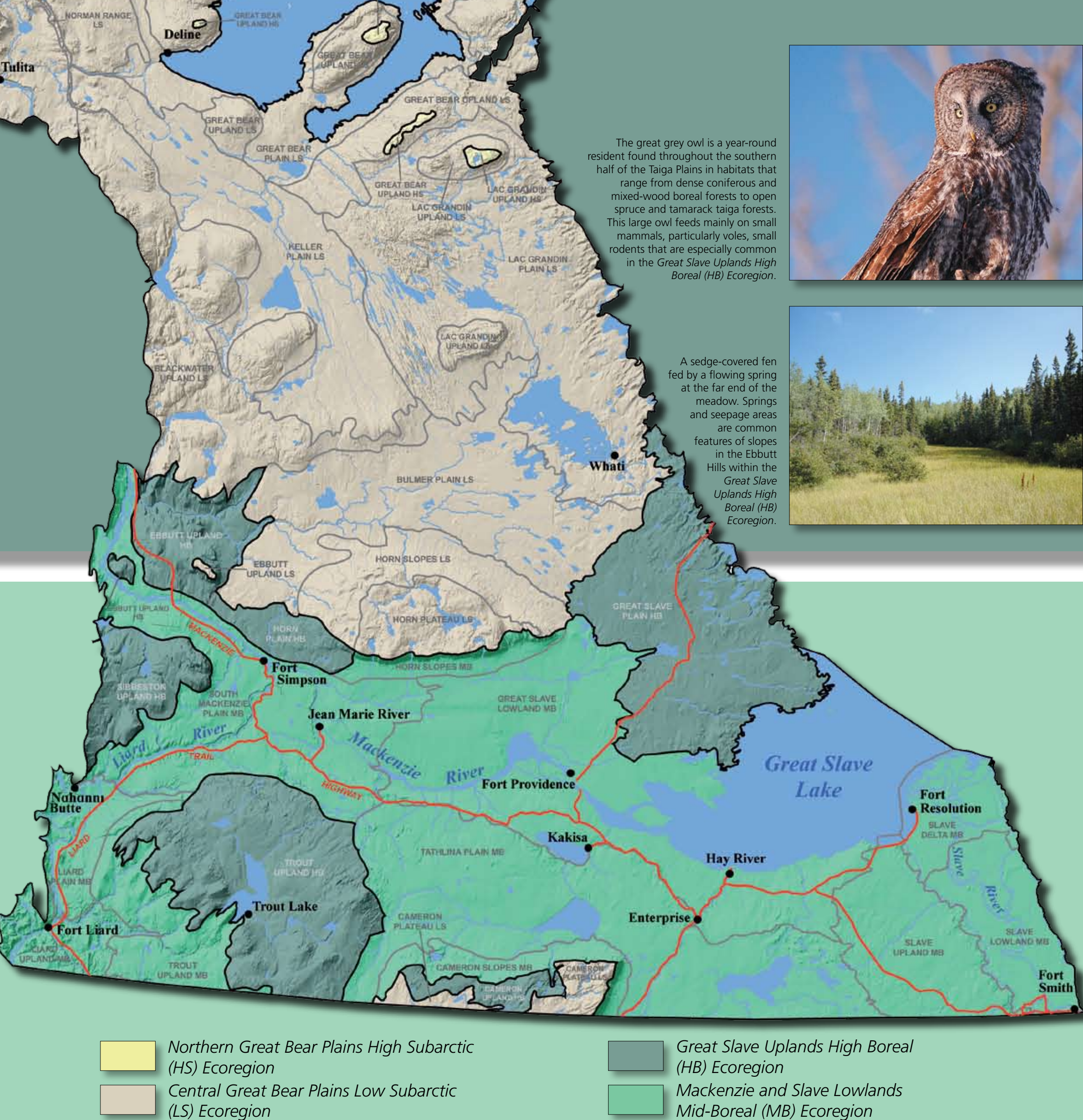
Shallow calcium-rich ponds bordered by lime deposits, low, wet greyish-green black spruce fens, and bright green jack pine stands on coarse materials (foreground) are typical of the *Great Slave Uplands High Boreal (HB) Ecoregion*.



An abandoned channel of the Liard River filled with sedges and holed with sedges and horsetails, and flanked on both sides by highly productive aspen, balsam poplar and white spruce forests, *Mackenzie and Slave Lowlands Mid-Boreal (MB) Ecoregion*.



Diverse stands of white spruce, aspen and balsam poplar are common on well-drained sites within the *Mackenzie and Slave Lowlands Mid-Boreal (MB) Ecoregion*. Extensive areas of highly productive, large-diameter mixed-wood stands are common in the Liard River valley, where these trees may grow to 30 meters in height in less than 100 years. Understory vegetation is highly diverse, with lush and vigorous high-bush cranberry, prickly rose, red-osier dogwood, dewberry, meadow-horsetail and other herbs.



The great grey owl is a year-round resident found throughout the southern half of the Taiga Plains in habitats that range from dense coniferous and mixed-wood boreal forests to open spruce and tamarack taiga forests. This large owl feeds mainly on small mammals, particularly voles, small rodents that are especially common in the *Great Slave Uplands High Boreal (HB) Ecoregion*.



A sedge-covered fen fed by a flowing spring at the far end of the meadow. Springs and seepage areas are common features of slopes in the Ebbutt Hills within the *Great Slave Uplands High Boreal (HB) Ecoregion*.



Northern Great Bear Plains High Subarctic (HS) Ecoregion
Central Great Bear Plains Low Subarctic (LS) Ecoregion

Great Slave Uplands High Boreal (HB) Ecoregion
Mackenzie and Slave Lowlands Mid-Boreal (MB) Ecoregion