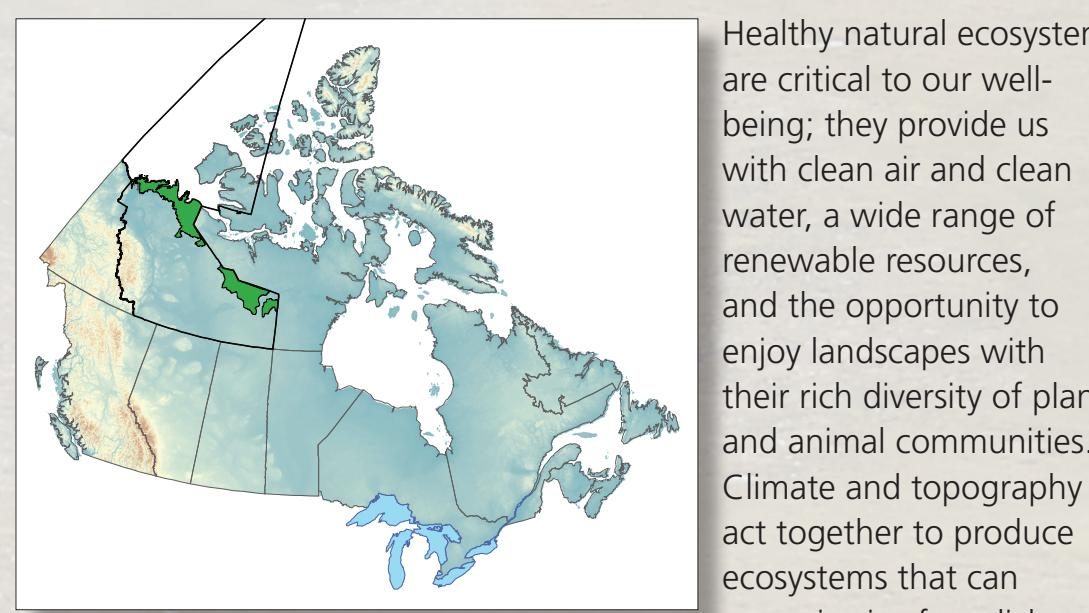




ECOLOGICAL REGIONS OF THE NORTHWEST TERRITORIES SOUTHERN ARCTIC

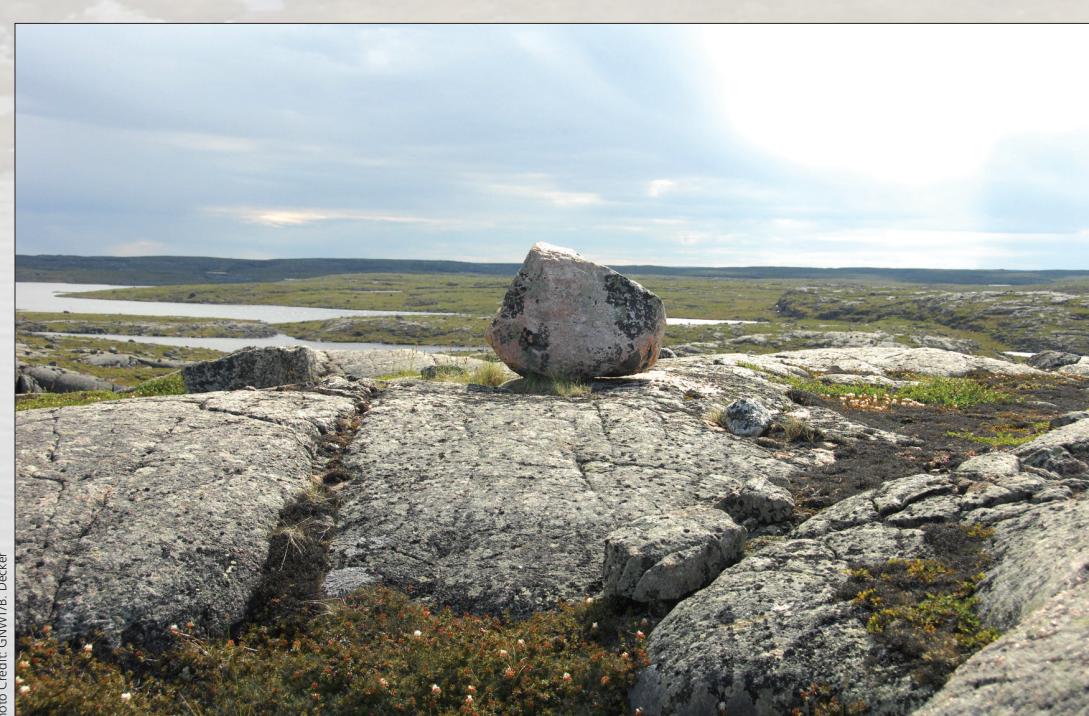


Healthy natural ecosystems are critical to our well-being; they provide us with clean air and clean water, a wide range of renewable resources, and the opportunity to enjoy landscapes with their rich diversity of plant and animal communities. Climate and topography act together to produce ecosystems that can range in size from lichen communities on a piece of granite to landscapes the size of Great Bear Lake. Understanding what differentiates one ecosystem from another is an important part of wisely managing the natural resources of the Northwest Territories for present and future generations. These differences can be described by dividing the vast tundra, boreal and mountain landscapes into smaller areas that have unique combinations of climate, terrain, vegetation, soils and wildlife. These are called ecological regions (ecoregions).

The Northwest Territories is developing 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 information needs, and the Northwest Territories is working with other Canadian provinces and territories to develop a coordinated North American continental approach to ecological classification. The tundra regions of the Northwest Territories described in this poster are collectively referred to as the Southern Arctic. It is an important landscape with diverse geology, glacial history, vegetation and wildlife features.

Ecological classification and mapping for the Southern Arctic is presented within an ecoregion framework for continental North America that includes four levels, from very large Level I ecoregions that represent ecosystems of global extent to relatively small Level IV ecoregions that represent ecosystems of several thousand square kilometres or less. The Northwest Territories includes parts of three Level I ecoregions: *Tundra*, *Taiga* and *Northwest Forested Mountains*. Eight Level II ecoregions are nested within the Level I ecoregions and 18 Level III ecoregions are grouped under the Level II ecoregions.

The Northwest Territories Southern Arctic is nested in one Level I ecoregion, the *Tundra*. The Level II ecoregions of the Southern Arctic include the *Tundra Plains* and *Tundra Shield*. The *Tundra Plains* is a cold northern extension of the *Taiga Shield*. Two Level III ecoregions, mainly separated by climatic differences as expressed in vegetation and permafrost features, are nested within the Level II ecoregions of the Southern Arctic: the *Tundra Plains Low Arctic (north) (LAn)*, and *Tundra Shield Low Arctic (south) (LAs)*. The Level III ecoregions are further divided into 35 Level IV ecoregions that are each differentiated by a characteristic pattern of terrain and vegetation.



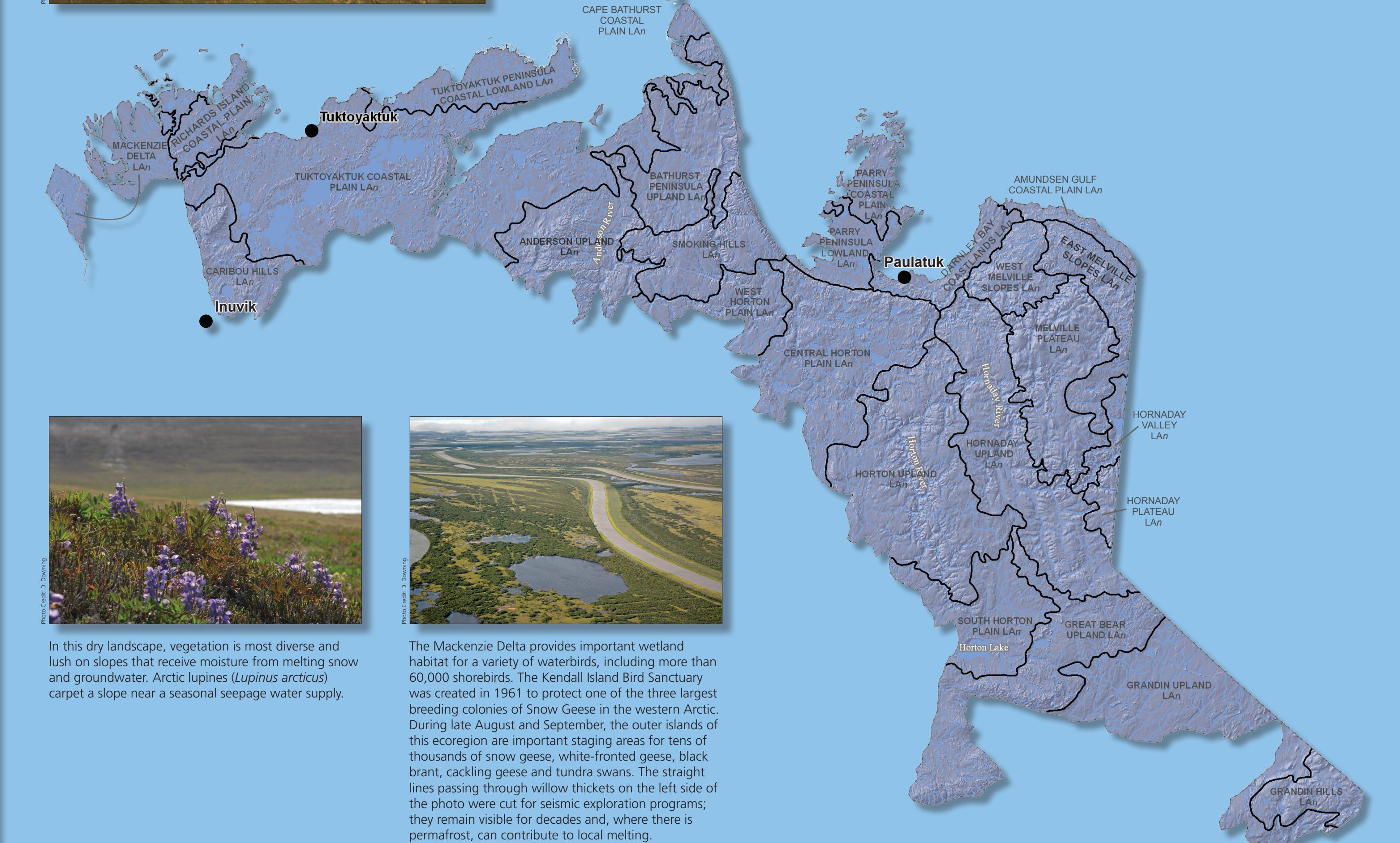
Additional copies of this poster and a descriptive report are available from: Department of Environment and Natural Resources P.O. Box 1320, Yellowknife, NT X1A 2L9 Phone: (867) 920-8064, Fax: (867) 873-0293, Web site: www.enr.gov.nt.ca

TUNDRA PLAINS



Tundra Plains Low Arctic north (LAn) Ecoregion

The Tundra Plains LAn ecoregion is cold and dry. It is a landscape of coastal plains with wetter shrub and sedge tundra to the west and dry rolling uplands and hills to the east. It is home to one of the highest concentrations of pingos on the planet. Permafrost is continuous; ice-wedge polygons, frost-shattered bedrock, low- and high-centre polygons and non-sorted circles provide abundant evidence of its influence. Most of the area was glaciated, but the highest elevation areas in the Melville Hills and the northernmost parts of the Tuktoyaktuk Peninsula and Cape Bathurst were not covered by ice during the most recent Ice Age. Several major rivers (the Horton, Hornaday, Brock) flow to the Beaufort Sea from the Melville Hills. Lakes and ponds are common on the western plains.



In this dry landscape, vegetation is most diverse and lush on slopes that receive moisture from melting snow and groundwater. Arctic lupines (*Lupinus arcticus*) carpet a slope near a seasonal seepage water supply.



Storm surges flood the outer reaches of the Delta with saline waters and are largely responsible for plant die-off. The whitish areas are bleached dead willows and the brown tones are dead sedge and grass tussocks.



Pingos are an interesting permafrost feature produced when water freezes in the beds of drained lakes, pushing the overlying soil up, which eventually cracks. The pingo grows until all of the water has frozen. Pingos are common on the coastal plain near Tuktoyaktuk and occasional to rare elsewhere.



The Hornaday River has carved deep canyons into Paleozoic dolomites in the northern part of the Hornaday Upland LAn Ecoregion. La Roncière Falls tumbles over fractured bedrock within a deep limestone canyon. Mists from the falls provide a moist local environment that allows the growth of lush sedge, low-shrub and moss communities on the adjacent bedrock plates. This area is good nesting habitat for peregrine falcons and golden eagles.



The Tundra Plains Ecoregion in the Northwest Territories harbours the calving grounds of three caribou herds: the Tuktoyaktuk Peninsula, the Cape Bathurst and the Bluenose West herds.



The Smoking Hills: Burning coal beds along the eastern coastline of Cape Bathurst are marked by a plume of smoke that is visible for kilometres. How plants grow, even with continuous toxic sulphurous fumes, has been the subject of some studies, but much remains to be discovered about the local ecology and how the coalbeds ignited. A globally rare plant, the hairy Northern Rockcress (*Brya pisioides*), is found in only one area on the planet: on Cape Bathurst and nearby Baillie Islands. Cape Bathurst is also the calving area of the Cape Bathurst caribou herd. For much of the year, the ocean is covered by sea ice; in late July 2011, when this picture was taken, only a few fragments remain.



Canadian Arctic: The closest other colonies are in Alaska and Nunavut, more than 1,300 kilometers away. Lesser numbers of black guillemots are also found at the C-1. Upwelling currents, open leads and polynyas (large sea areas that are ice-free year round) provide a rich marine environment for seabirds and marine mammals.



This sharply-ridged hill in the Great Bear Upland LAn Ecoregion is a kame mound that was formed when glacial meltwaters flowing alongside and over stagnant glacial ice dropped silt, sand and gravel on ice-free lands adjacent to the ice front. The kame features in this ecoregion are some of the most outstanding examples in the world.



Tors (limestone towers) would probably not have survived glacial ice flows. These features usually indicate that an area was not glaciated in the most recent ice age. This particular tor is on one of the tributary valleys of the Horton River near the eastern boundary of the Horton Upland LAn Ecoregion. This ecoregion also has evidence of ancient human habitation (caribou fences).



Rough-legged hawks are moderately large, broad-winged hawks that breed throughout the tundra and taiga regions of North America and Eurasia. They exhibit considerable variation in plumage colouration from very light to almost completely black. Like most birds nesting in the Southern Arctic, they migrate south in winter.

TUNDRA SHIELD

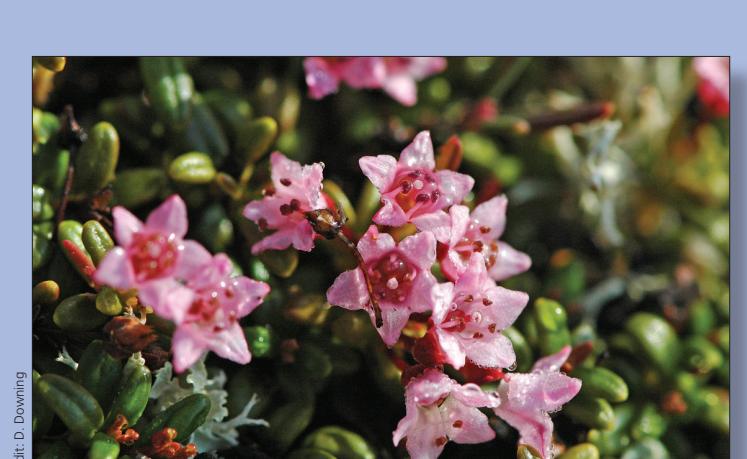


Tundra Shield Low Arctic south (LAs) Ecoregion

The Tundra Shield LAs Ecoregion is influenced by a continental Arctic climate and is somewhat warmer and moister than the Tundra Plains. All of this ecoregion was covered by the last Laurentide ice sheet, which left behind impressive glacial features and highly polished bedrock. It is a complex of exposed rocks, outwash plains crisscrossed by long eskers and dotted with thousands of lakes. Shrub tundra is the main vegetation cover, with lichen tundra dominating extensive dry till deposits in the southeast. The ecoregion is part of three major drainages: the Arctic, including rivers that drain to the Arctic Ocean; the Mackenzie, including rivers that drain to the Mackenzie River; and the Hudson Bay, including rivers that drain to Hudson Bay.



Arctic hares range throughout the tundra regions of the Canadian Arctic. In the Southern Arctic, they are most abundant in boreal, uneven, hilly areas compared to the Tundra Shield and the more rugged rocky areas of the eastern Tundra Plains. They have adapted to winter on the tundra by changing colour to white. A few other species active above the snow in winter in the Southern Arctic change their pelage – collared lemming, arctic fox, ermine, and willow and rock ptarmigan.



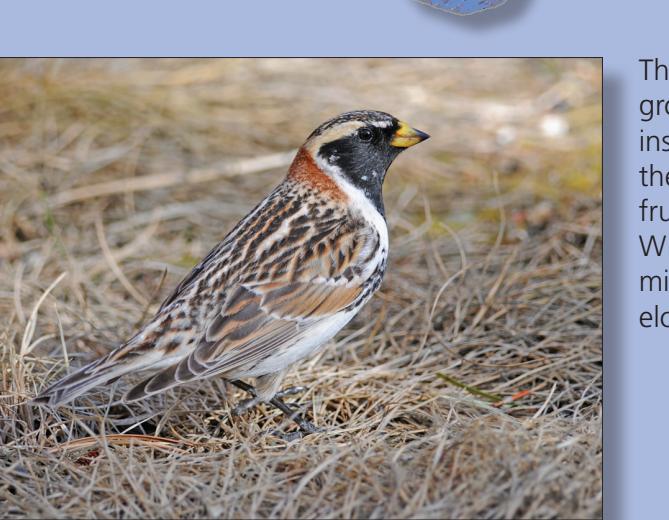
The Tundra Shield (LAs) supports somewhat taller and more diverse tundra vegetation than much of the colder Tundra Plains (LAn) Ecoregion. Still, plants here are more restricted to sheltered, well-drained sites, hugging the ground, and flowering then producing seeds within the short sun-filled summer. Many species have adaptations to protect from cold and dry conditions: hairy or waxy leaves. Alpine azalea (*Loiseleuria procumbens*) is a colourful dwarf shrub with leathery leaves. It occurs across the Northern Hemisphere in arctic and alpine areas.



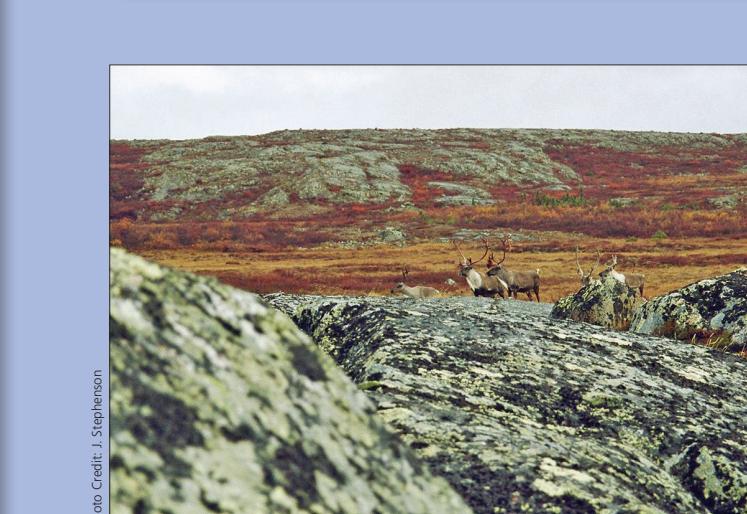
Eskers were deposited by fast-flowing glacial rivers either under or over a glacier. They are made of sand, gravel and cobbles. The variations in plant cover, as indicated by tone and texture in this picture, reflect differences in temperature, water and nutrients at different places on the sideslopes. Eskers are important to wildlife, being used as travel corridors, den or nesting sites, and feeding areas. Some of the most extensive esker and outwash deposits in the world are found in the Mackay Upland (LAs) Ecoregion.



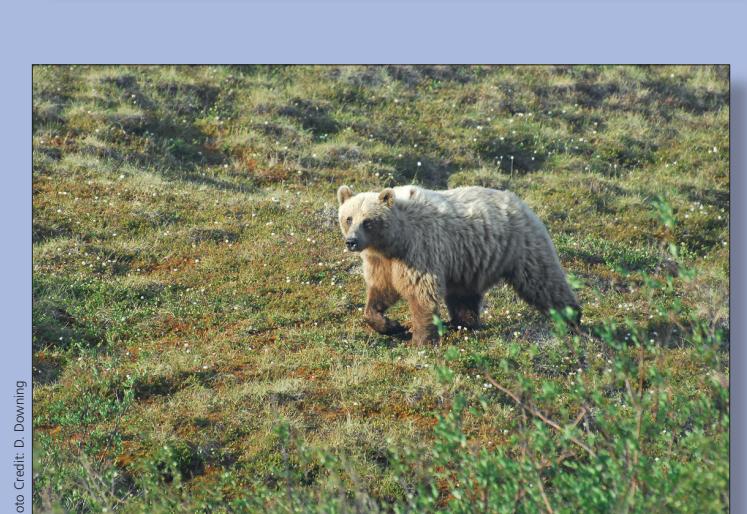
Wolverines are strict carnivores and do not hibernate, but look for food year round. They are the largest member of the weasel family, ranging throughout the forests and tundra of the mainland Northwest Territories. Wolverine is a species of special concern in Canada.



The lapland longspur is a ground forager that eats mainly insects during the summer, and then feeds on seeds and fruit during the other seasons. Winter flocks may number in the millions. Longspur refers to the elongated claw of the hind toe.



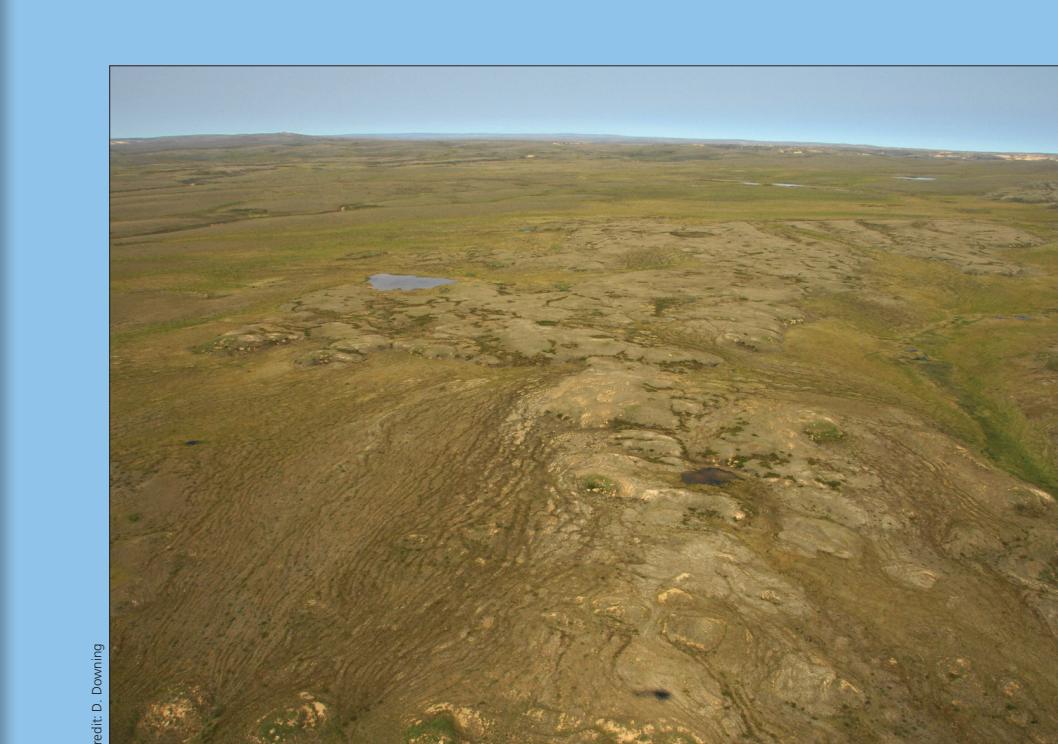
Each fall, large areas of the Tundra Shield turn a bright to deep red as leaves of dwarf birch and red bearberry lose their chlorophyll, revealing the other pigments. At that time, and again in spring, several herds of barren-ground caribou travel the Southern Arctic. The Bathurst, Ahiat, Beverly and Qamanirjuaq herds are mainly associated with the Tundra Shield during migration between calving grounds in Nunavut and wintering areas in the Taiga Shield.



Grizzly bears (*Ursus arctos*) are omnivores and have adapted to living conditions on the tundra by putting on fat reserves during the short summer, then hibernating in winter. Although genetically very similar to the bears of the Cordilleran, "barren-ground" grizzlies tend to be smaller and lighter in colour. East of the Mackenzie River, they are more widespread and abundant in the Southern Arctic than in either the Taiga Plains or Taiga Shield. Grizzly is a species of special concern in Canada.



The lapland longspur is a ground forager that eats mainly insects during the summer, and then feeds on seeds and fruit during the other seasons. Winter flocks may number in the millions. Longspur refers to the elongated claw of the hind toe.



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