Theme Regions

100
Plateau–Taiga

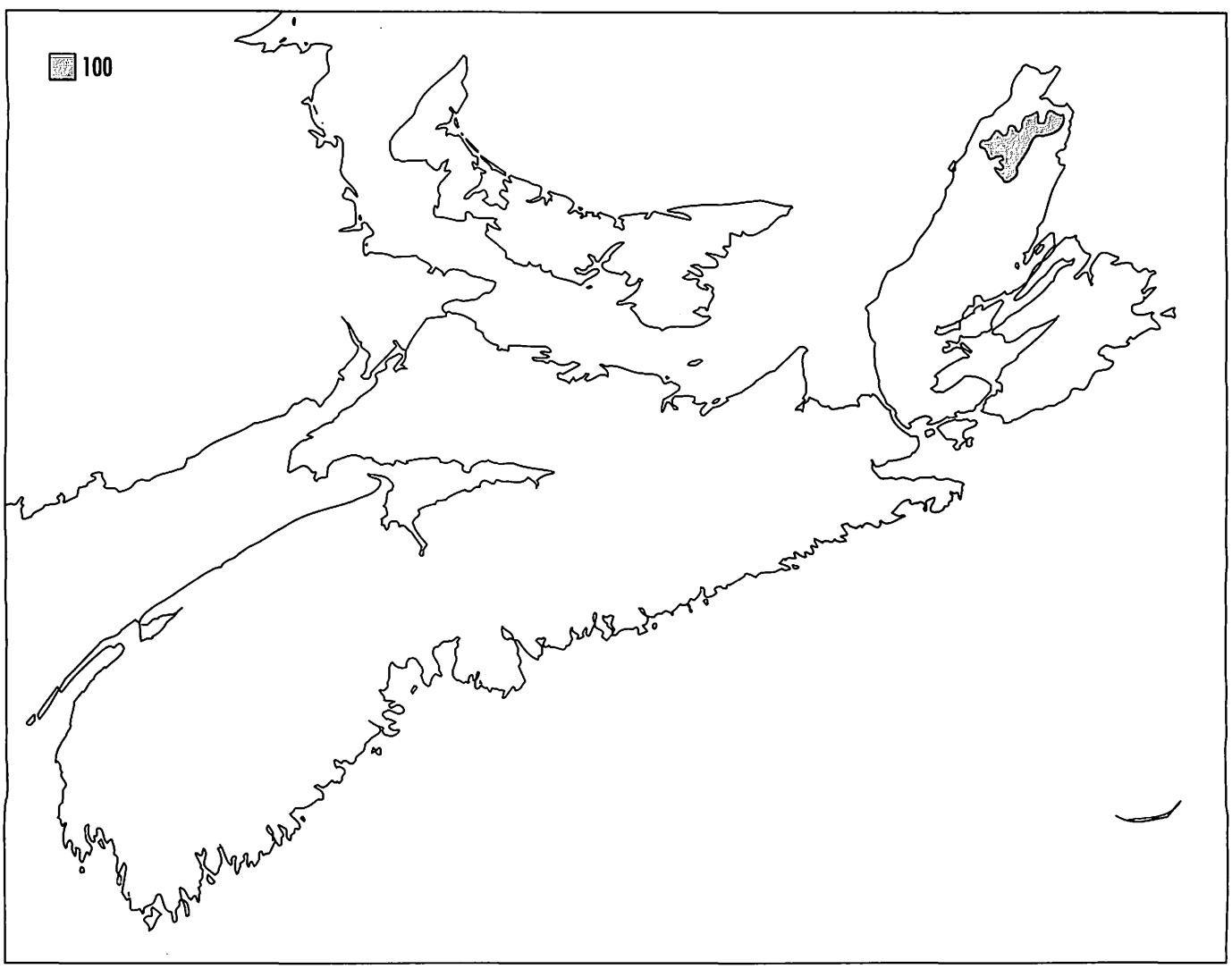

Figure 3: Region 100, Plateau–Taiga.

100 PLATEAU–TAIGA

REGIONAL CHARACTERISTICS

The plateau surface is more than 500 m in elevation and is the highest part of Nova Scotia. Its height results in a harsh climate with extreme exposure to winds and a very short growing season. Dwarfed spruce–taiga—a combination of dense spruce, blanket bogs, and barrens—dominates the vegetation, providing summer moose habitat.

GEOLOGY

Some of the oldest rocks in Nova Scotia are found in the Plateau–Taiga Region. Over a long history characterized more by periods of erosion than deposition, these previously deeply buried rocks which now form the highest elevations in the province were exposed.

Geologically the Plateau–Taiga is part of the Cape Breton highlands fault block, and it has only a few of the several rock types which are found in complex relationships throughout the larger area. The bedrock is predominantly composed of severely altered rocks, some of which have been distinguished as the George River Group. These rocks were originally deposited during Precambrian times, possibly as marine sediments. During subsequent deep burial, they were severely altered by heat and pressure to form hard, banded crystalline rocks called schists and gneisses.

The schists and gneisses are cut by granites in a complex way. The granites range in age from Precambrian to Devonian-Carboniferous. The intrusive nature of the granite, and especially its cross-cutting contact with surrounding rocks, can be seen in several places (see Figure 5).

Any sediments deposited above these basement rocks were long ago removed by erosion. Almost certainly, Carboniferous sediments thickly covered this area at one time. Carboniferous cover is still found as patches on the slopes of the Cape Breton highlands block and as a more or less continuous fringe at lower elevations. This indicates that the present landscape was created prior to the Carboniferous, and that the cliffs, slopes, and plateau are all exhumed features of an ancient landscape.

Because sedimentary rocks younger than Precambrian are absent, there is no evidence of paleoenvironments that may have existed in this area during the period of about 600 million years before the Pleistocene glaciation.

LANDSCAPE DEVELOPMENT

Uplift and Erosion

The Plateau–Taiga Region represents an ancient, deeply eroded landscape that is presently undergoing imperceptibly slow morphological change. However, despite being eroded, it is not low-lying but includes the highest elevations in the provincial landscape. This is attributable to several causes:

- the plateau is on the highest side of the tilted planation surface or peneplain
- the hard mass of the Cape Breton highlands was very resistant and less affected by the renewed cycle of erosion in the Tertiary than the surrounding softer sediments
- the block itself appears to have moved vertically upwards after the overlying Carboniferous strata were deposited

Glaciation

Glaciation during the past one million years has left a veneer of compacted glacial till over about 50 per cent of the Plateau–Taiga Region but no stratified ice-contact deposits or glacial outwash material. The ice cover which engulfed the Cape Breton highlands during the last phase of ice advance (the Wisconsinan) was reduced to an ice-cap in the later stages. From this relatively static ice-cap, glaciers radiated down the steep slopes of the highlands, scouring the surface, reworking and redepositing rock debris. The surface underneath the ice-cap itself appears to have been relatively protected. Evidence of permafrost in the area of the Plateau–Taiga indicates that deep freezing was more significant than scouring in this region. Evidence of some glacial movement is found, however, in the form of glacial striae and plucked bedrock.

Plate 1: Region 100. Oblique aerial view of the Plateau–Taiga landscape showing the mosaic of small lakes, bogs and scrub spruce forest. Photo: A. Wilson.

Recent Evolution

The surface of the Plateau–Taiga is undulating, with low hills and shallow valleys, and it is exposed and barren. There are large areas of bare bedrock, but little evidence of active erosion. The gradients are such that streams are sluggish and have little erosive power. Material loosened by seasonal freezing and thawing tends to remain in place.

CLIMATE

The elevation of the Plateau–Taiga Region influences its climate, which features harsh winters, short summers, exposure to almost constant winds, and high precipitation.

Because of an absence of weather stations in this area, precise weather records are not available. In general, winters are long and cold. Spring is very late, and summer is cool and short. Although the estimated mean annual temperature, less than 5°C, is not markedly colder than other areas in the Maritimes, the daily temperature range is considerably greater. Short-term observations in summer indicated that daily minimum temperatures were from 10° to 14°C lower on the plateau than along the coast. The first freezing temperatures were recorded as early as September 8. There is good reason to believe that in some years minimum temperatures will drop below freezing during every month.

Total annual precipitation is more than 1600 mm a year, the highest in the province. More than a quarter of this falls as snow—more than 400 cm. However, snowfall accumulations are not as great as might be expected. For example, at the end of February the Cape Breton highlands have a median snow cover in excess of 50 cm, while northern New Brunswick, where the total annual snowfall is similar, has a median snow cover greater than 100 cm. The presence of crusted layers within the snow cover indicates frequent episodes of rain and thaw through the winter.

The snowpack stays for a long time. In some north-facing hollows it may still be present in July. The peak runoff period in the Cape Breton highlands is in May. Elsewhere in the province, peak runoff occurs in March and April.

Wind records suggest that strong winds blow in northern Cape Breton during much of the year. The Plateau–Taiga Region is an exposed plateau that offers very little shelter. Low cloud cover or fog is common, and relative humidities are high.

The Plateau–Taiga Region has a very short growing season, probably six to eight weeks shorter than adjacent areas on the coast. The frost-free period is substantially shorter than 100 days. The winds have a very adverse impact on the growth of vegetation. Ice blasting causes trees to be dwarfed and stunted. Organic matter tends to accumulate, partly because the time available for decomposition is so short.

FRESH WATER

Region 100 may be divided into two major watersheds. The western portion of the Region is the headwater of the Chéticamp River and has relatively few lakes. The eastern portion contains many small glacial lakes. Streams that drain the Plateau–Taiga have a radial pattern overall and tend to meander on the plateau. Streams maintain a somewhat irregular or deranged character individually until steeper gradients are reached at margins of the plateau, where the water falls into steep brooks. Productivity is low, and pH ranges between 5.2 and 6.2. Conductivity is also low, averaging 30 micromhos/cm.

The shallow lakes are margined by bog vegetation and tend to have high peat accumulations. Small islands and sloped and raised bogs are common. In many cases, the bogs contain ponds arranged in a concentric configuration around a domed centre, or in a random pattern on a flat surface.

SOILS

This area was not mapped in the soil survey of Cape Breton Island because of its inaccessibility. However, it is now known that the gneisses and other metamorphic rocks which predominate have produced sandy loams that vary in depth from zero on rock outcrops to almost 1.5 m over much of the area. Soil depth is not the factor limiting tree growth. Soils are usually ferro-humic podzols, gleysols, or organic, according to drainage conditions. Surface organic layers are deep, and many areas are covered by several decimetres of dry, semi-decomposed organic material. The most significant features are the major accumulations of sphagnum and sedge peat. These peat accumulations grow both horizontally and vertically.

PLANTS

The Plateau–Taiga Region corresponds to Loucks' Spruce–Taiga Zone. The main influences on regional vegetation are the harsh winter climate, the high precipitation, and the poorly drained terrain. The cold, wet conditions favour conifers and other bog and barren vegetation. Winds and ice blasting result in stunted krummholz. Short, dense spruce and fir alternate with shrub barrens and peat bogs (see Figure 5).

In the few areas where soils are deep and well drained, a relatively stable association of stunted Black Spruce, White Spruce, Balsam Fir, and White Birch occurs. Mountain Ash is scattered along stream sides, and Balsam Fir forms almost pure stands. Barrens occur on shallow soils on low ridges, while sedge and sphagnum bogs occur in depressions and on seepage slopes. The high plateau barrens are characterized by exposed and stunted Black Spruce and Balsam Fir, Reindeer Moss and other lichens, blueberry, Sheep Laurel and deep surficial humic layers. Although it is quite possible that fires were originally an important factor in the development of the Taiga barrens, the presence of advanced barren vegetation indicates that fires have not occurred for a long period of time. Peat bogs are characterized by a variety of sphagna species, bulrushes, beak rush, cranberry, mosses, and liverworts.

Relict arctic-alpine plants are an important feature of this Region's vegetation. Dwarf birches and the Alpine Whortleberry are particularly associated with this area.

ANIMALS

The barren and bog vegetation in this Region does not support a large or diverse fauna. Small mammals present in the bogs and barrens include the Common Shrew and Red-backed Vole. The Region provides some lynx habitat. Moose sometimes use the area. Black Bear are common in the fall when blueberries are abundant. Although breeding birds are not abundant in this Unit, they include the Greater Yellow-legs and Grey-cheeked Thrush. Relict arctic aquatic animals are found in the small dystrophic lakes. The area harbours abundant populations of amphibians such as Mink Frog and Yellow-spotted Salamander. Freshwater fishes include White Perch, Brook Trout, and American Eel.

SCENIC QUALITY

This high plateau, with its stunted forest and few lakes, offers unique but often bleak scenery. It generally rates as medium in scenic value, although it is moderately high at the interface of forest, bog, and barrens. Where it overlooks deeper river valleys (e.g., Chéticamp River, North Aspy River) the scenic potential is occasionally very high. However, with no road

access and few trails, there is little opportunity to view the area.

CULTURAL ENVIRONMENT

The Plateau–Taiga is best known as a conservation area since it is part of the Cape Breton Highlands National Park, established in 1936. Recreational fishing takes place at several lakes in the Region. In the past, moose and Woodland Caribou were decimated by indiscriminate slaughter. In 1947, moose from Alberta were successively introduced into the park to restore populations; Woodland Caribou were unsuccessfully reintroduced in 1968. The construction of the Wreck Cove Hydro Power Plant in the early 1970s directed the waters of Chéticamp Lake into a hydro power reservoir.

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Sites of Special Interest

- Sunday Lake (IBP Proposed Ecological Site 20)—an example of high plateau with boreal forest, bogs, and barrens with rare arctic-alpine plants
- Chéticamp River (nominated as a Heritage River)

The Proposed Parks and Protected Areas System includes Natural Landscapes 64c, 72a, 72b, and 72c. Most of this area is protected within Cape Breton Highlands National Park.

Associated Topics

T2.2 The Avalon and Meguma Zones, T2.3 Granite in Nova Scotia, T2.4 The Carboniferous Basin, T3.1 Development of the Ancient Landscape, T3.2 Ancient Drainage Patterns, T3.3 Glaciation, Deglaciation and Sea-level Changes, T3.4 Terrestrial Glacial Deposits and Landscape Features, T4.1 Post-glacial Climatic Change, T4.2 Post-glacial Colonization by Plants, T5.2 Nova Scotia's Climate, T10.6 Trees, T10.12 Rare and Endangered Plants, T12.11 Animals and Resources, T12.13 Recreational Resources.

Associated Habitats

H4.1 Bog, H5.1 Barren, H6.2 Softwood Forest (Balsam Fir Association; Spruce, Fir Association), H6.3 Mixedwood Forest (White Spruce, Fir–Maple, Birch Association).