

# 300

## Avalon Uplands

300  
Avalon  
Uplands



Figure 6: Region 300, Avalon Uplands, and its component Districts.

## 300 AVALON UPLANDS

Region 300 is divided into three Districts on the basis of geology, geomorphology, elevation, and climate:

- 310 Hardwood Plateau
- 320 Dissected Margins
- 330 Fault Ridges

### REGIONAL CHARACTERISTICS

These uplands experience more severe winters, greater precipitation, and shorter growing seasons than the surrounding lowlands, but climatic conditions are not as harsh as in the Cape Breton highlands. The climate of this Region is reflected in the dominant hardwood vegetation characterized by a Sugar Maple, Yellow Birch–Fir association. Six of the eight plateaus (District 310) which compose the Region are sharply defined, with level plateau surfaces at elevations between 100 and 300 m above sea level. Margins of the plateaus generally fall abruptly, 100 m or more, with little dissection by stream valleys. The remaining two uplands (District 330) are at lower elevations and have a less severe climate and a greater proportion of softwood trees. Mainland parts of this Region are bordered by ancient sedimentary rocks on which soils are deeper and river valleys more deeply carved (District 320). All of these uplands provide excellent moose ranges.

### GEOLOGY AND LANDSCAPE DEVELOPMENT

The blocks are made up of very resistant metamorphic and igneous rocks, among which are some of the most ancient rocks in Nova Scotia. In most cases, the blocks are bounded and crosscut by faults. At the margins these give steep scarp slopes; within the blocks, where harder and softer strata are juxtaposed, they produce rugged hills and valleys.

The crests of the blocks are often narrow and dissected but are usually uniform in height along their length. Their height relationship is cited as evidence for a Cretaceous planation surface. The crests progressively decrease in elevation southeastwards as they intersect an almost uniform surface now dissected and tilted to the southeast. Subsequent erosion has removed soft strata and left the resistant blocks as uplands. The prominence of the blocks varies according to the hardness of the adjacent rocks and their position on the tilted peneplain.

### CLIMATE

Elevation is the dominant influence on the climate of this somewhat diverse Region. The climate in different areas is modified by proximity to water masses. The main climatic features are wide daily and seasonal temperature ranges, and high precipitation, especially snowfall.

Winters are generally long and cold. Because of their greater elevation, the Cobequids record the coldest temperatures within the Region. The uplands south and east of the Bras d'Or Lake are slightly warmer than the rest of the Region because of lower elevations and the moderating influence of the Bras d'Or Lake and the Atlantic Ocean. Spring is late, although somewhat earlier in the Bras d'Or area. Mean temperatures do not rise above 0°C until April. Summer temperatures are cool at the higher elevations, but warmer towards Cape Breton. Freezing temperatures return before the end of November in the Cobequid Hills and Antigonish Highlands, and one or two weeks later in Cape Breton.

Total annual precipitation exceeds 1200 mm in the mainland. The Region is noticeably wetter in Cape Breton, where precipitation exceeds 1400 mm. Snowfall is greatest on the highest parts of the Mainland, exceeding 300 cm. In Cape Breton, 200–250 cm falls close to the Bras d'Or Lake, and over 250 cm elsewhere. The snow-cover season follows the same pattern, being longer in the mainland areas (more than 140 days) and somewhat shorter (130 days) in the rest of the Region. In midwinter, snow accumulations of more than 40 cm occur in the Cobequid Hills and Antigonish Highlands.

Cloud cover occurs frequently, and the relative humidity is high. Exposure to wind is an important factor at the highest elevations and in areas close to the Gulf of St. Lawrence.

The main features of the bioclimate of the Avalon Uplands are the short frost-free period, the short growing season, cool moist summers, and low evapotranspiration.

### FRESH WATER

There are relatively few lakes across this Region, but there are many rivers and streams. Most uplands in this Region tend to function as drainage divides for

watershed areas. The headwaters are not especially productive.

## SOILS

The main influences on soils in this Region are the high precipitation, the presence of somewhat more basic igneous rocks, steep terrain that provides good drainage, and a prevalence of deciduous trees. Soils here are strongly leached but in many areas have higher natural fertility than soils found on the more acid upland rock. Soils are usually well-drained, shallow, and stony sandy loams, often of the Ferro-Humic Podzol Great Group. Because of low evapotranspiration, substantial levels of organic matter accumulate in the upper layers. Leaf litter from the hardwood forests develops into a mull or moder humus form.

C.D. Howe made the following observations on soil-forest relationships in 1912: "The felsites and syenites are similar to granites ... they vary in hardness, and the softer forms give rise to very vigorous soils which rank with alluvial soils in fertility, while the harder forms results in a soil similar in fertility to that of the more compact sandstones. They are, therefore, feeble soils."

The more recent Cumberland County Soil Survey (1973) reports: "The somewhat higher base status derived from ferro-magnesian minerals may have something to do with the prevalence of hardwood trees in the Cobequid Mountains and the rich undergrowth there, but this effect is difficult to separate from the adverse effect of exposure on the conifers."

## PLANTS

Most of the Region falls within Loucks' Sugar Maple, Yellow Birch-Fir Zone and these are the predominant species. Parts of the Region south and east of the Bras d'Or Lake are in the Sugar Maple-Hemlock, Pine Zone. The major influences on the regional vegetation are the fertile soils, cold winters and cool summers, good drainage, and relative lack of disturbance. The high elevation and well-drained fertile sites favour hardwoods or mixed woods, with softwoods appearing on poorly drained sites and cool, moist ravine slopes and valley bottoms. Shallow soils on parts of the plateau surfaces support only Balsam Fir with lesser amounts of spruce.

Sugar Maple, American Beech, and Yellow Birch are the main species on the hills. White Spruce, Red Spruce (mainly in the Cobequid Hills), and Balsam Fir form mixed or softwood stands on valley slopes, while Black Spruce, White Spruce, scattered Eastern

Hemlock, and White Pine predominate on the valley bottoms. A prominent feature in this Region is the vigorous shrub growth, particularly of Mountain Maple, Witch Hazel, and Hobblebush. This shrub community develops in cut-overs and insect-killed stands, with the prominent addition of *Rubus* spp. Following disturbance, shade-intolerant hardwoods are found throughout but are more prevalent on lower slopes, mixed with spruce and fir. There are few bogs in this Region, but seepage sites are common.

Plants of the Alleghanian floral element, whose main range is further south, are associated with intervale habitat in this Region.

## ANIMALS

This Region provides a range of forested habitats but does not have significant aquatic habitats. It includes large areas which are relatively undisturbed and inaccessible, and provide good habitat for ungulates, bears, and the larger carnivores.

## CULTURAL ENVIRONMENT

Specific sites by the Bras d'Or Lake were Mi'kmaq burial grounds, and these spots continue to be important to the Mi'kmaq today. In general, highland areas such as the Avalon Uplands were settled by Scots in the first half of the nineteenth century, when fertile valley lands were no longer available. Farmlands were established as forests were cleared; however, most emigrants were squatters on the land. According to the 1851 census, many backland settlers had cleared 10-20 acres, enough to pasture cows, sheep, goats and horses and to grow essential crops. Soils were often only marginally productive. For the majority of these highland emigrants, seasonal employment was sought in the Sydney coal mines, the fishery (particularly with American vessels fishing in the Gulf), and selling timber stripped from unprotected Crown land. Poor livelihoods and meagre agricultural potential led backland settlers to abandon their farmlands; consequently, successional forest regeneration of the land took place. Today, a limited amount of farming is practised. A century ago, 100,000 sheep roamed the uplands and meadows of Cape Breton but, with the waning of rural life, by the 1970s only 2,700 animals remained. Upland areas are now used for commercial maple syrup production and mining ventures; however, forestry is the dominant economic land use. The impressive upland scenery of these environs has attracted recreation and tourism.

*Associated Topics*

T2.1 Introduction to the Geological History of Nova Scotia, T2.2 The Avalon and Meguma Zones, T2.4 The Carboniferous Basin, T3.1 Development of the Ancient Landscape, T4.2 Post-glacial Colonization by Plants, T5.2 Nova Scotia's Climate, T9.1 Soil-forming Factors, T10.4 Plant Communities in Nova Scotia, T10.6 Trees, T11.10 Ungulates, T12.2 Cultural Landscapes, T12.10 Plants and Resources.

*Associated Habitats*

H3.1 Freshwater Open-Water Lotic, H3.3 Freshwater Bottom Lotic, H6.1 Hardwood Forest (Sugar Maple, Yellow Birch, Beech Association), H6.2 Softwood Forest (Spruce, Fir, Pine Association; Spruce, Fir Association), H6.3 Mixedwood Forest (Spruce, Fir, Pine-Maple, Birch Association).

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## 310 HARDWOOD PLATEAU

District 310 has four Units, two on the mainland and two in Cape Breton, each with its own distinctive geological and geomorphological features:

- 311 Cobequid Hills
- 312 Pictou-Antigonish Highlands
- 313 North Bras d'Or Uplands
  - (a) Creignish Hills
  - (b) North Mountain
  - (c) Boisdale Hills
- 314 Mabou Highlands

### GEOLOGY

A number of fault blocks are grouped within this District in northern mainland Nova Scotia and Cape Breton, and are positioned on the up-tilted, northern side of the planation surface. The highest elevations of each block are between 275 and 340 m. A similar elevation and northerly position on the planation surface give areas within the District common climatic characteristics. At these elevations the plateau is characterized by hardwoods. This District also in-

cludes areas of lower elevation, down to 200 m, in which softwoods occur.

### SCENIC QUALITY

These plateaus have similar qualities, because they possess similar topography, range of relief, and vegetation. The smaller units (Mabou Highlands and North Mountain) possess little or no plateau top and thus offer throughout what is available only on the margins of the other uplands: high relief, incised river valleys, and panoramic views of surrounding lowlands. Though the forest land cover is unrelieved by lakes or fields, the broadleaf trees are scenically distinctive and display spectacular autumn colour. Waterfalls are another interesting landscape element and occur most frequently in the Mabou Highlands and on the faulted southern scarp of the Cobequid Hills. Scenic quality is very high where these uplands overlook the ocean or large lakes, as on the Mabou coast, along the West Bay of Bras d'Or Lake, and along the shores of Cobequid Bay and Minas Channel.

310  
Hardwood  
Plateau



**Plate 3:** Region 300. View from the Parrsboro area looking north towards the Cobequid Hills (Unit 311). The uniform hilltops of this landscape represent the ancient erosion surface. Photo: R. Lloyd.

## 311 COBEQUID HILLS

### 311 Cobequid Hills

#### GEOLOGY

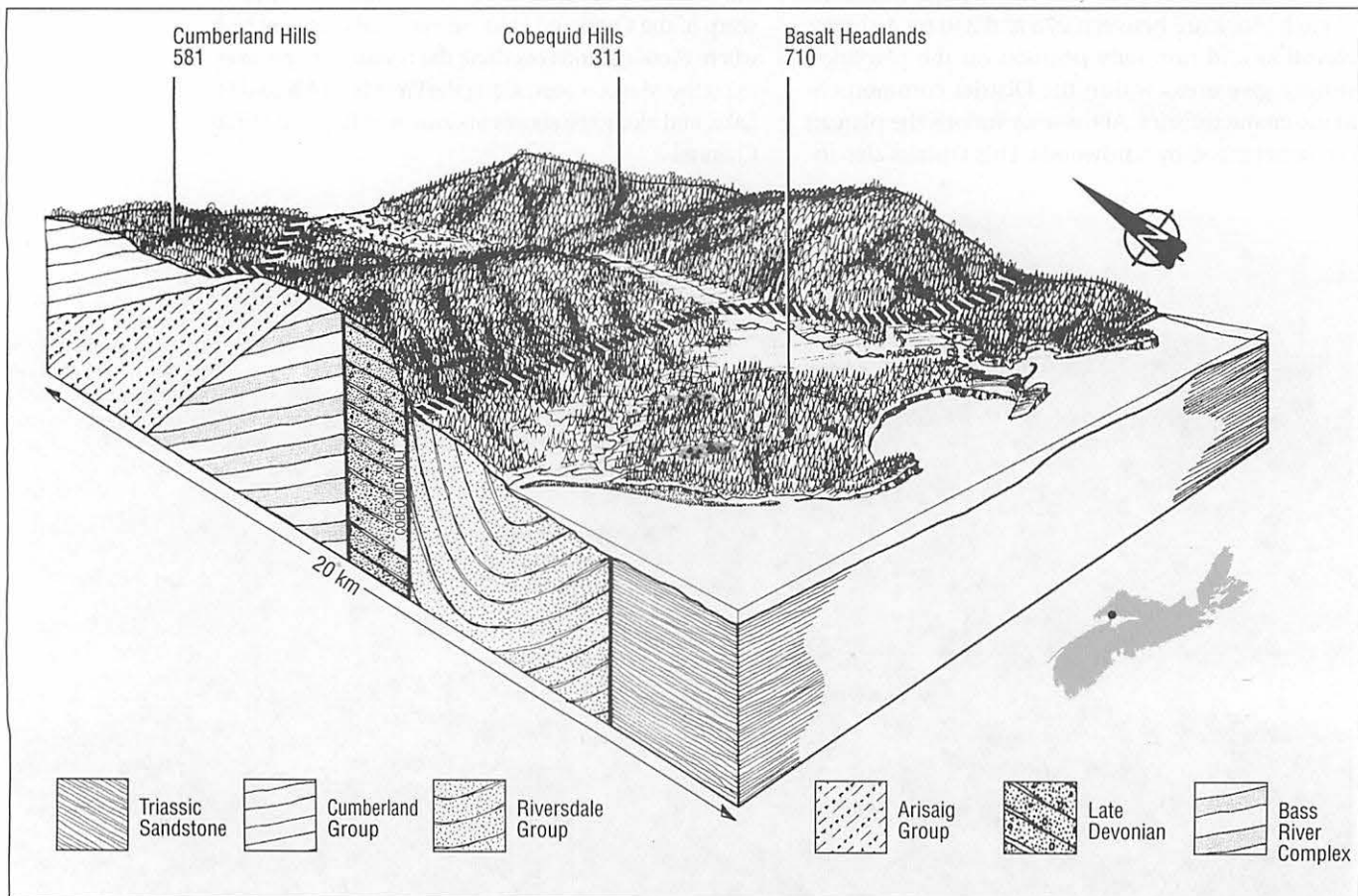
The Cobequid Hills are the surface expression of a steep-sided, elongated fault block—a slice of Avalon crust—which forms a highland on the north side of the Minas Basin. It is a resistant massif surrounded by more easily eroded and low-lying Carboniferous and Triassic sediments (see Figure 19). The geology of the Cobequid Hills is dominated by metamorphosed sediments, granites, and volcanic deposits which range in age from Precambrian to Devonian. These have been crushed, folded, and faulted. Geological complexity is manifest in the rapid changes of rock type within short distances.

#### *Precambrian Basement Rocks*

The oldest rocks are those of the Bass River Complex, found from Economy River to Nuttby and in the Central New Annan area, and the Mount Thom Complex, exposed at Mount Thom. These rocks were originally sedimentary and volcanic deposits but have been metamorphosed to schists and gneisses. They form part of the Precambrian basement upon which deposition took place in the Silurian. Included in this basement are altered granites which were intruded during obscure early phases of crustal upheaval.

#### *Overlying Sedimentary Rocks*

There are no Cambrian strata in the Cobequid Hills, but deposition appears to have been continuous from the Silurian through the Devonian and Carboniferous.



**Figure 7:** Parrsboro shore area. The Cobequid Hills (Unit 311), part of the Avalon Uplands, descend abruptly along the Cobequid Fault to the lowlands fringing the Minas Basin. To the north, in contrast, the Cobequids merge gradually into the Cumberland Hills (Unit 581). Headlands of basalt along the Minas Basin separate bays carved from the less-resistant Riversdale shales and Triassic sandstones of the Fundy Coast (District 710).

Many different rock types are present. The earlier, Silurian deposits of fossiliferous siltstone and shale are interleaved with various types of volcanic deposits such as ash (tuff) and flows (ignimbrites and lavas). These give way to younger (Devonian) non-fossiliferous red beds, which can be correlated to the Knoydart Formation in the Pictou-Antigonish area. The red beds were deposited in shallow, fresh water and are thought to represent the retreat of the sea prior to the Acadian crustal collision which led to the formation of Pangaea. Middle Devonian deposits include more volcanic rocks. Late Devonian strata include coarse sediments which continue into the Carboniferous.

#### *Acadian Orogeny*

The Acadian Orogeny caused the crushed and folded sediments to begin melting and mobilizing deep within the crust. The resulting granitic liquid rose and cooled, forming large intrusive bodies. These granites, together with their older counterparts, now represent more than 40 per cent of the bedrock underlying the Cobequid Hills.

#### *Surface Exposure of the Fault Block*

Although the Cobequid Hills have ancient origins, they did not become a topographic feature until after the Cretaceous. The block appears to have begun moving vertically upwards via fault movement during the Carboniferous, but was deeply covered by sediment at that time. Unlike other areas in the Avalon Uplands, it did not form an island in the Carboniferous Sea.

The block lies on the upper side of the uplifted planation surface and has remained as a resistant highland while the surrounding softer Carboniferous and Triassic sediments have been stripped away (see Figure 7).

#### **LANDSCAPE DEVELOPMENT**

The Cobequid Hills form a cigar-shaped block about 120 km long, 15 km wide, and on average 275 m high. The crest is a narrow, featureless plateau which ends abruptly at faulted margins on both the north and south sides. The western extremity is the granite headland of Cape Chignecto (see Figure 9).

#### *Faults*

The southern boundary is the scarp of the Cobequid Fault, which is the westerly continuation of the Chedabucto Fault. This fault, which can be traced from Truro to Cape Chignecto, is obscure in the east, but in the west it has a steep and prominent scarp

slope. The fault zone is best exposed along the beach just west of Port Greville. It is also visible at Bass River as a 100-m band of crushed rock. East of Parrsboro it appears as a series of high cliffs and steep hills that are skirted by the road. From Parrsboro to Diligent River, the highway follows the contact between the resistant older rocks on the north side and the Carboniferous lowlands to the south. Beyond Fox River, the fault follows the north shore of the Minas Channel, becomes obscure around Advocate, and runs seaward off high cliffs at Cape Chignecto.

The northern boundary of the Cobequid Hills runs from Earltown to River Philip. Although there is an abrupt drop to the rolling northern plain, the slope descends more by a series of steps than as high cliffs. The fault on the northern side is covered by Carboniferous deposits.

Within the Cobequid Hills, other east-west faults divide the block into long slices, but these have little topographic expression because they are juxtaposed rocks of similar hardness.

The crest of the Cobequid Hills is relatively even and undissected, except for two places where it is crosscut by major valleys: the Parrsboro and Folly gaps. The Parrsboro and Folly gaps are believed to be the abandoned valleys of rivers which at one time may have flowed southwards from the Gulf of St. Lawrence. They were superimposed upon the massif as it rose and became exposed, and they cut deep channels across its surface. The remnants of these rivers now flow northwards and may be represented by River Hebert and the Wallace River. The floors of the Parrsboro and Folly gaps are covered by glacial debris, including thick deposits of gravel. Folly Lake has formed between dams of gravel at either end of the valley. Water seeps through on both sides to form the headwaters of the Wallace and Folly rivers.

Along the sides of the Parrsboro Gap are glacio-fluvial gravel terraces and kames. Other kames and kame terraces in the centre of the valley cut off several small lakes.

#### **FRESH WATER**

The Cobequid Hills form a drainage divide across northern mainland Nova Scotia. Primary tributaries tend to run north-south. The Region contains the headwaters for many watercourses draining to the Bay of Fundy and the Northumberland Strait, including the Folly, Portapique, Economy, and Chiganois rivers. The streams rise in the lakes and bogs on the till-blanketed crest and then plunge down the scarp slopes in waterfalls, cascades, and straight, steep-sided gorges. The falls and gorges are most spectaculo-

lar on the south side; e.g., along the Economy, Moose, Bass, and Portapique rivers. On the north side, falls can be seen east and west of New Annan. The valleys tend to be wider on the north side. In some cases, a new channel has been cut in the centre of a wider, shallow valley; e.g., along the Folly River where the river occupies a central narrow gorge 20–30 m deep.

The small headwater lakes, bogs, and swamps are relatively infertile. Conductivity ranges between 16 and 62 micromhos/cm and pH averages 6.8.

## SOILS

The soils derived from the igneous and metamorphic rocks in this Unit are stony, usually shallow, and extremely acidic, gravelly, sandy loams. Over large areas the bedrock is within 0.5 m of the surface, and rock outcrops are common. The Cobequid series covers most of the area. This well-drained, sandy loam is an excellent forest soil, providing a porous but solid rooting medium. The cool, moist climate is responsible for the accumulation of colloidal organic matter in these soils. Wyvern soils are found along the northern edge of the Cobequid Hills. These soils are similar in many ways to the Cobequid series. Significant areas of Wyvern soils were accessible to early settlers who cleared the land; some is now reverting to forest while the rest is being used for blueberry production. Small areas of Hebert soils (well to excessively drained gravelly, sandy loams) are found on glacio-fluvial sands and gravels around lakes.

## PLANTS

The plateau top of the Cobequids now supports a Sugar Maple, Yellow Birch, and American Beech forest interlaced on shallow soils with Balsam Fir and Red and Black Spruce. The poorly drained depressions support Balsam Fir and Black Spruce.

The northern part of the plateau has the purest stands of hardwoods. Conifers become increasingly common to the south, especially Red Spruce and Balsam Fir. The influence of the Bay of Fundy can be seen towards the west where extensive stands of Red Spruce thrive up to 200 m above sea level. Parts of the plateau in Cumberland County that were once cleared for agriculture are now blueberry fields. Other fields were created recently by clearing woodlands. Oldfields have come back in coniferous stands dominated by White Spruce.

Eastern Hemlock is common in ravines. White Spruce, Red Spruce, and Balsam Fir form mixed woods with Sugar Maple, Yellow Birch, and Red Ma-

ple on the slopes, becoming softwood forests of Black Spruce, White Spruce, and White Pine in the valley bottoms.

Exposure to wind affects a large part of the Unit. Red Spruce and Yellow Birch are particularly susceptible and may be stunted.

In 1912, C.D. Howe observed: "On the granite north of Advocate bay [there is] a luxuriant forest which contains 75 percent red spruce. The same type is found on the granite mass north of Greville bay. From there, the outcrops of this group of rocks occur only in small patches, until the Cobequid hills are reached, where they are found in largest mass. The northern slopes of the Cobequid hills in the neighborhood of Wentworth, for example, support at the base a mixed forest of hardwoods and red spruce, fir and hemlock, in which softwoods originally predominated. As one ascends the slopes the forest becomes prevaillingly of the hardwood type. In some places it is two-thirds yellow birch; in other places it is about equally divided between yellow birch, hard maple and beech. Near the top of the slopes one often finds narrow ridges which are covered to the extent of ninety percent with beech of inferior quality. In the higher levels frequently immense hopper-like basins are found nearly enclosed by ridges. In these, the forest is composed in nearly equal proportions of balsam fir, red spruce and the hardwoods. In the narrow valleys of the streams on the other hand, hemlock, spruce and fir prevail in the order named, so that looking at the northern slopes of Cobequid from a distance, one sees the green of the prevailing hardwoods interspersed with black bands of coniferous softwood foliage."

Ground and shrub vegetation is usually varied and luxuriant. A number of unusual arctic-alpine and Alleghanian plant species may be found in cool, moist ravines and in rich Sugar Maple woods.

## ANIMALS

In winter, the accumulation of snow and the more-open deciduous forest forces deer to migrate off the Cobequid Hills to the south-facing lower slopes. The deer then return in May to mature hardwood habitats to feed on spring flowers. The Cobequid Hills support good moose populations year-round. Softwood forests on poorly drained soils are used by moose for winter cover. It is thought that the winter separation of moose and deer lessens the transfer of a central-nervous-system nematode parasite from deer carriers to the moose.

Animals and plants characteristic of fertile wetlands are not abundant in this Region. Steep water-



courses and small, relatively unproductive headwater ponds and bogs disfavour their establishment. Low-energy drainage systems on the crest are inhabited by beaver, but sparse food and harsh climate usually limit populations. Bobcats and, more recently coyotes, hunt the softwood swamps for Snowshoe Hare.

Maple and Yellow Birch forests provide an excellent opportunity for animals dependent on tree cavities and fallen logs. The erythristic (all-red) colour phase of the Eastern Redback Salamander is commonly found in the hardwood forest.

The scarcity of active farmland results in the virtual absence of most open-country birds, and the predominance of hardwoods may restrict the occurrence of some birds characteristic of softwood forests. However, the Great Horned Owl is known to nest in the softwoods on top of the hills and in the hardwood slopes below them. Goshawk, Red-tailed Hawk, and Barred Owl also nest in this Unit. In winter, bird life is relatively scarce except for possible sightings of Common Raven, Pileated Woodpecker, and Ruffed Grouse in the hardwoods. Grey Jay and chickadees proliferate in the softwoods. Many species of warbler and other insectivorous birds can be seen here in the summer.

Brook Trout is the predominant fish species, but Brown Trout and Atlantic Salmon are also found in many small headwater streams.

Unit 311 meets the coast at Cape Chignecto, where one sees various marine birds and Grey Seal. Cliffs in this area are monitored as possible nesting sites for Peregrine Falcon.

#### CULTURAL ENVIRONMENT

Much of the Cobequid Hills was logged in the early 1900s. A second wave of forestry is now occurring with increasing construction of forest-access roads and clearcuts. The new route for the Trans-Canada Highway also passes through this Unit. Such activity may favour some wildlife species and possibly negatively affect some other, old forest-dependent species. Sugar Maple stands in the Cobequid Hills have also been used for the commercial production of maple syrup. In some areas, such as Mount Thom, forests were cleared for farmlands that are still in use. Road construction has been challenged by the Cobequid Hills, with passages like the Folly Gap providing important routing points. Tracts of woodland have been cleared for commercial blueberry production.

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#### *Sites of Special Interest*

- Road from Highway 104 to Lornevale—shallow iron deposits 800 m north of Cobequid Fault
- Londonderry—iron-bearing carbonates formed the foundation of an iron industry in the nineteenth century
- Folly Gap—U-shaped glaciated valley best seen near Wentworth is a relic of the ancient drainage system
- Folly Lake—glacial lake
- Parrsboro Gap—the channel cuts Unit 311, draining the River Hebert north and the Parrsboro River south; glacial terraces and kames
- Economy River, Bass River, Moose River, Tatamagouche—waterfalls
- Portapique River—cascades and gorge
- Nuttby Mountain—lookoff
- Bass River—Cobequid Fault zone of crushed rock
- Greville Bay and Cape Chignecto—cliff exposure of Cobequid Fault
- Lynn Mountain—mature deciduous forest with characteristic flora
- Eatonville—junction of Units 311, 532, and 581

#### *Provincial Parks and Park Reserves*

- Simpson Lake, Cape Chignecto

Proposed Parks and Protected Areas System includes Natural Landscape 23, and Candidate Protected Areas include 24 Economy River and 25 Portapique River.

#### *Scenic Viewpoints*

- Wentworth Valley, Sugarloaf Mountain, Parrsboro Valley, Greville Bay, Five Islands Provincial Park, Portapique River, Economy River (falls), Moose River (falls).

#### *Associated Offshore Unit*

912 Outer Bay of Fundy.

#### *Associated Topics*

T2.2 The Avalon and Meguma Zones, T2.4 The Carboniferous Basin, T3.2 Ancient Drainage Patterns, T3.4 Terrestrial Glacial Deposits and Landscape Features, T8.1 Freshwater Hydrology, T10.12 Rare and Endangered Plants, T11.4 Birds of Prey, T11.12 Marine Mammals, T12.10 Plants and Resources.

#### *Associated Habitats*

H3.1 Freshwater Open-Water Lotic, H3.3 Freshwater Bottom Lotic, H5.2 Oldfield, H6.1 Hardwood Forest (Sugar Maple, Yellow Birch, Beech Association).

## 312 PICTOU-ANTIGONISH HIGHLANDS

### GEOLOGY

The Pictou-Antigonish Highlands are underlain by a block of old crustal rocks which are bounded and transected by numerous faults. The Unit stands at an average elevation of 245 m but is dissected into steep-sided hills and valleys where faults cut across the resistant massif. The two most important faults are the Hollow Fault in the northwest and the Cobequid-Chedabucto Fault on the south. These two faults accommodated extensive lateral slip motion as the crustal sections were slipping into place during the formation of Nova Scotia.

The strata within the Pictou-Antigonish fault block are dislocated and do not form a neat succession. However, when pieced together like a jigsaw puzzle, they provide an almost continuous record of the geological evolution of this section of Nova Scotia. This can be correlated with parts of Cape Breton, the Cobequid Hills, and other areas further south along the Atlantic seaboard.

#### *Early Geological Events*

The oldest strata are of the Precambrian Georgeville Group, which consists of volcanic and sedimentary rocks many thousands of metres thick. These rocks are intruded by fine-grained igneous rocks that are believed to be the necks of ancient volcanoes. Sugarloaf Hill south of Malignant Cove is an example of a volcanic neck. This early period of vulcanism ended with crustal disturbance and metamorphism that may have been part of the Taconic Orogeny during the Ordovician.

#### *Marine Sediments at Arisaig*

Between the Taconic and Acadian orogenies (Silurian to Devonian) came a period of continuous deposition in a shallow sea. During this time the Avalon Zone was developing far distant from the Meguma sediments, which had already accumulated off the coast of Africa (or South America). The richly fossiliferous strata which accumulated in this shallow sea are exposed west of Arisaig Point and contain brachiopods, graptolites, pelecypods, trilobites, crinoids, cephalopods, ostracods, and bryozoans. These fossils are well preserved and have been very significant in tracing the history of the

Avalon Zone and relating it to other parts of eastern North America.

#### *Freshwater Deposits*

The succession of strata ended with the shallow accumulation of water-lain deposits. The youngest are the red beds of the Knoydart Formation (exposed along the road between McArras Brook and Dunmaglass, 5 km to the south). These contain the remains of freshwater fish which have been correlated with similar strata in Europe. It appears that the North American and European crustal plates may have drifted together by this time, initiating the formation of Pangaea and the onset of the Acadian Orogeny.

#### *Acadian Orogeny*

During this orogeny, the pile of sediments was uplifted and granite was intruded. The Pictou-Antigonish block rose along the major fault lines and initially formed a topographic high. Later it became an island in the Carboniferous Sea and was eventually engulfed by Carboniferous sediments. Still later, erosion caused readjustment to take place along the numerous fault lines, which in turn produced a "jumbling" of the strata.

### LANDSCAPE DEVELOPMENT

The northern border of the Pictou-Antigonish Highlands is the scarp of the Hollow Fault, which extends from Cape George almost to New Glasgow. Beyond this to the west it joins the Cobequid-Chedabucto Fault. Along the Hollow Fault is a 200-m scarp which has developed as a result of differential erosion since the Tertiary. The old strata of the highlands are much more resistant to erosion than those surrounding them. The scarp is conspicuous south of Piedmont. Further northeast, between Baileys Brook and Doctors Brook, the fault lies in a long, straight valley with a very high, steep southern margin. Along the valley flow the tributaries of several rivers, which turn abruptly northwestwards and drain into the Northumberland Strait. The valley, called "The Hollow" or "Bruin's Highway," has eroded from the softer or broken strata within the fault zone. From Malignant Cove to Cape George, the Hollow Fault forms high cliffs along the straight coastline.

Within the body of the fault block many subsidiary faults crosscut in north-south and northeast-southwest directions. Narrow valleys have formed along some of these lines, particularly where softer strata have been downfaulted, for example, east from Kenzieville. This valley was deepened during the Pleistocene and now contains deposits of sand and gravel which create a uniform grade. Some valleys are ancient landscape features which are now being exhumed as the Carboniferous infilling strata are being stripped away. An example of such a fossil valley is found at Marshy Hope and along the Eden River. Another valley near Kenzieville lies along the length of the Kenzieville Trough—a downfolded section of the Arisaig Formation.

Around the borders of the Pictou-Antigonish Highlands, the prominence of the scarp slope reflects the different hardnesses of adjacent strata. Where soft Windsor sediments are set against the resistant block, the scarp is prominent; where harder Horton strata are juxtaposed, the scarp has a diminished expression.

The southern boundary of the Highlands is the Cobequid-Chedabucto Fault; here the block is set against Horton strata (see Figure 18). The topography of this margin is rugged. The scarp reaches 180 m in places and is cut by deep valleys where other fault lines create lines of weakness; e.g., along Garden River to Eden Lake, and along Moose River, Beaver River, and Campbells Brook. The height of the scarp in part reflects the vertical movement (in addition to the extensive horizontal movement) along this major fault.

#### FRESH WATER

The drainage pattern is generally dendritic but is heavily influenced by fault lines. Along the margins, streams and rivers flow down the scarp slope in straight narrow channels. Unlike the Cobequid Hills, there are no wind gaps across the Pictou-Antigonish Highlands as evidence of superimposed drainage. Surface water consists mainly of rivers and streams; there are very few lakes. Conductivity in the streams ranges between 28 and 54 micromhos/cm and pH averages 6.4.

#### SOILS

Four major soil associations occur in this area. Cobequid soils occupy the southeastern sector of Pictou County. These are stony loams or sandy loam soils developed on a variety of tills derived from diorite, felsite, syenite, and granite. Barney River soils

have developed on shaly loam tills derived principally from Silurian shales, while Kirkmount soils around North Bloomfield have developed on tills derived from schists, hard sandstones, and slates. Well-drained Thom soils have developed on tills derived from sandstone and hard metamorphic rocks.

Because of the elevation and low evapotranspiration, all these soils tend to have accumulated substantial levels of organic matter in the surface layers. Most are stony and shallow to bedrock. The Barney series is somewhat less stony and is also somewhat finer textured than the others.

#### PLANTS

Mainly shade-tolerant hardwood forest covers this Unit, with Yellow Birch, Sugar Maple, and American Beech being most common. Red Spruce, White Spruce, Eastern Hemlock, and Balsam Fir are scattered on the upland surfaces and form coniferous stands on the lower slopes and valley bottoms. Red Spruce is less common towards the eastern side of the Unit. White Spruce has colonized old farmlands in the area. As in Unit 311, the shrub layer is diverse and vigorous.

An historical perspective on the evolution of the forests is supplied by C.D. Howe, who wrote in 1912: "This large mass of felsites and syenites ... supports a mixed, thoroughly culled forest. The eastern slopes along the Upper Ohio river southeast of Antigonish are quite abrupt and are covered with a mixed coniferous and hardwood forest in which the hardwoods predominate. On some of the slopes they are in pure stands. The broad tableland between the headwaters of the Ohio river and Black brook is made up of low ridges and depressions, the former being covered chiefly by yellow birch and the latter by rather inferior red spruce. The soil is thin, and large areas are covered with rock fragments. The flats about the lakes, however, support nearly pure stands of good spruce. The tableland also contains frequent black spruce-fir swamps. The western third of the area is three-quarters hardwood, over half of which is yellow birch, and the remaining portion is about equally divided between red spruce and fir."

#### ANIMALS

This Unit provides a mixture of mature hardwood and softwood habitats and oldfields, with few bogs or lakes. Like the Cobequid Hills, the Pictou-Antigonish Highlands provide very good moose habitat. The Fisher has been reported from this Unit. Although lit-

tle appears to be known about this area, it may be assumed that wildlife will be relatively abundant.

Freshwater fishes include White Sucker, Brook Trout, sticklebacks, Golden Shiner, Yellow Perch, and Banded Killifish.

### CULTURAL ENVIRONMENT

Highland Scots settled in various locales in this highland area, practising subsistence farming on marginally productive soils. Many of these farmlands were later abandoned and regenerated into the regional forest of the area. Much of this area is managed for forestry.



#### *Sites of Special Interest*

- Sugarloaf Hill (south of Malignant Cove)—ancient volcanic neck
- Arisaig Point westwards—well-preserved fossils of brachiopods, graptolites, clams, trilobites, crinoids, cephalopods, ostracods, bryozoans
- Knoydart—fossil fish, ostracods, and plant remains in ancient coastal floodplain
- Cape George to Malignant Cove—cliffs along the Hollow Fault
- Marshy Hope, Eden River—fossil valleys with remnant Carboniferous infilling
- Blue Mountain—good lookoff north along French River
- Clydesdale (IBP Proposed Ecological Site 11)—mature, relatively undisturbed Sugar Maple forest
- the road between McArras Brook and Dunmaglass exposes red beds of the Knoydart Formation

#### *Provincial Parks and Park Reserves*

- Beaver Mountain
- James River
- Cape George

Proposed Parks and Protected Areas System includes Natural Landscapes 44a and 44b.

#### *Scenic Viewpoints*

- Highway 347 at Blue Mountain, Highway 104 along Barneys River, Beaver Mountain Provincial Park

#### *Associated Offshore Unit*

914 Northumberland Strait.

#### *Associated Topics*

T2.2 The Avalon and Meguma Zones, T3.1 Development of the Ancient Landscape, T11.10 Ungulates, T12.9 Soil and Resources, T12.10 Plants and Resources.

#### *Associated Habitats*

H5.2 Oldfield, H6.1 Hardwood Forest (Sugar Maple, Yellow Birch, Beech Association), H6.2 Softwood Forest (White Spruce Association; Spruce, Fir Association).

## 313 NORTH BRAS D'OR UPLANDS

This Unit is divided into three sub-Units:

- (a) Creignish Hills
- (b) North Mountain
- (c) Boisdale Hills

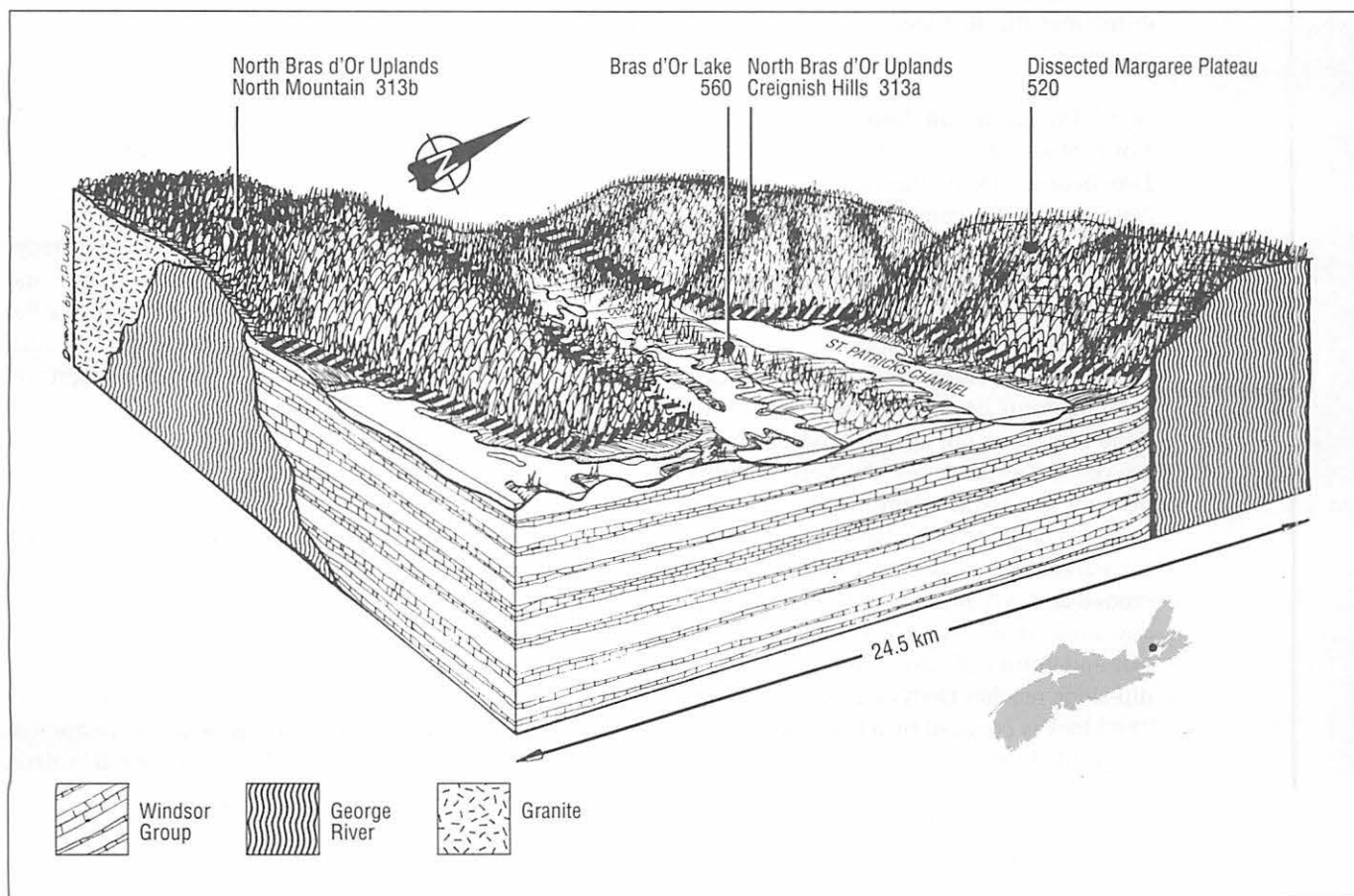
### GEOLOGY AND LANDSCAPE DEVELOPMENT

The North Bras d'Or Uplands are a series of elongated northeast-southwest oriented fault blocks situated on the north side of Bras d'Or Lake. They are composed of Avalon crustal material, predominantly Precambrian in age, which has risen in the landscape. The blocks have moved vertically along fault boundaries and have domed and tilted the surrounding Carboniferous strata (see Figures 8 and 19).

The blocks occupy a central position along the tilted planation surface and generally achieve average elevations which are consistent with that position, about 245–310 m. The elevations are greatest on the southeast side where movement was along faults. They then tilt towards the northwest, declining in elevation and ending in relatively shallow dip-slopes on the northern margins.

The relief along the boundaries of the blocks depends upon the nature of the adjacent Carboniferous deposits. The North Bras d'Or Uplands were once islands in the Carboniferous Sea, were probably engulfed by sediment, but are now eroded out as topographic highs. Some parts of the margins are set against resistant early Carboniferous Horton grits,

313  
North  
Bras d'Or  
Uplands



**Figure 8:** North Bras d'Or Uplands area. Fault-bounded blocks of resistant metamorphic and granitic rocks form the North Bras d'Or Uplands (Unit 313). The easily eroded Windsor Group rocks remain only as a partly submerged lowland fringe around the Bras d'Or Lake (District 560). More resistant Horton sandstones remain as the dissected Margaree Plateau (Unit 591).

whereas others lie against the Windsor Group deposits. These softer sediments are easily eroded and expose the resistant Precambrian rocks in maximum relief. Horton sandstones, in contrast, form a resistant continuum and mask the boundary with the older rocks.

#### *Creignish Hills (sub-Unit 313a)*

The Creignish Hills occupy the same relative position on the planation surface as the Pictou-Antigonish Highlands and achieve an average elevation of 275 m. This block is divided into two almost equal sections of metamorphosed volcanic and sedimentary rocks and granite; the former is Precambrian and the latter is Ordovician.

The northern margin is against Horton grits, which form a rolling upland and topographically mask this boundary. The southern boundary is faulted from Whycomagh Bay to River Denys Mountain and forms a steep scarp slope against the adjacent Windsor Group deposits.

The profile of the North Bras d'Or Uplands as seen from near Port Hawkesbury is relatively even and dominates the first view of Cape Breton from the causeway.

#### *North Mountain (sub-Unit 313b)*

North Mountain lies on the west side of Bras d'Or Lake between Denys Basin and West Bay. It is about 260 m high and is composed of Precambrian granitic and George River Group rocks. The latter originally contained limestone bands, which have been metamorphosed into marble. Some marble is still quarried at Marble Mountain.

The North Mountain block was outside the early Carboniferous basin where the Horton strata were deposited. Later on, during Windsor time, when the sea covered a wider area, the North Mountain block became an island against which Windsor Group strata accumulated. The block is now almost entirely surrounded by Windsor deposits, which are deeply eroded and give maximum relief on both the north and south sides. The scarp is steepest on the south side and forms cliffs along West Bay. The more gentle dip-slope reaches Denys Basin at a shallower angle. The block is crosscut by a fault, forming a narrow, steep-sided valley.

#### *Boisdale Hills (sub-Unit 313c)*

This part of the North Bras d'Or Uplands lies on the east side of Bras d'Or Lake and has a more complex geological composition than either the Creignish Hills or North Mountain. The strata include late Precambrian sediments and volcanics, granites of

Precambrian and Devonian age, and younger volcanic and sedimentary rocks.

This upland block is crosscut by northeast-southwest oriented faults which divide it into a series of strips. Precambrian granites and George River Group rocks are thus juxtaposed against Cambrian and middle Devonian strata. The fault lines are eroded to form scarp slopes in several places along the coast and inland. A well-developed fault scarp can be seen at Eskasoni; another is aligned southwest and northeast along East Bay.

The Carboniferous strata immediately adjacent to the older rocks are the sandstones and shales of the Grantmire Formation. These are intermediate in erodibility and provide moderate relief next to the harder upland strata.

#### FRESH WATER

There are few lakes, and most of the streams and rivers are tributaries feeding larger rivers in the surrounding District 560. Colluvial deposits in stream valleys are zones of springs and groundwater seeps.

#### *Creignish Hills (sub-Unit 313a)*

The hills form a divide across western Cape Breton. Both the south-flowing Inhabitants River and the north-flowing Mabou River rise in these hills.

#### *North Mountain (sub-Unit 313b)*

The valley is occupied by two streams, Kennedys Brook and MacIntyres Brook. Lakes, bogs, and wandering streams are found on the relatively flat crest of North Mountain, but once the marginal slopes are reached, the streams become straight and fast flowing.

#### *Boisdale Hills (sub-Unit 313c)*

The landscape is divided into numerous tertiary watersheds that drain many short streams and small lakes.

#### SOILS

A wide variety of metamorphic and granitic rocks occurs in this Unit, but the strong podzol development and the presence of a thick iron humate B horizon typical of ferro-humic podzols tend to mask the diversity of the parent materials. The principal soil, which has developed from the thin mantle of stony loam till is Thom—a well-drained, stony, sandy loam. Small areas of peat are found in depressions. On the Boisdale Hills (sub-Unit 313c), Mira soils (mottled, sandy loam) have developed where drainage is

impeded by relief. There are also some coarse-textured Debert soils. Shallow soils occur on ridges and steep slopes.

## PLANTS

Sugar Maple, Yellow Birch, American Beech, and shade-intolerant hardwoods occupy the upper slopes and high ridges, while Balsam Fir, White Spruce, and Black Spruce cover the upland flats and ravine slopes. On the Boisdale Hills (sub-Unit 313c), where elevations are somewhat lower (200 m), mixedwoods become more prevalent.

## ANIMALS

Little direct study has been done in this Unit, but the small amount of information available for sub-Unit 313c indicates the fauna in Unit 313 is not necessarily similar to that in Units 311 and 312.

Of special note are the large number of eagle nests in stream ravines in sub-Unit 313c. Deer use the side slopes for winter yards; the slopes shelter them, especially on sunny days when the slopes block winter winds. There are few to no moose in this area. Fish include Brook Trout, Golden Shiner, White Sucker, White Perch, sticklebacks, and Banded Killifish.

## CULTURAL ENVIRONMENT

### *Creignish Hills (sub-Unit 313a)*

Bornish Hills, a section of the Creignish Hills, is a protected site under the Special Places Act administered by the Department of Natural Resources.

### *North Mountain (sub-Unit 313b)*

North Mountain was well known for its Marble Mountain limestone quarry. The story of this limestone and marble quarry industry of the late 1800s and early 1900s is documented at the Marble Mountain Museum. After limestone was extracted from the quarry, it was crushed, slaked, and shipped to Prince Edward Island, where farmers used it to lime soils. Important Mi'kmaq burial sites are found in North Mountain cliffs bordering the Bras d'Or Lake.

### *Boisdale Hills (sub-Unit 313c)*

Forestry has been one of the dominant land uses in the Boisdale Hills. A limestone quarry once operated here.

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### *Sites of Special Interest*

- Marble Mountain—marble quarry

### *Provincial Parks and Park Reserves*

- Marble Mountain
- Barachois
- Eskasoni fault scarp
- East Bay fault scarp

Proposed Parks and Protected Areas System includes Natural Landscapes 49a and 49b.

### *Ecological Reserves*

- Bornish Hill Nature Reserve (sub-Unit 313a)

### *Scenic Viewpoints*

- Marble Mountain (sub-Unit 313b)

### *Associated Topics*

T2.2 The Avalon and Meguma Zones, T2.4 The Carboniferous Basin, T3.1 Development of the Ancient Landscape, T11.4 Birds of Prey, T12.3 Geology and Resources.

### *Associated Habitats*

H3.1 Freshwater Open-Water Lotic, H3.3 Freshwater Bottom Lotic, H3.5 Freshwater Water's Edge Lotic, H4.1 Bog, H6.1 Hardwood Forest (Maple, Oak, Birch Association; Sugar Maple, Yellow Birch, Beech Association), H6.2 Softwood Forest (Spruce, Fir Association).

## 314 MABOU HIGHLANDS

### GEOLOGY AND LANDSCAPE DEVELOPMENT

The Mabou Highlands lie southwest of the Cape Breton highlands on the Northumberland Strait. They form a rounded knoll 15 km by 8 km which reaches an elevation of 335 m at the north end and 320 m at the south end. The surface of the Mabou Highlands is highly dissected, and little remains of the original plateau. The sides are deeply eroded. The area is underlain by two rock types: one is a series of metamorphosed sedimentary and volcanic rocks, and the other is a gneiss complex. Both are probably Precambrian in age and are comparable to similar rocks found in the Cape Breton highlands (Regions 100 and 200). Both are very resistant to erosion. The western boundary of this block of Avalon crust is a north-south fault which has set Devonian-Carboniferous sandstones against the Precambrian strata.

The Mabou Highlands are almost entirely surrounded by Horton strata, but unlike other sections of the Avalon Uplands, they stand out in high relief against these rocks. At the boundaries the hills rapidly climb to 200 m above the Horton deposits. There are steep cliffs along the rather even Northumberland coastline from Port Ban to Cape Mabou.

Coarse glacial deposits lie against the lower slopes of the Mabou Highlands south of Inverness. Other finer sandy deposits are found on the banks of Broad Cove, ascending to more than 150 m above sea level.

### FRESH WATER

Streams that flow in wide valleys near the crest of the Mabou Highlands occupy deep gorges further down the slopes and are separated by rounded valley shoulders. The drainage exhibits a radial pattern, with stream systems draining outwards from the rounded crest.

Groundwater springs and seeps can be found in areas with colluvial deposits.

### SOILS

The main soil series is Thom, a well-drained, stony, sandy loam. Thom soils are heavily podzolized, with a thick iron humate B horizon. Small areas of peat are common in depressions.

### PLANTS

Away from the immediate influence of the winds off the Gulf of St. Lawrence, shade-tolerant hardwoods dominate the upland plateau in this Unit, with Sugar Maple, Yellow Birch, and American Beech being the main species. White Spruce and Balsam Fir are found on coastal sites, while Balsam Fir, spruce, and Eastern Hemlock form softwood stands or mixedwood stands with Red Maple and birch on the lower slopes. A large area around South Cape Mountain has been cleared for use as a community pasture.

### ANIMALS

Trapping in the northern part of the Mabou Hills in July and September 1982 revealed that no Rock Voles or Gaspé Shrews were present, but otherwise the small-mammal fauna was diverse. Bald Eagles are frequently seen near Mabou Harbour.

### CULTURAL ENVIRONMENT

The marginal farmland of the Mabou Highlands was settled by Scots in the mid-nineteenth century, with subsistence agriculture and sheep farming forming much of the economic base, together with the timber trade and mining nearby. Many of these farms were later abandoned, and forest succession ensued. However, sheep farming is still practised here today. The Sight Point Walking Trail has long been a recreational attraction here. Seasonal hunting also takes place in these highlands.



#### *Sites of Special Interest*

- Sight Point—exposures of Precambrian intrusive rocks
- Inverness and Broad Cove—raised beaches

#### *Provincial Parks and Park Reserves*

Proposed Parks and Protected Areas System includes Natural Landscape 60.

#### *Scenic Viewpoints*

- Sight Point, Glenora Falls



*Associated Offshore Unit*  
914 Northumberland Strait.

*Associated Topics*

T2.2 The Avalon and Meguma Zones, T3.4 Terrestrial Glacial Deposits and Landscape Features, T11.4 Birds of Prey, T12.9 Soil and Resources, T12.11 Animals and Resources, T12.12 Recreational Resources.

*Associated Habitats*

H6.1 Hardwood Forest (Sugar Maple, Yellow Birch, Beech Association), H6.3 Mixedwood Forest (Spruce, Fir, Pine-Maple, Birch Association).

## 320 DISSECTED MARGINS

This District is divided into two sub-Districts:

- (a) Waughs River
- (b) French River

### GEOLOGY AND LANDSCAPE DEVELOPMENT

At the margins of the Cobequid Hills and the Pictou-Antigonish Highlands in Pictou County are foothills which lie between the uplifted plateaus and the relatively undisturbed surrounding lowlands (see Figure 18). Kame fields and esker systems are evident in the landscape. The two main areas are Waughs River (sub-District 320a) and French River (sub-District 320b).

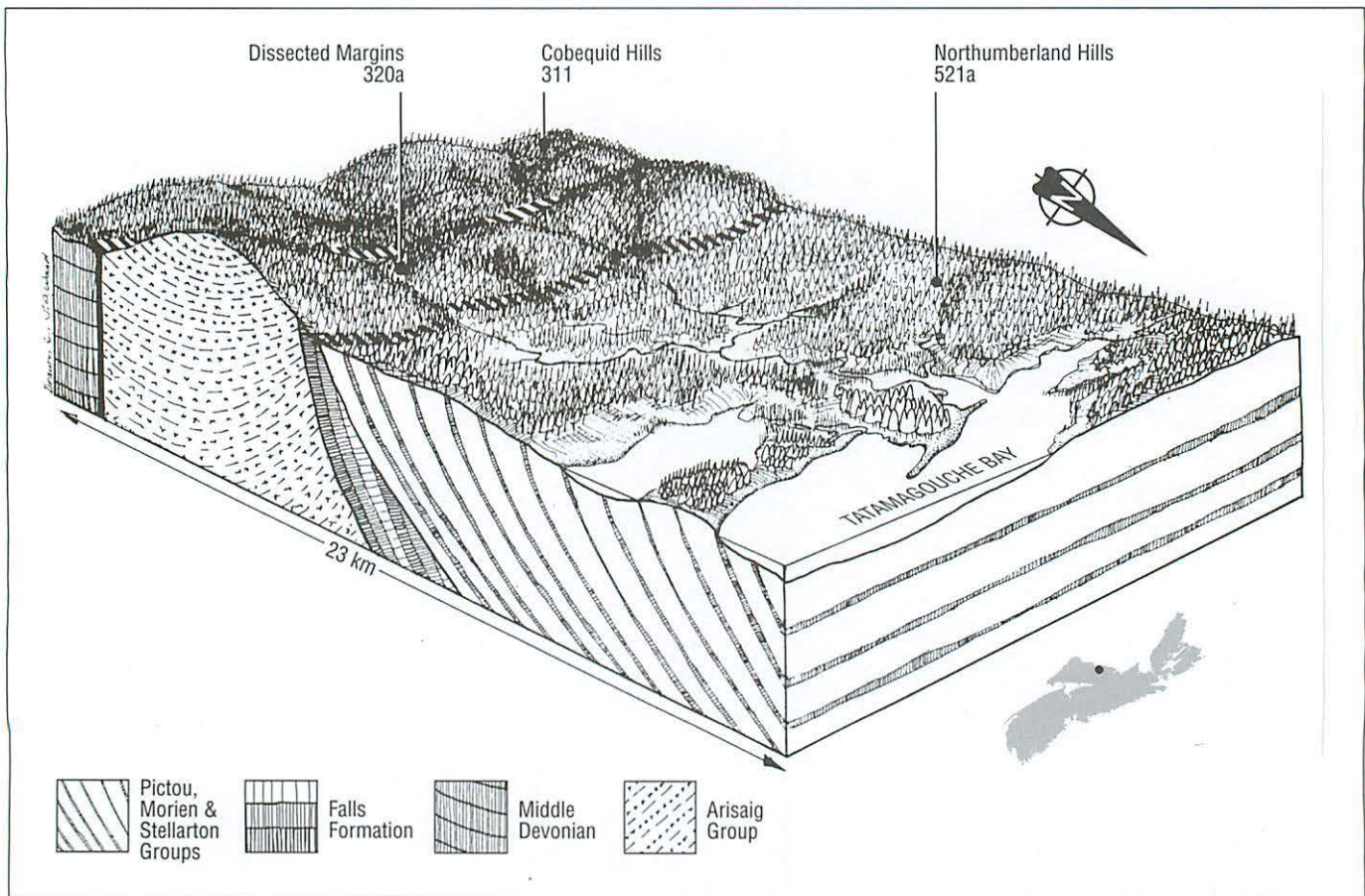
#### *Waughs River (sub-District 320a)*

East of Warwick Mountain on the north side of the Cobequid Hills are a number of small faults which lie broadly parallel to the Cobequid Fault. These create a series of slices at the margin of the upland, and these slices form dissected steps down to the Northumberland Plain (see Figure 9). Numerous rivers and streams create attractive and varied hill and valley topography.

#### *French River (sub-District 320b)*

The north and west margins of the Pictou-Antigonish Highlands are broken into numerous blocks by two sets of faults running north-south and east-west. Strata of varying hardness have been juxtaposed and

### 320 Dissected Margins



**Figure 9:** Northumberland Plain area. The wide coastal plain (Unit 521) with low sandstone ridges nearly parallel to the coast is terminated abruptly by the Dissected Margins (District 320) of the Avalon Uplands which are underlain by older, more resistant sedimentary rocks. The distant Cobequid Hills (Unit 311) grade subtly into the foothills.

the area has been dissected by many streams and rivers. The landscape is hilly with steep narrow valleys occupied by branches of the French River.

## SOILS

In both parts of this District the soils reflect the contributions of both varied bedrock and Carboniferous glacial material brought in from the north.

### *Waughs River (sub-District 320a)*

Well-drained Cobequid soils derived mainly from granitic materials occur at the higher elevations. In the Pictou County part of the sub-District, Westbrook soils (well-drained loam) have developed from a gravelly loam till which was derived from Carboniferous conglomerates of the Horton Group. In Colchester County, Wyvern soils, which are similar to Cobequid soils, have developed on granite-rich tills.

### *French River (sub-District 320b)*

Thom and Cobequid soils (typical highland soils) again occur at higher elevations. Elsewhere Barney soils (well-drained loam) have developed on shaly clay loams derived from Silurian shales.

## PLANTS

Mixed forest covers most of this District, with hardwood stands on well-drained ridges. Balsam Fir, Red Spruce, White Spruce, Red Maple, and birch are the common trees.

## ANIMALS

This District shares many of the faunal characteristics of the Cobequid Hills (Unit 311). Brown Trout and Brook Trout are common fish species in the smaller tributaries that feed the French and Waugh rivers.

## SCENIC QUALITY

When compared with District 310, scenery is often less spectacular but more intimate and varied. The many hills, knolls, and small river valleys, combined with more frequent evidence of human settlement (roads, farms, and small clearings), add much variety and interest. Scenic ratings vary from medium to moderately high. Particularly attractive are the valleys of MacKays Brook and Waughs River (sub-District 320a), Barneys River, West Barneys River, and the East French River (sub-District 320b). Numerous viewpoints from the roads travelling down to

Tatamagouche provide vistas of the slopes and the plain beyond.

## CULTURAL ENVIRONMENT

### *Waughs River (sub-District 320a)*

Forestry characterizes land use. Scots settled in these upland areas, later abandoning some settlements. Waterways were utilized downstream to power grist mills such as the Balmoral Mill, which is now a museum site.

### *French River (sub-District 320b)*

The dominant land use in this area is woodland management. Sparse settlement occurs along river intervals.



### *Sites of Special Interest*

- Four Mile Brook near Tatamagouche Mountain—waterfall
- Balmoral Mills—picnic park and historic site (Grist Mill)

### *Provincial Parks and Park Reserves*

Proposed Parks and Protected Areas System includes Natural Landscape 42.

### *Associated Topics*

T2.2 The Avalon and Meguma Zones, T3.4 Terrestrial Glacial Deposits and Landscape Features, T12.10 Plants and Resources.

### *Associated Habitats*

H6.3 Mixedwood Forest (Spruce, Fir, Pine-Maple, Birch Association).

## 330 FAULT RIDGES

This District is divided into two sub-Districts:

- (a) Sporting Mountain
- (b) East Bay Hills

### GEOLOGY AND LANDSCAPE DEVELOPMENT

The Fault Ridges lie on the south side of West Bay, Cape Breton. The District is made up of two elongated blocks of Precambrian rocks: Sporting Mountain and East Bay Hills. Each block is composed of the same two rock types: volcanic deposits of the Fourchu Group (ash and lava interleaved with marine sediments) and granites, but in different proportions. Sporting Mountain is predominantly composed of granites, whereas the East Bay Hills have more Fourchu Group rocks (see Figure 29).

Both blocks are elongated northeast-southwest in accordance with the same prevailing trend of faults which dominates the geomorphology of the North Bras d'Or Uplands. The southeastern margins are also faulted, in this case bringing the resistant Precambrian strata against late Carboniferous sandstones and siltstones. On the northeastern side the contact is with easily eroded Carboniferous Windsor Group strata, which were deposited directly against the blocks when they stood as islands in the Carboniferous Sea.

Morphologically, the relief and elevations of Sporting Mountain and East Bay Hills reflect not only their geological setting, surrounded by rocks of varying resistance, but also their position on the low side of the planation surface. Both blocks rise to little more than 180 m, forming low ridges in an otherwise lowland landscape. Precambrian rocks of equivalent resistance have created dominant uplands further north, but here, where there was little uplift during the Tertiary, there was also minimal rejuvenation of erosional action and limited exposure of this hard core of old rocks.

The steepest slopes are found on the northwest side of both Sporting Mountain and East Bay Hills, where soft Windsor Group rocks form a narrow band along the shore. The valley of Breac Brook, at the north end of East Bay Hills, appears to be an ancient coastal valley which was filled by Windsor Group deposits and is now being exhumed. The fault line on the southeastern margin can be seen in some areas

(e.g., northeast of Oban) but in general does not form a prominent scarp slope.

In this part of Cape Breton south of Bras d'Or Lake, glaciation more than geological structure appears to have influenced drainage patterns. South of East Bay Hills the glacial direction is strongly north-east-southwest, in this case parallel to the fault which defines their southern boundary.

### FRESH WATER

Both Sporting Mountain and East Bay Hills have relatively flat plateau-like crests which are poorly drained. The streams flowing towards West Bay become straight and fast-flowing once the coastal slopes are reached, but those flowing southeast retain a dendritic-to-deranged (or disorganized) pattern. Most streams are located on the margins. In the eastern part of this District, the streams are aligned northeast, reflecting the glacial direction. The District contains several large lakes and a few scattered raised bogs.

### SOILS

Heavily podzolized Thom soils with a thick iron humate B horizon cover most of this District. They are associated with Arichat soils (poorly drained, mottled, sandy loams), found where the relief is gently undulating or depressional. There are also small areas of peat.

### PLANTS

The two parts of this District are somewhat lower than the North Bras d'Or Hills and shade-tolerant hardwoods, although present, are no longer dominant. The South Bras d'Or Hills support instead mixed stands of Red Maple, White Birch, Yellow Birch, American Beech, Balsam Fir, and White Spruce.

### ANIMALS

There are few moose in this area. Deer are found on side slopes in winter yards. There are a large number of eagle nests in stream ravines.

## SCENIC QUALITY

These two plateau blocks have less relief than District 310, even on their north-facing scarps, and they lack the visual interest of pure hardwood stands. Nevertheless, they offer some spectacular views north over Bras d'Or Lake, for example, where Highway 4 climbs above shore level near Irish Cove and Middle Cape.

## CULTURAL ENVIRONMENT

Small-scale farming is practised in some areas of Sporting Mountain (sub-District 330a) and the East Bay Hills (sub-District 330b). Fishing the waters of the Bras d'Or Lake and sporadic forestry have been economic activities in the past. Much of this area is now cottage country, and tourism plays a significant role in the local economy. In the early 1900s the mineral springs at Glengarry in Irish Cove were well known for their perceived healing properties, which drew local people as well as distant travellers.



### *Sites of Special Interest*

- Irish Cove Park (East Bay Hills)—view of East Bay and road-cut exposure of Precambrian ash (tuff) deposits
- Breac Brook, an ancient coastal valley filled with deposits, now being exhumed

### *Provincial Parks and Park Reserves*

- Ben Eoin
- Big Pond

Proposed Parks and Protected Areas System includes Natural Landscape 50.

