

3.2.2 Ecological units of the Des Quinze lake proposed biodiversity reserve

An intact forest mass

The Des Quinze lake proposed biodiversity reserve (see appendix 3) protects terrestrial environments almost exclusively. Proximity of Des Quinze lake explains the initial toponyms attributed to this proposed biodiversity reserve.

The substratum of this territory is mostly made up of granitic rock (acid, intermediate or gneissic rocks). The north part is composed of granite.

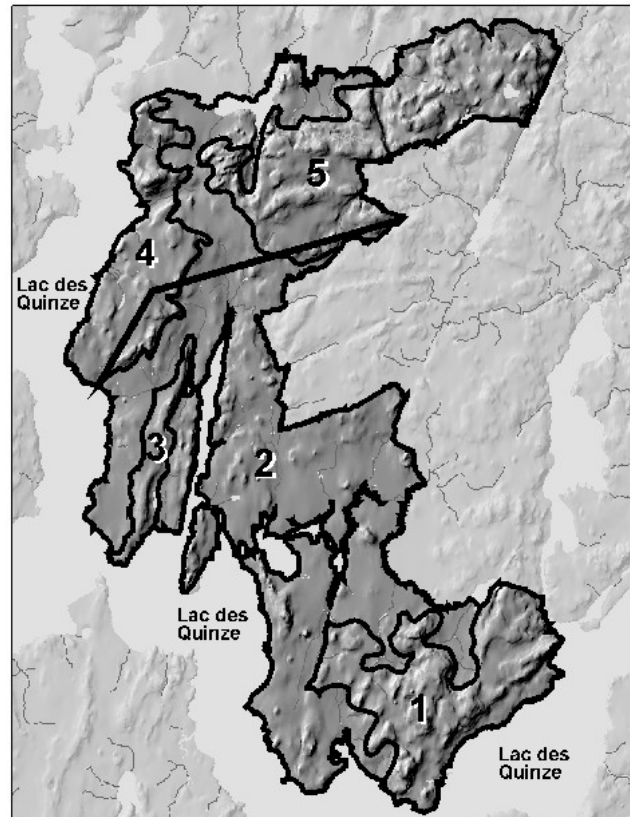
The general relief is a gently undulating glaciolacustrine clay and silt plain with a few congregations of knolls in the northeast and south parts of the proposed biodiversity reserve. Elevation varies between 265 and 379 metres with an average elevation of 284 metres.

The forest cover is mostly made up of mixed stands (54 %). The deciduous and softwood forests are in equal proportions. The key species are black spruce and white birch stands. A number of yellow birch stands also occupy this territory. Other species, including jack pine, trembling aspen, eastern white cedar and tamarack are also present. The particular feature of this proposed biodiversity reserve is its high rate of mature forests, with about 45% of the forest cover made up of stands aged 90 years and more, and 38% made up of average age stands (50-70 years).

This territory is divided into five distinct ecological units (see map to the right):

- **the complex of hillocks (1)**
- **the plain (2)**
- **the esker (3)**
- **the flat (4)**
- **the complex of knolls (5)**

The five ecological units are mainly distinguished by the combination of their landforms and surface deposits. The vegetation cover of each unit is influenced by these physical features. The natural and anthropogenic disturbances have also influenced the forest growth dynamic.



Location of ecological units

3.2.2.1 Ecological unit 1 – The complex of hillocks (24 km²)

Relief and surface deposits

- Complex of till hillocks and rocky outcrops
- Esker: northeast/southwest sandy fluvio-glacial complex
- Low sectors occupied by clay-silt and sandy glaciolacustrine deposits
- Elevation between 267 and 363 metres with an average of 300 metres
- Average difference in elevation of 30 metres

Geology

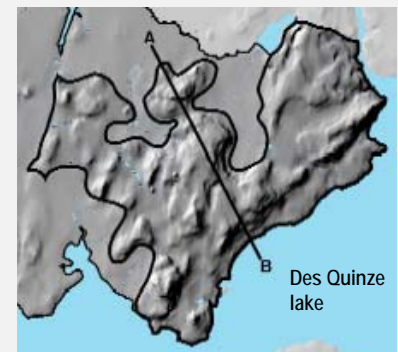
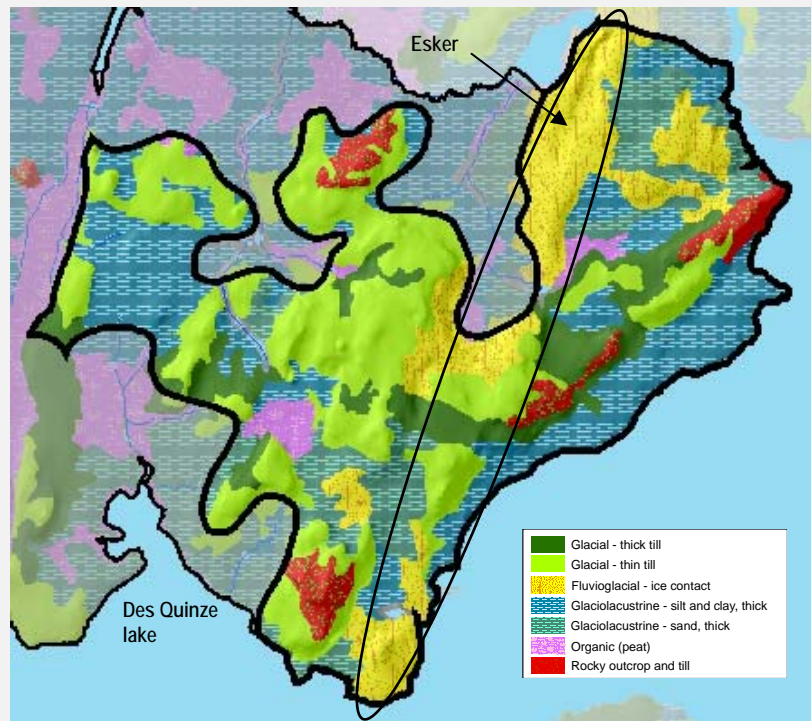
- Entirely made up of granitoids

Watercourses and lakes

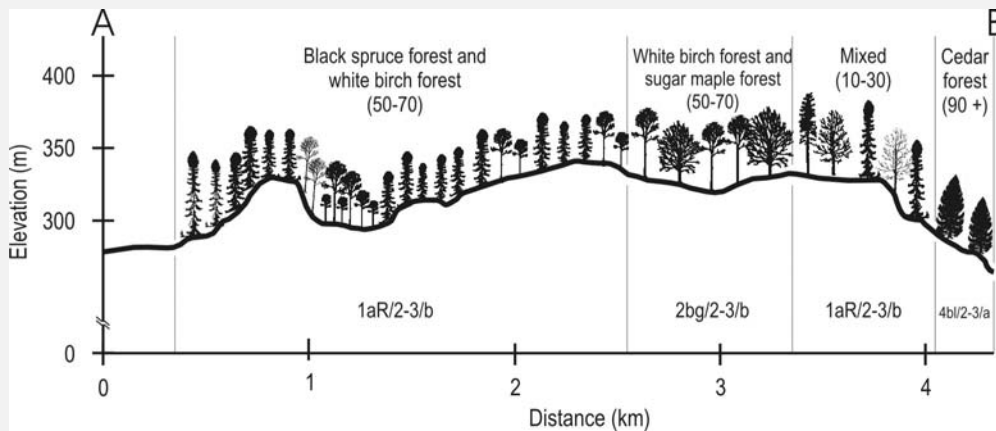
- Very few lakes, a few minor streams

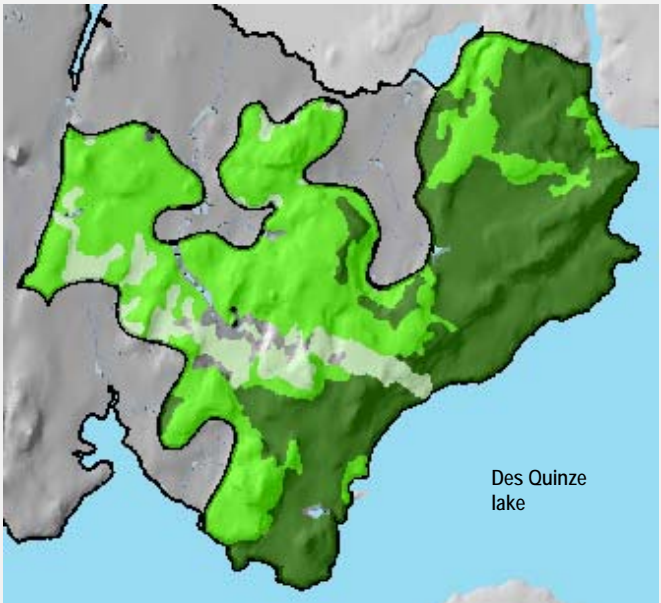
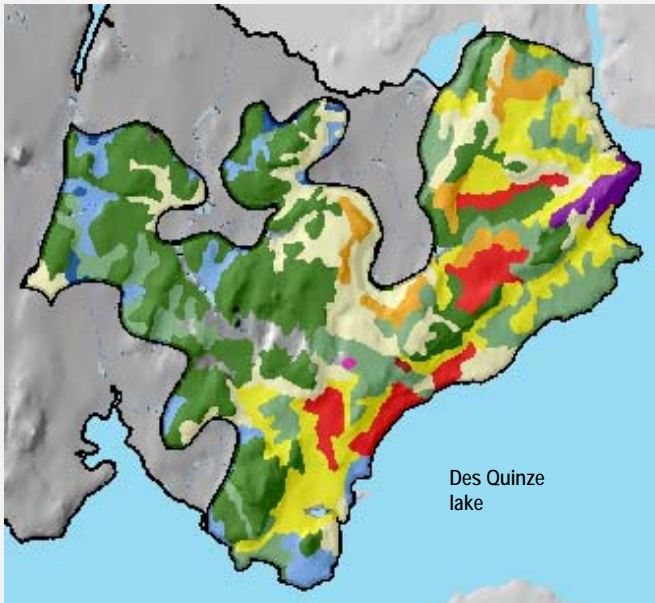
Vegetation

- Black spruce colonizes the till hillocks and the less well drained soils.
- White birch grow with the spruce on the hillocks.
- Sugar maple stands occupy certain north and west facing slopes.
- Yellow birch stands dominate the clay-silt and sandy glaciolacustrine soils.
- White pine stands with white birch or sugar maple colonize a ridge where the rock outcrops.
- A few cedar groves share some clay-silt and sandy deposits with yellow birch.
- Mixed forests occupy 50% of this unit whereas the softwood forests occupy 36%.
- While the forests are of average age (50%), there is a good proportion of mature forests (39%).



Location of transect





White birch	Sugar maple	Trembling aspen
Yellow birch	Tamarack	Balsam fir
Eastern white cedar	White pine	Softwoods - other
Black spruce	Jack pine	

10-30 years
50-70 years
90 years and +



Till hillock occupied by black spruce and a few white pine with sugar maple at the base



View of Des Quinze lake from a rocky outcrop at the top of the till knoll

3.2.2.2 Ecological unit 2 – The plain (84 km²)

Relief and surface deposits

- Plain dotted with depressions
- Poorly drained glaciolacustrine clay and silt occupy most of this unit
- Forested thin minerotrophic bogs over clay and silt in the many depressions
- A few rare till mounds and rocky outcrops
- Small sandy glaciolacustrine area in the extreme south of this unit
- Elevation between 264 and 332 metres with an average elevation of 275 metres
- Average difference in elevation of 10 metres

Geology

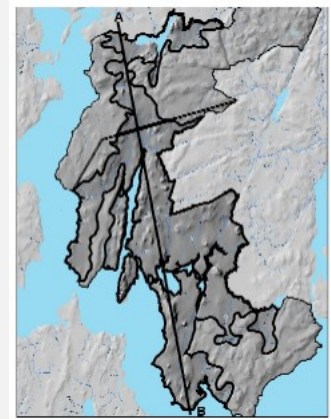
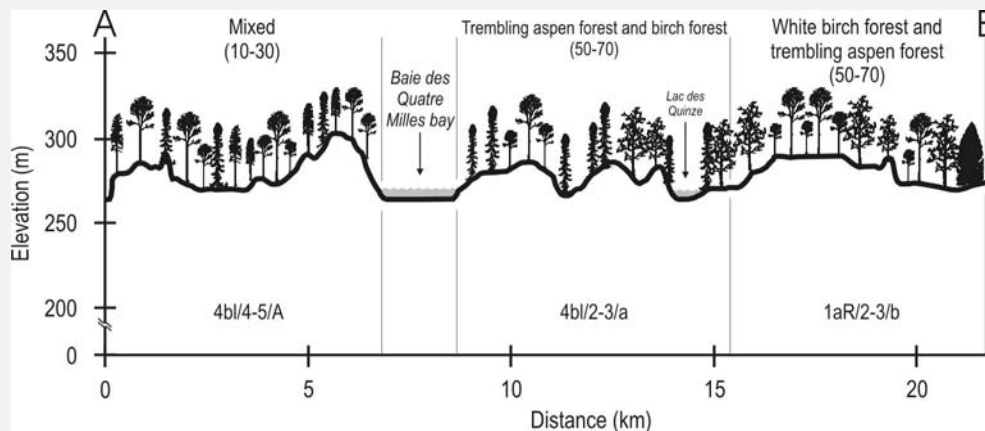
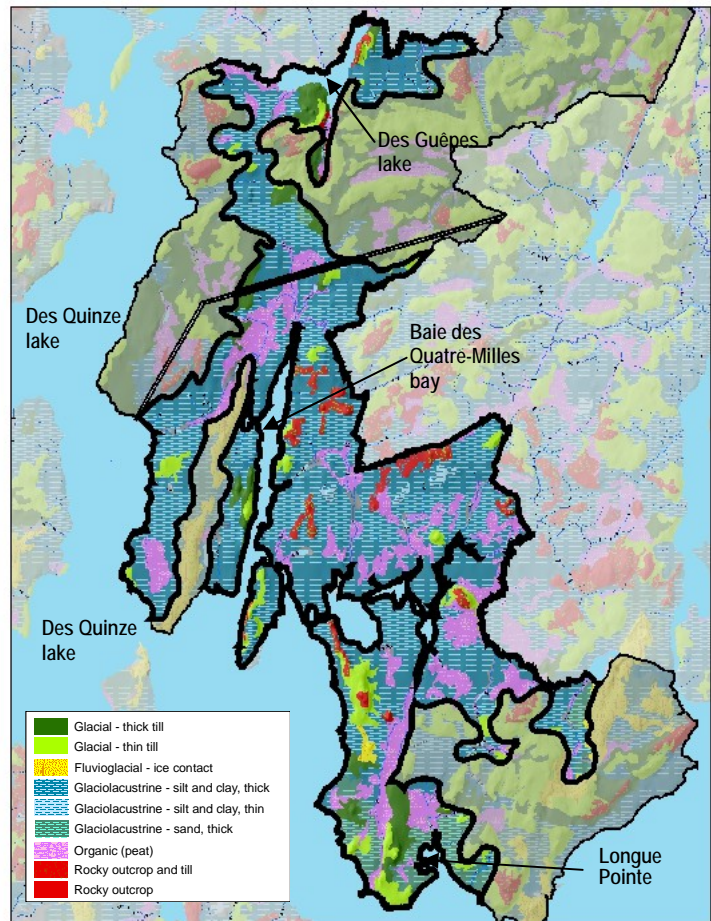
- Basement is almost entirely composed of granitoids, except in the northern part, near Des Guêpes lake, where the basement is granite

Watercourses and lakes

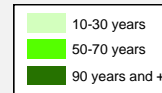
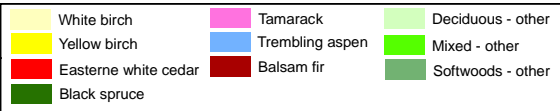
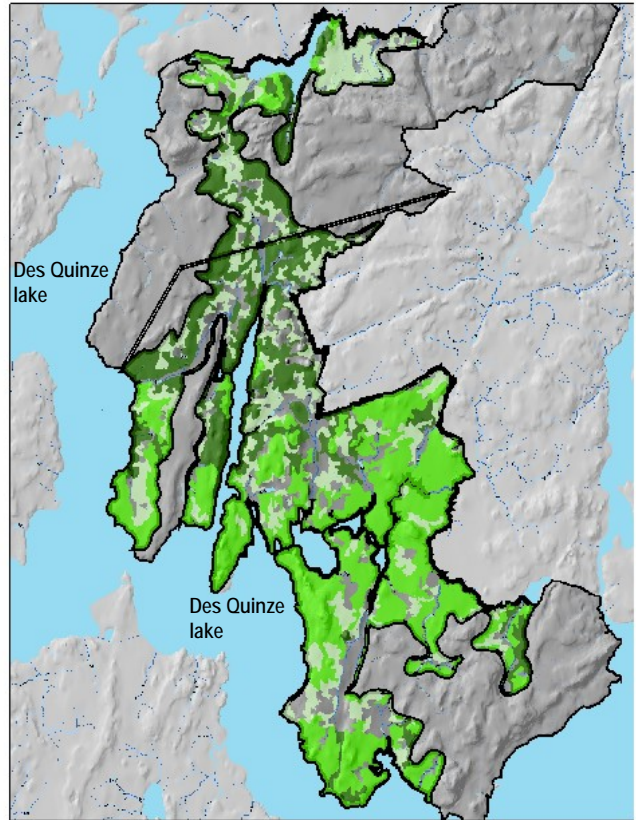
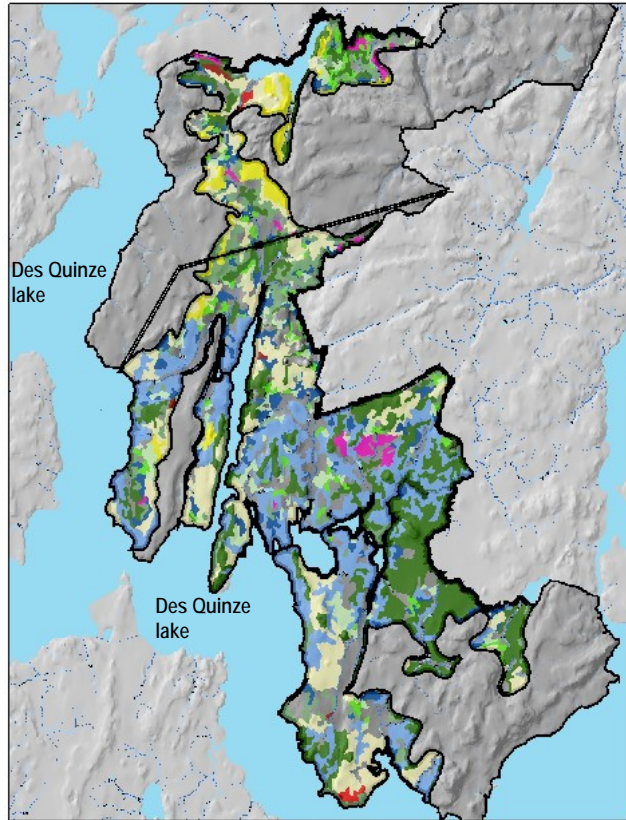
- Only two lakes are named: Des Guêpes (1.33 km²) and Vieux-Leblanc (0.31 km²)
- Few lakes, a few minor streams
- Numerous bays and points are named, including Baie des Quatre Milles bay which is over 6 km long

Vegetation

- Over half the forest area is made up of mixed forests, with the deciduous stands and softwood stands in equal proportion.
- About half the forests are of average age (50-70 years).
- Forests of 90 years or more occupy a third of the area and are mostly found in the northern part of the unit.
- Dominant species are white birch and trembling aspen.
- Black spruce is quite common, particularly in the southeast part of the unit.
- There are a few yellow birch stands south of Des Guêpes lake.
- A cedar grove occupies the south part (Longue Pointe) of the unit, on a riverside till mound exposed to the wind.



Location of transect



Vegetation on rocky outcrops on the banks of the Baie des Quatre-Milles bay



East bank of the Des Quinze lake eroded by waves

3.2.2.3 Ecological unit 3 – The esker (4 km²)

Relief and surface deposits

- North-northeast/south-southwest ridge with an elevation of about 25 metres above the surrounding area
- Mainly made up of fluvio-glacial sands and gravel extending southwest of Des Quinze lake
- Sandy glaciolacustrine deposits in lower, less steep areas
- Esker: course sand and gravel caused by powerful meltwaters that formed a central core which was then covered in vast subaquatic outwash fans which left wide bands of sand on the sides of the esker; these deposits were later reworked by waves when the glacial lake retreated, leaving stratification lines along the sides of the esker (Veillette, 2000)

Geology

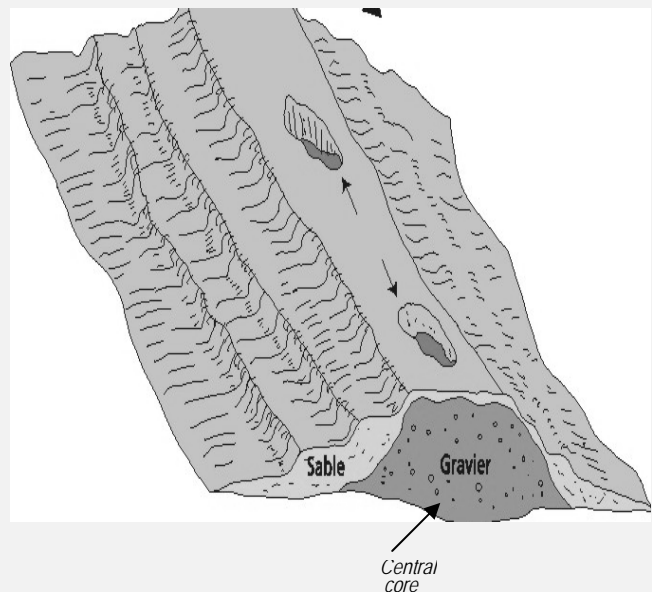
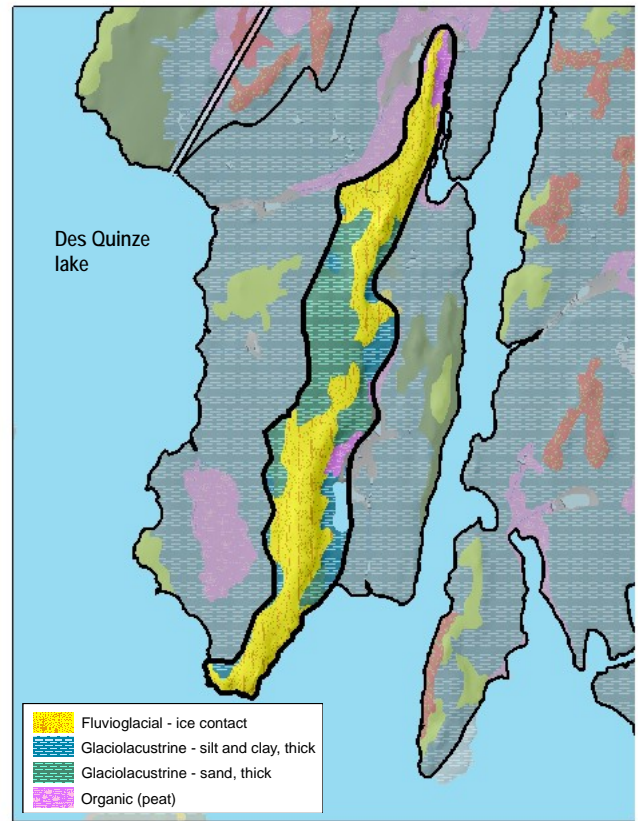
- Basement entirely made up of granitoids

Watercourses and lakes

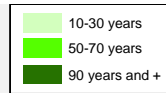
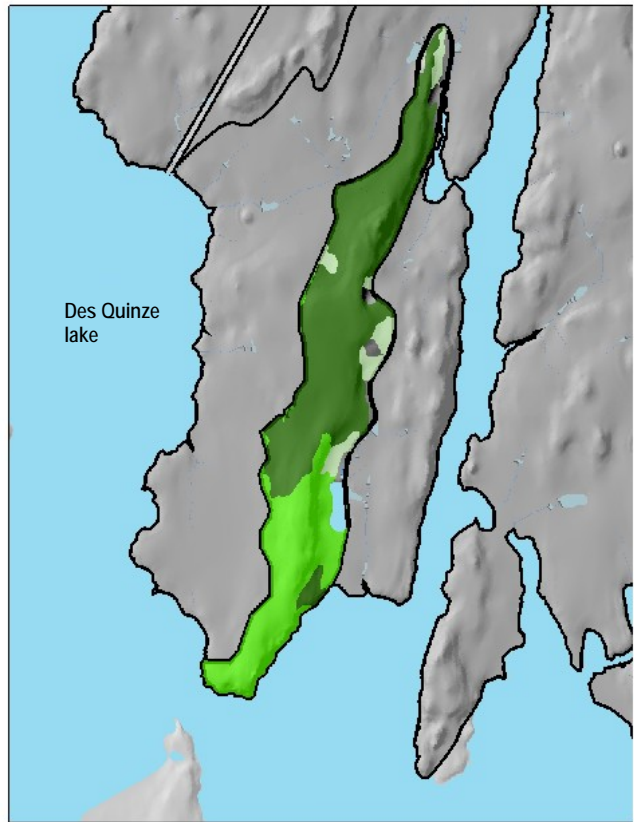
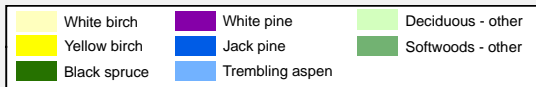
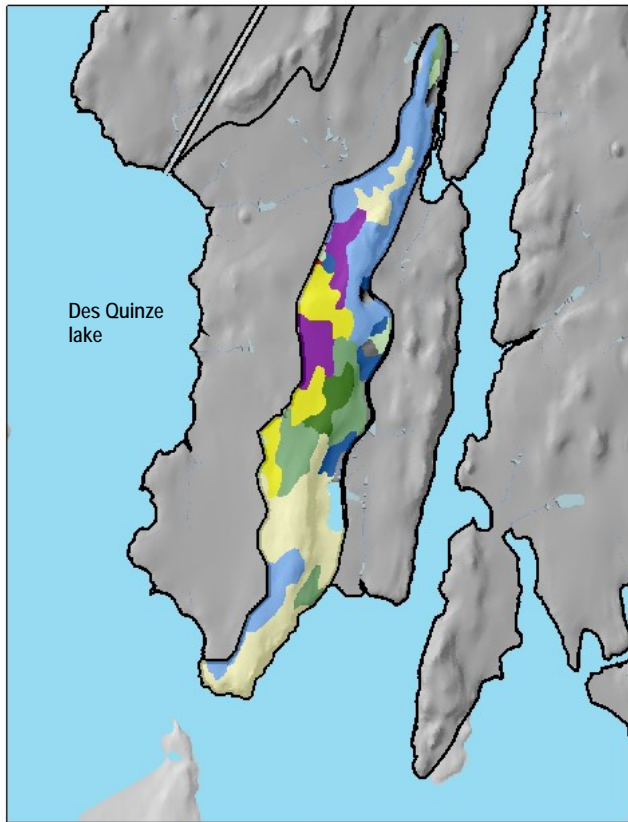
- Only one lake: Donat (0.09 km²)
- A few minor streams

Vegetation

- The south third of this unit has forests of average age (50-70 years), the remainder being made up of mature forests.
- The south third is mostly made up of white birch, along with trembling aspen, whereas the north part is dominated by trembling aspen and white birch.
- In the central part, black spruce occupies the parts of the esker that are less steep and higher; white pine and yellow birch occur on the esker's west side.
- There are a few jack pine stands at the base of the esker's slopes.



Cross section of an esker
Source: Miron, 2000



Beginning of the ridge formed by the esker



Deciduous vegetation on the slopes and peak of the esker

3.2.2.4 Ecological unit 4 – The flat (15 km²)

Relief and surface deposits

- Generally flat terrain, slightly higher than its surroundings and dotted with till mounds
- Clay-silt glaciolacustrine deposits over the flat areas
- Organic deposits in the depressions: forested thin minerotrophic bog over clay and silt
- A few rocky outcrops, particularly on the knoll
- Elevation varying between 266 and 361 metres with an average elevation of 290 metres
- Average difference in elevation of 10 metres

Geology

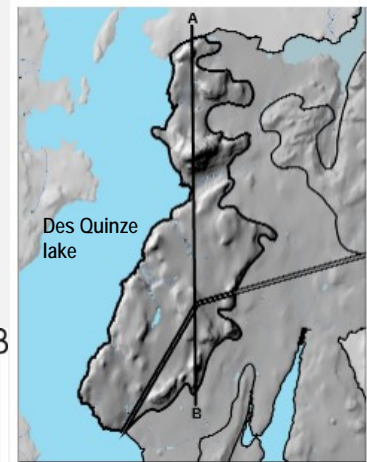
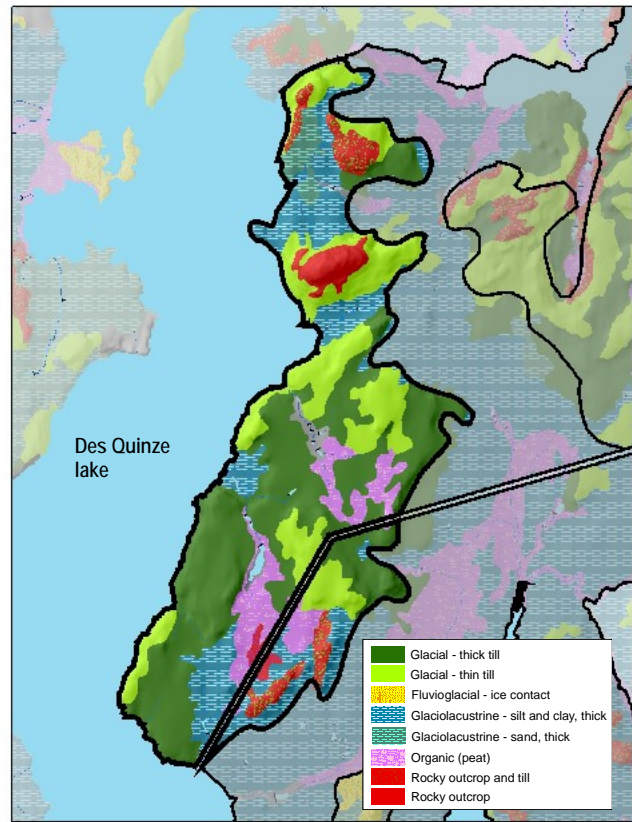
- The north third of the unit is made up of granite, the south part of the unit of granitoids

Watercourses and lakes

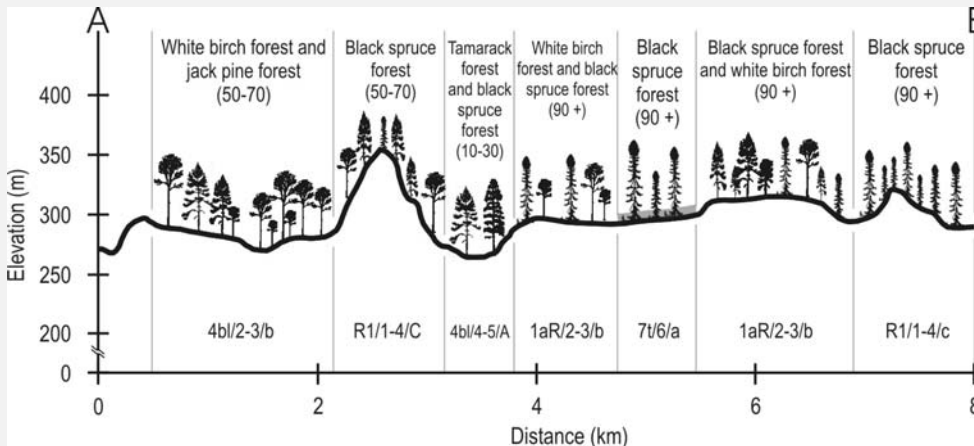
- A few small lakes and minor streams

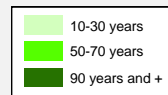
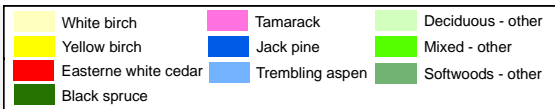
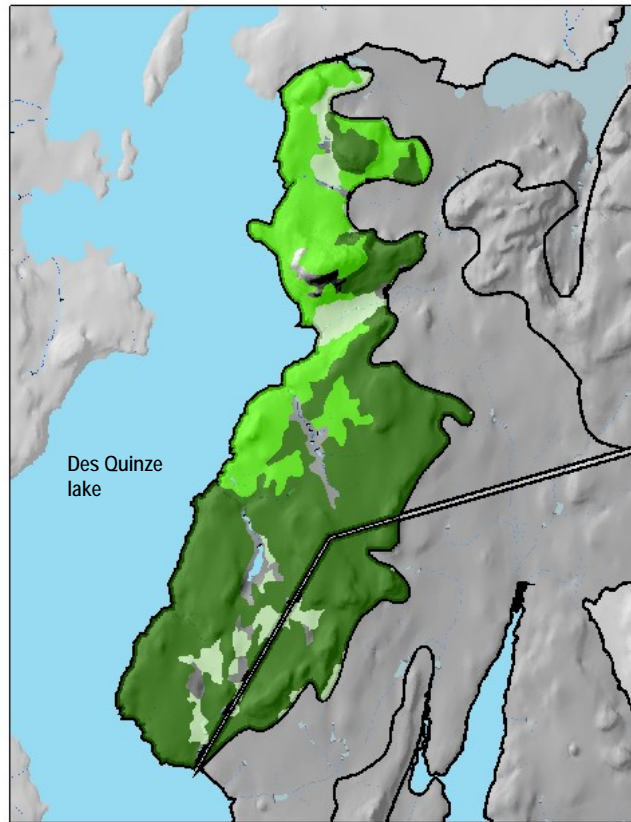
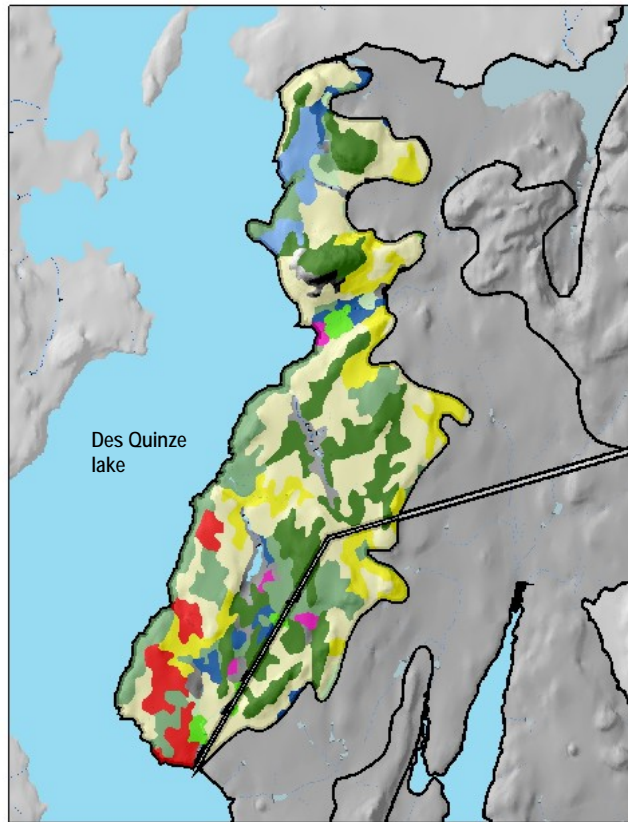
Vegetation

- This unit's forest is mostly mixed.
- The stands aged 90 years or more occupy two thirds of the unit and dominate the south part.
- White birch is the dominant tree species.
- Black spruce and white birch occupy the till mounds and dominate the knoll with rocky outcrops.
- Yellow birch colonize the east side of the hills mostly.
- Cedar groves occupy the exposed peaks of the southeast part of the unit.
- Trembling aspen colonize the east banks of the Des Quinze lake in the north end of the unit.
- The jack pine is found particularly in the depressions and poorly drained areas where there are also black spruce and tamarack.



Location of transect





Sandy banks



Typical riparian vegetation on the east banks of the Des Quinze lake bays

3.2.2.5 Ecological unit 5 – The knoll complex (32 km²)

Relief and surface deposits

- Complex of knolls including two subgroups influenced by the geology: 1) southwest part made up of elongated knolls oriented eastwest; 2) northeast part dotted with circular knolls
- Organic deposits in the depressions, saddles and ravines: forested thin minerotrophic bogs over clay and silt
- A few rocky outcrops
- Elevation varying between 284 and 379 metres with an average of 340 metres
- Average difference in elevation of 45 metres

Geology

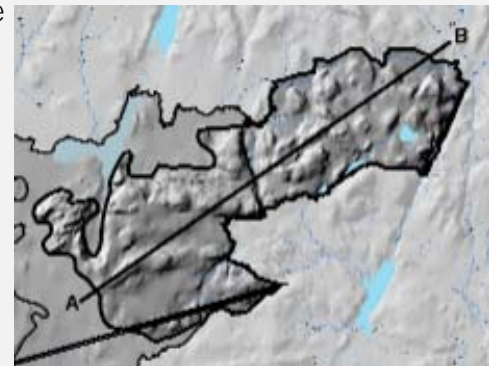
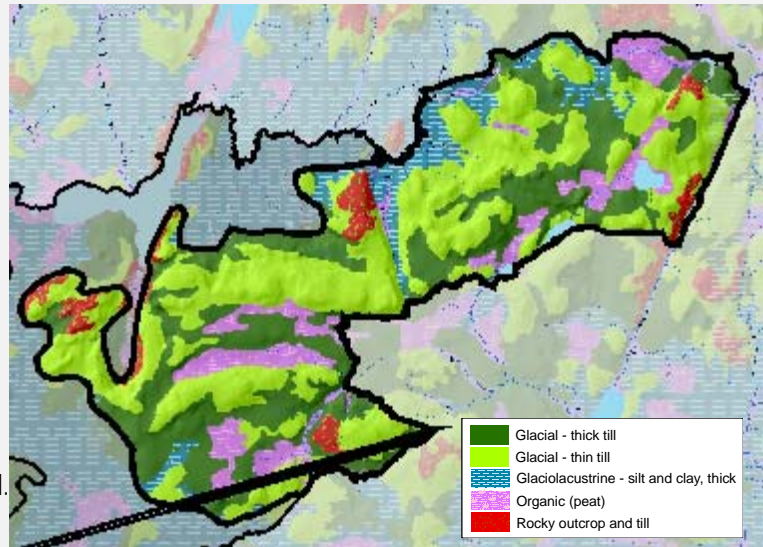
- The entire southwest part is made up of granitoids
- The entire northeast part is made up of granite

Watercourses and lakes

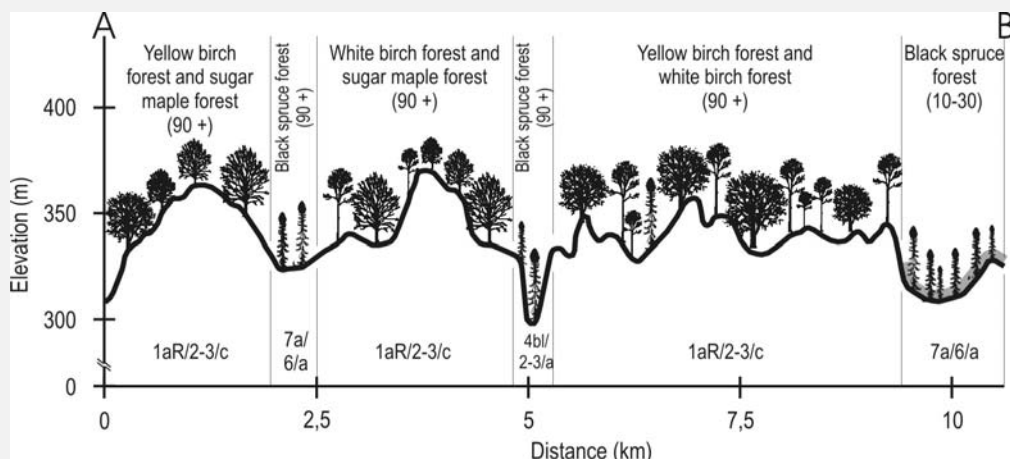
- A few small lakes and minor streams

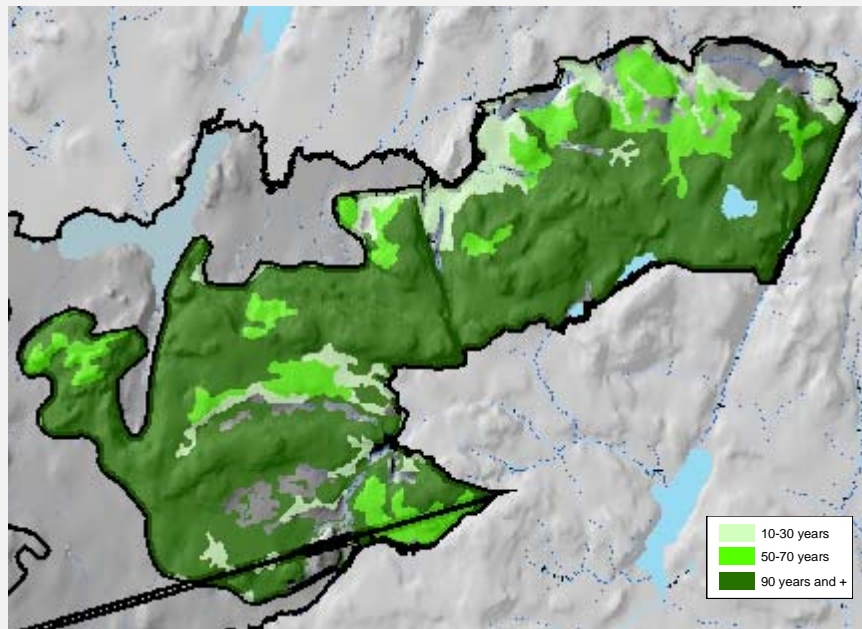
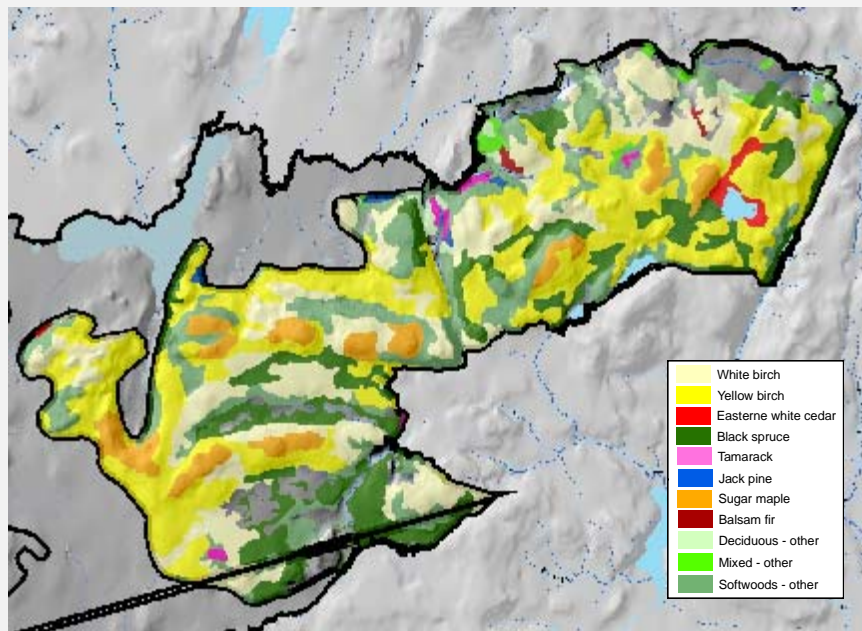
Vegetation

- More than half the forest cover of this unit is mixed.
- Stands over 90 years old largely dominate, occupying 75% of the unit's forest area.
- There are a lot of yellow birch, which is the dominant species along with white birch.
- Yellow birch occupy several slopes of the knolls.
- White birch dominate the peaks and slopes of the less steeper knolls.
- Sugar maple are particularly abundant and dominate the peaks of the higher hills with the steeper slopes.
- Black spruce are found mostly in the depressions and poorly drained sites where there is sometimes also tamarack.



Location of transect





Forested bog at the northeast end of the reserve



Regenerating sector at the foot of the till knolls