

### 3.2.4 Ecological units of the Decelles reservoir proposed biodiversity reserve

#### Vestiges of the glacial melt

The Decelles reservoir projected biodiversity reserve (see appendix 5) protects a territory adjacent to the Decelles reservoir. This important body of water is not included in the protected area, but its proximity explains the attribution of the proposed biodiversity reserve's initial toponym. The Decelles reservoir created by the Rapide-Sept dam ends at the boundary of the proposed biodiversity reserve, which protects terrestrial environments on either side of the dam. North of the Rapide-Sept dam on the reserve is located the Ottawa river.

The territory's rocky basement is entirely composed of granite (acid rocks).

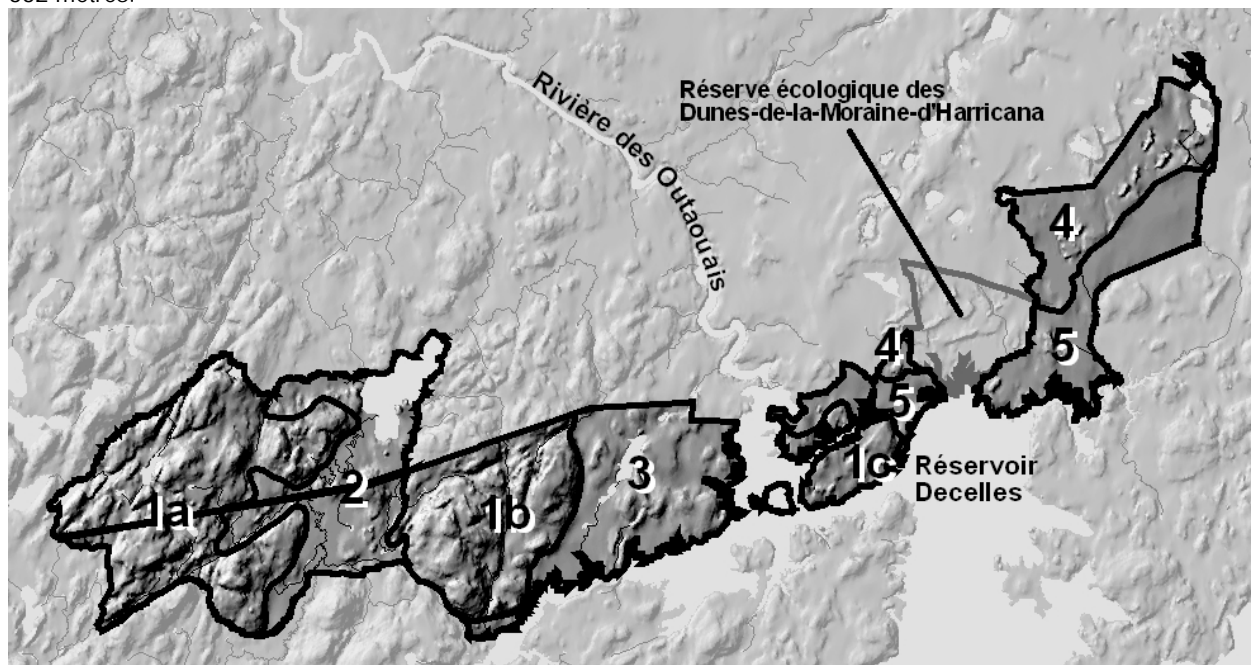
The relief varies considerably because it is located at the junction of several Quaternary phenomena which influenced the physiography of the sector. The proposed biodiversity reserve is divided by the Harricana Interlobate Moraine, which is shaped like a large elongated button oriented northeast/southwest. The east part of the protected area was influenced by the presence of this moraine (sand and gravel deposits). The axis of the Decelles reservoir and Ottawa river is a glaciolacustrine plain. Finally, the west part is a complex of rocky outcrops and till knolls. The elevation varies between 290 and 434 metres with an average elevation of 332 metres.

The forest is mostly made up of regenerating mixed forests and softwoods, which dominate the eastern part of the territory since the recent cuts. The main stands consist of black spruce, white birch and jack pine. There are also a few trembling aspen stands. This territory's forest cover is 57% average age forests (50-70 years) and 35% young forests (10-30 years). Mature forests (90 years and more) occupy less than 10% of the forested area of the proposed biodiversity reserve.

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

- **convex reliefs (1):**
  - complex of knolls (1a)
  - low hills (1b)
  - complex of hillocks (1c)
- **Godard lake plain (2)**
- **Harricana moraine (3)**
- **complex of dunes and bogs (4)**
- **east plain (5)**

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

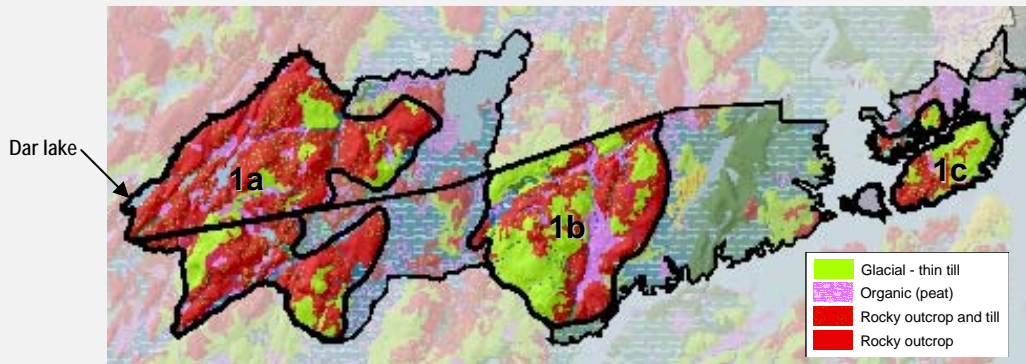


*Location of ecological units*

### 3.2.4.1 Ecological unit 1 – Convex reliefs (37 km<sup>2</sup>)

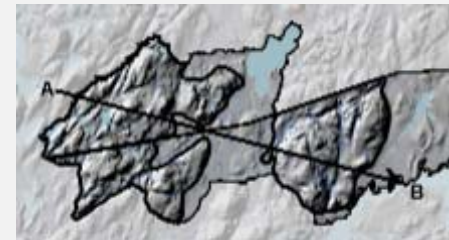
#### Relief and surface deposits

- Ecological unit made up of three parts of a greater whole:
- **subgroup 1a**: complex of fairly steep knolls where rock outcrops in some areas or the till is rare and thin; elevation varying between 325 and 400 metres with an average of 365 metres; average difference in elevation of 50 metres;
- **subgroup 1b**: low hills where rock outcrops in some areas and the till is thin; elevation varying between 325 and 425 metres with an average of 380 metres; average difference in elevation of 80 metres;
- **subgroup 1c**: complex of hillocks of thin till where the rock outcrops in areas; elevation varying between 305 and 350 metres with an average of 330 metres; average difference in elevation of 20 metres;
- In the case of the three subgroups: organic deposits forming bogs (thin ombrotrophic over till) around the streams in the valley bottoms, depressions and dips.



#### Watercourses and lakes

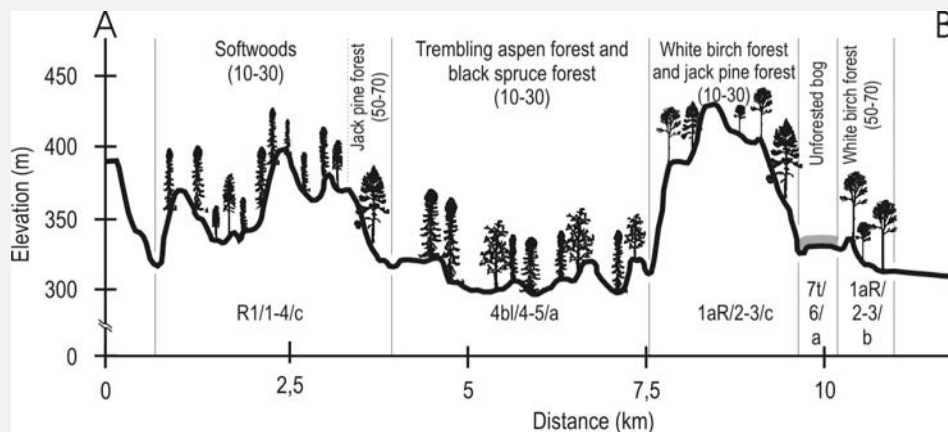
- Only one lake named, situated at the west end of the proposed biodiversity reserve: Dar (0.2 km<sup>2</sup>)
- A few minor streams



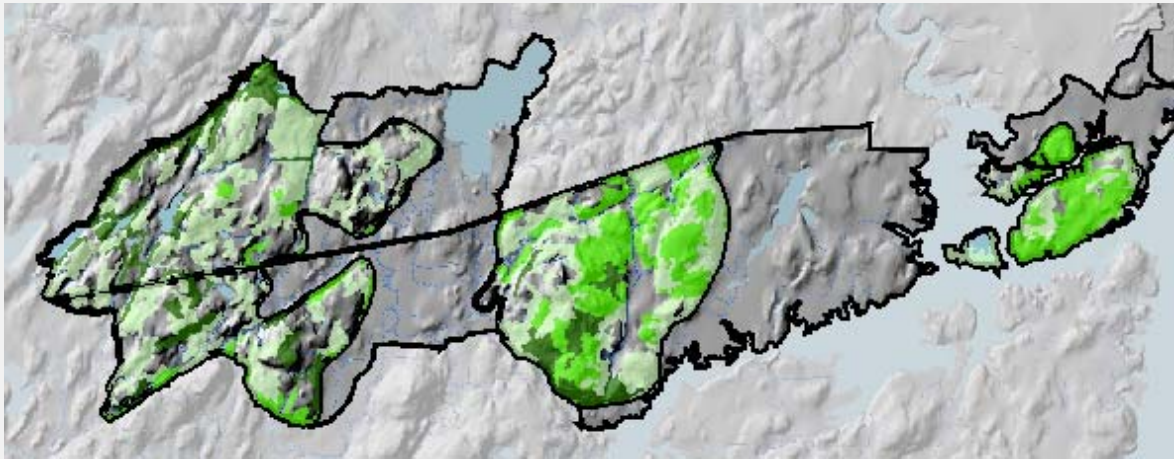
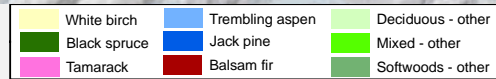
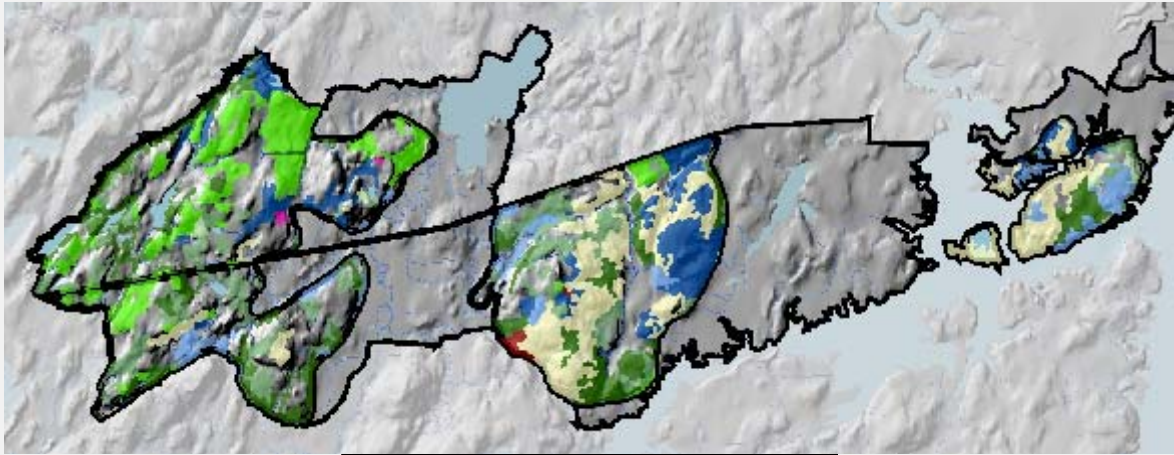
*Location of transect of units 1 and 2*

#### Vegetation

- The forests are made up of 50% young stands (10-30 years) and 33% average age stands (50-70 years) while the mature forests are very rare and are situated on the hard-to-reach steep slopes.
- The mixed forests are numerous while the deciduous forests are rare and mostly situated on certain slopes.
- The part most to the west of the unit is mostly occupied by black spruce stands, while certain slopes are occupied by trembling aspen and jack pine on the steeper slopes.
- The two other parts of the unit are dominated by white birch and the steeper slopes are colonized by jack pine.
- Other stands, including aspen, spruce and balsam fir are found in these parts.







Rocky banks of the Decelles reservoir (ecological unit 1c)



Disturbed sector undergoing regeneration (ecological unit 1b)



### 3.2.4.2 Ecological unit 2 – Godard lake plain (13 km<sup>2</sup>)

#### Relief and surface deposits

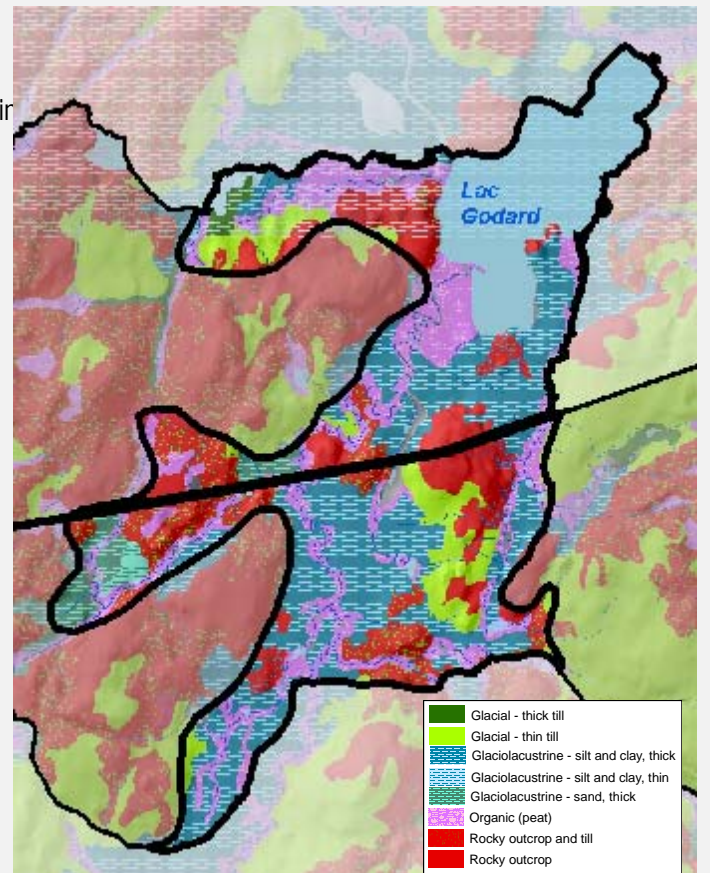
- Clay and silt glaciolacustrine plain around Godard lake and dotted with till mounds and a knoll where the rock outcrops in areas
- Organic deposits in the poorly drained sectors forming forested thin minerotrophic bogs over clay and silt
- Elevation varying between 291 and 358 metres with an average elevation of 300 metres
- Average difference in elevation of 10 metres

#### Watercourses and lakes

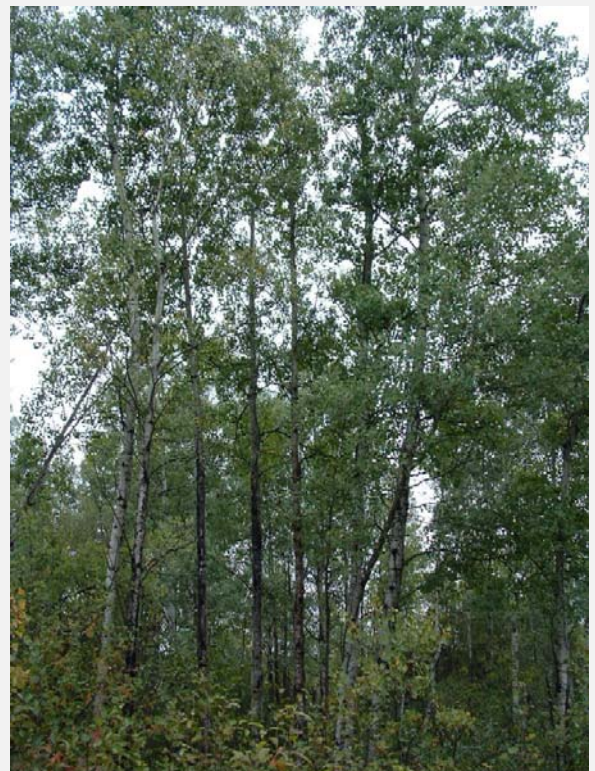
- Only one lake named: Godard (2.05 km<sup>2</sup>)
- A few minor streams flowing from the surrounding knolls and emptying into Godard lake

#### Vegetation

- Half the forest cover is made up of mixed forests.
- Deciduous forests are very rare.
- Softwood forests occupy the peaks of the knolls and areas that are poorly drained.
- The treed vegetation cover is very rare and the only mature stands are deciduous cover over bogs.
- The forests, undergoing regeneration after a cut, are relatively young.
- The most common stands are black spruce which occupy sites that are not well drained.
- Jack pine dominates the central knoll.
- Other stands including white birch and aspen are found on the flat clay and silt areas.

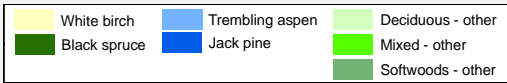
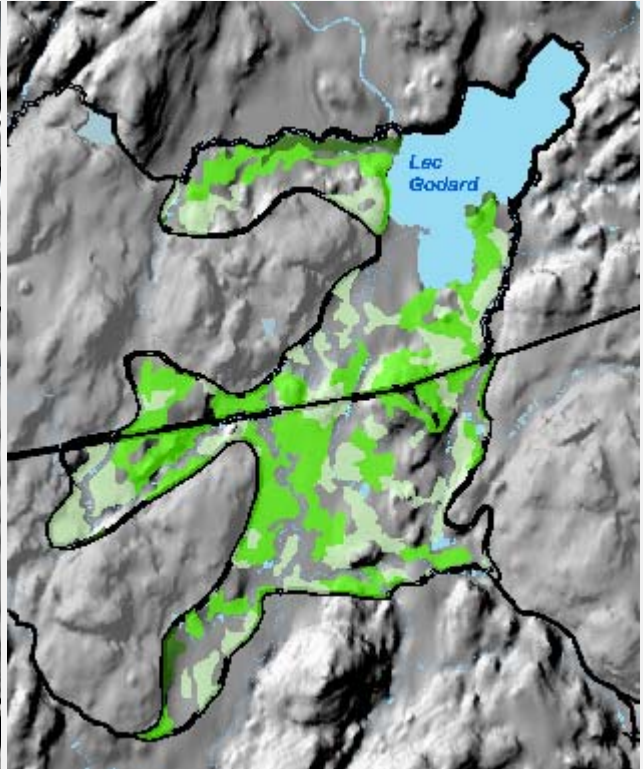
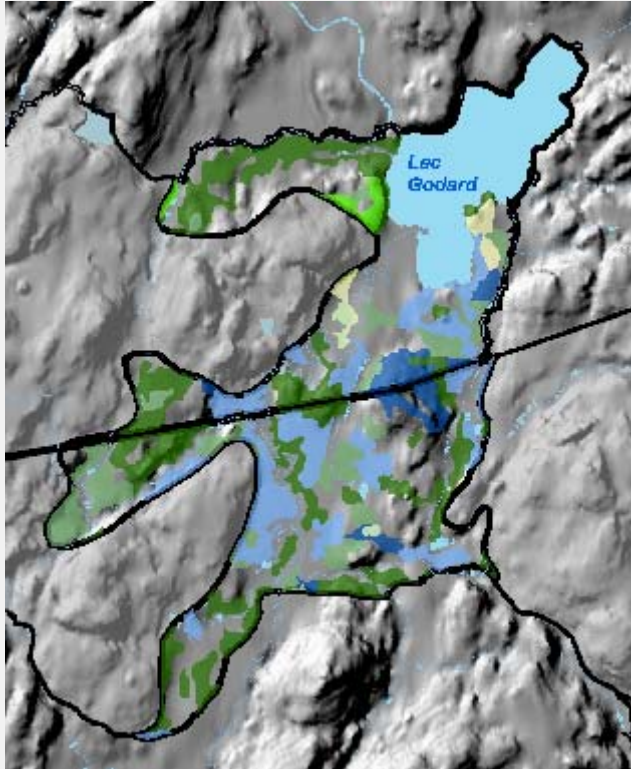


Godard lake and boggy west bank



Aspen dominates most of the disturbed areas





Godard stream



Disappearance of softwoods from a minerotrophic bog

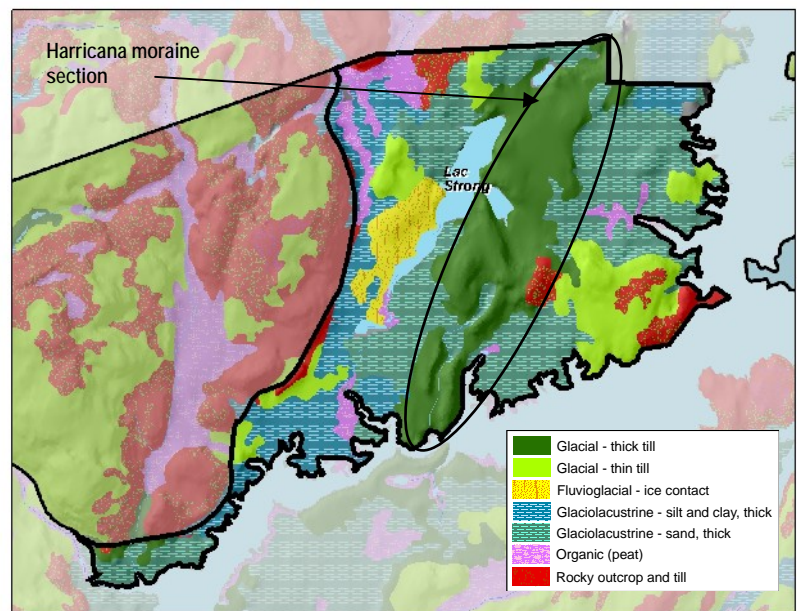
### 3.2.4.3 Ecological unit 3 – Harricana moraine (12 km<sup>2</sup>)

#### Relief and surface deposits

- Glaciolacustrine plain dotted with till mounds and hillocks
- Thick sand and gravel deposits aligned with and corresponding to a smaller section of the Harricana moraine
- Moraine sand, scattered throughout by waves from the lake, which was located on the Ottawa river plain at a certain period
- Elevation varies between 304 and 351 metres with an average of 320 metres
- Average difference in elevation of 150 metres

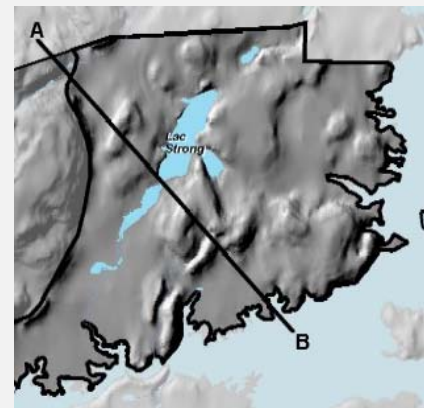
#### Watercourses and lakes

- Only one lake named: Strong (0.38 km<sup>2</sup>)
- A few minor streams empty into the Decelles reservoir

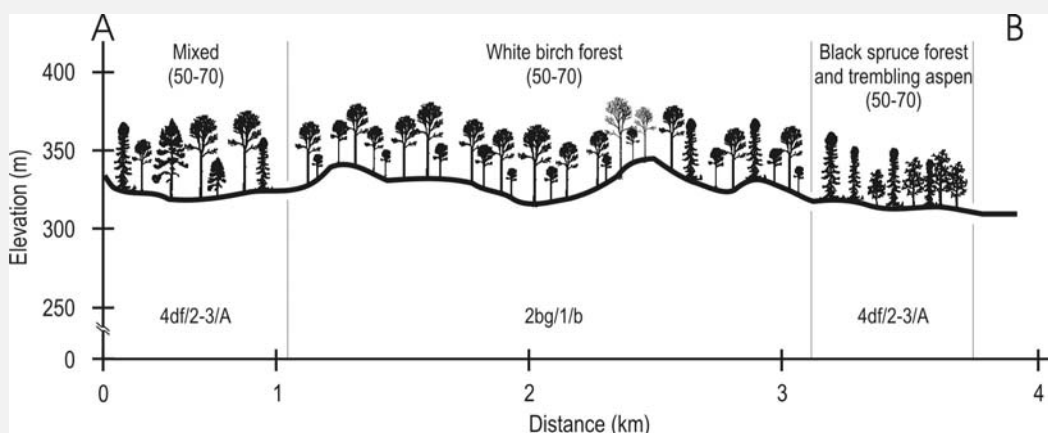


#### Vegetation

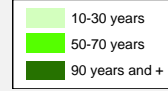
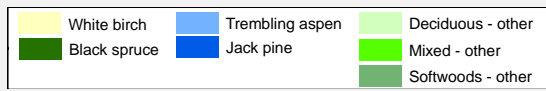
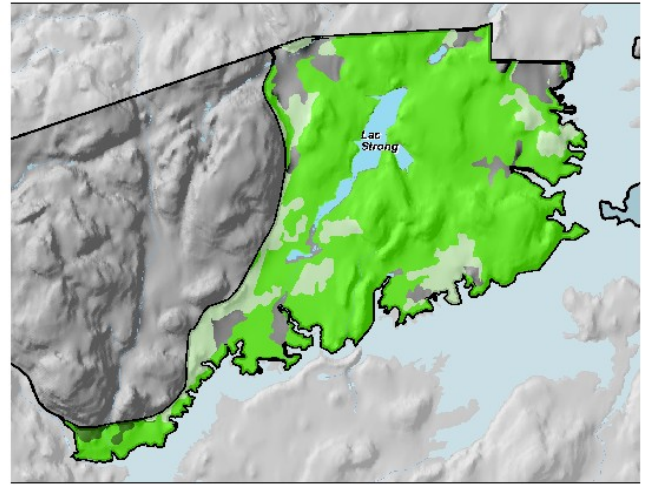
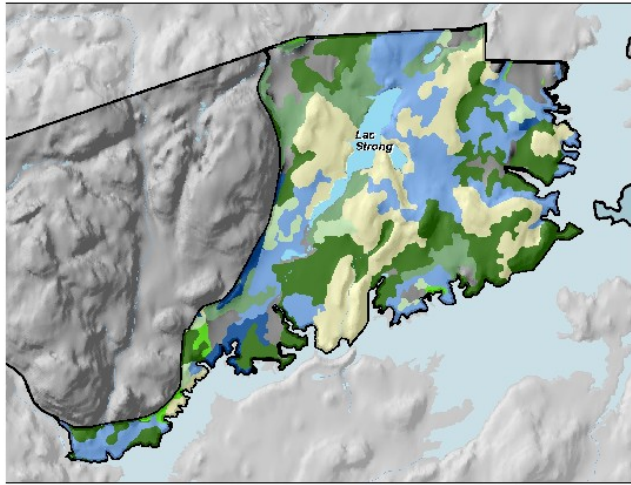
- Mixed, softwood and deciduous forests are present in equal proportions.
- The deciduous forests mostly occupy the thick sand and gravel of the Harricana moraine.
- The forests are almost entirely of average age (50-70 years) and mature forests are practically non-existent.
- This unit presents three forest types: white birch, aspen and black spruce.
- Trembling aspen occupy the flat terrain whereas the white birch and black spruce are found on the mounds and knolls.
- Black spruce also dominate the depressions and poorly drained areas.
- A few jack pine stands occupy the foot of steep slopes of the hills of unit 1, adjacent to the west.



*Location of transect*







Black spruce and jack pine



Deciduous sector east of Strong lake



Disturbed sector east of Strong lake

### 3.2.4.4 Ecological unit 4 – The complex of dunes and bogs (9 km<sup>2</sup>)

#### Relief and surface deposits

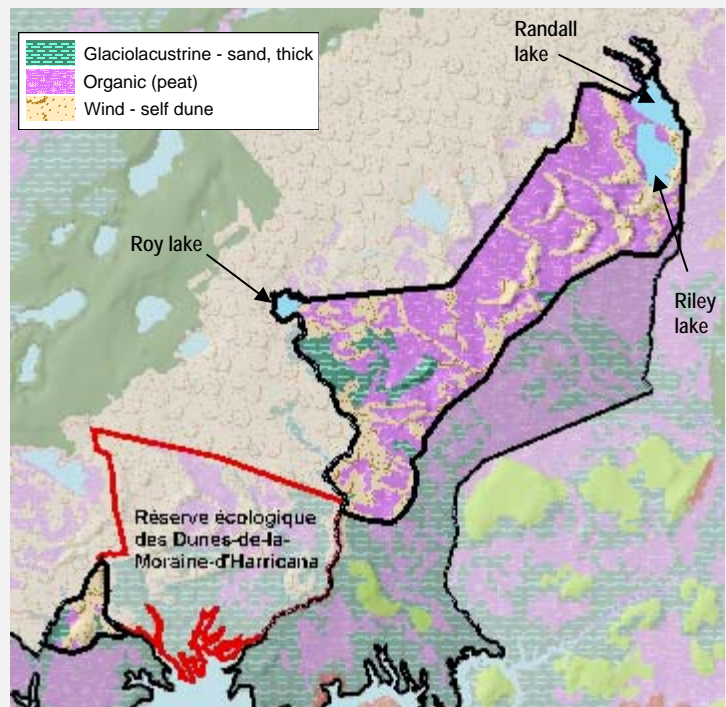
- Bench between the Harricana moraine dunes (to the northwest) and the sandy glaciolacustrine plain (to the southeast)
- Bench composed of ombrotrophic bogs and dotted with a few mounds formed by the dunes
- Bogs occupy the poorly drained depressions situated between the dune sand mounds
- Dunes, more numerous in the northwest, originating from the fluvio-glacial sands of the moraine
- Elevation varying between 317 and 360 metres with an average of 340 metres
- Average difference in elevation of 10 metres

#### Watercourses and lakes

- Three lakes named: Roy (9 ha), Riley (23 ha) and Randall (28 ha)
- Two streams emptying the Roy, Riley and Randall lakes into the Decelles reservoir

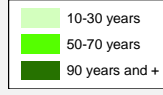
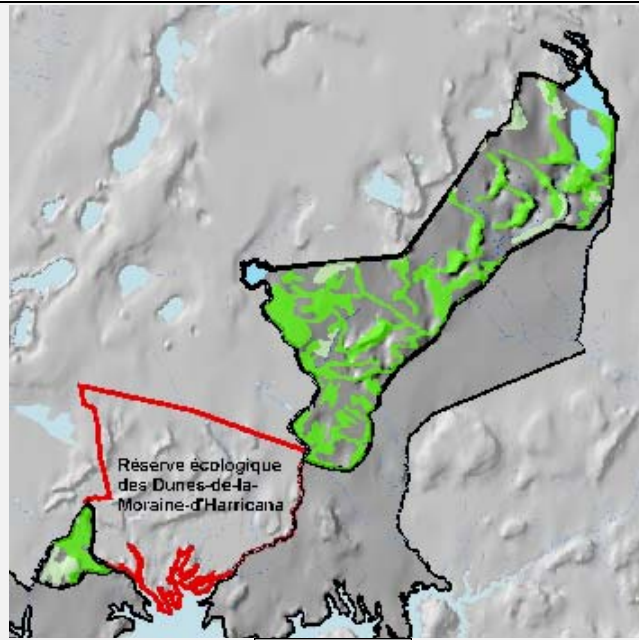
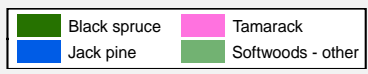
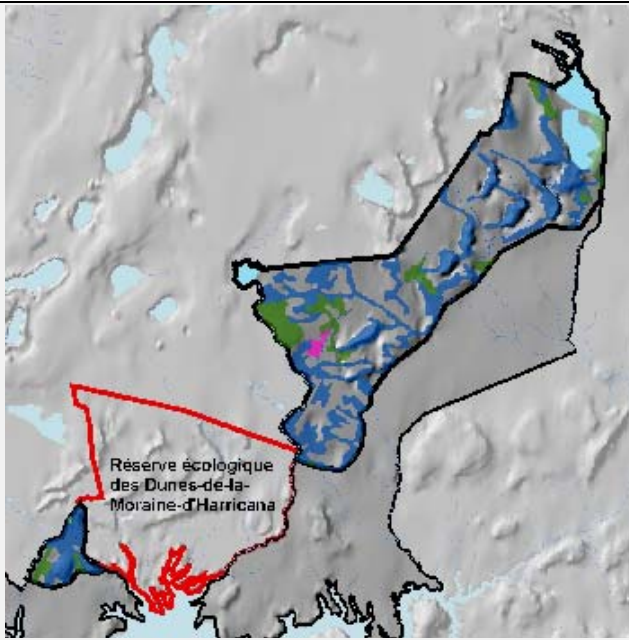
#### Vegetation

- The forest, which occupies less than half this unit, is almost entirely made up of softwoods.
- Mixed forests occupy the small parcels of sandy glaciolacustrine deposits; there are no deciduous trees.
- Forests are mostly of average age and there are no mature stands.
- The species present are black spruce and jack pine with a great number of bogs.
- Jack pine dominate the dune sand mounds and black spruce, which is rather rare, is found on the sandy glaciolacustrine deposits.



Large parabolic dunes, east side of Harricana moraine (near protected area)  
Photo: Jean Veillette. Reproduced with the permission of Public Works and Government Services Canada, 2006 and courtesy of the Geological Commission of Canada of Natural Resources Canada





Roy lake



Jack pine stand

### 3.2.4.5 Ecological uni 5 – East plain (11 km<sup>2</sup>)

#### Relief and surface deposits

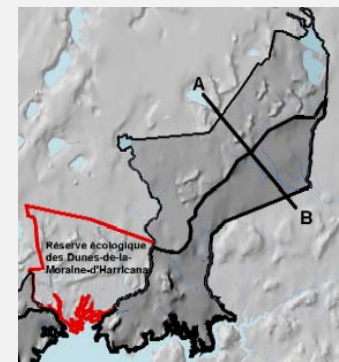
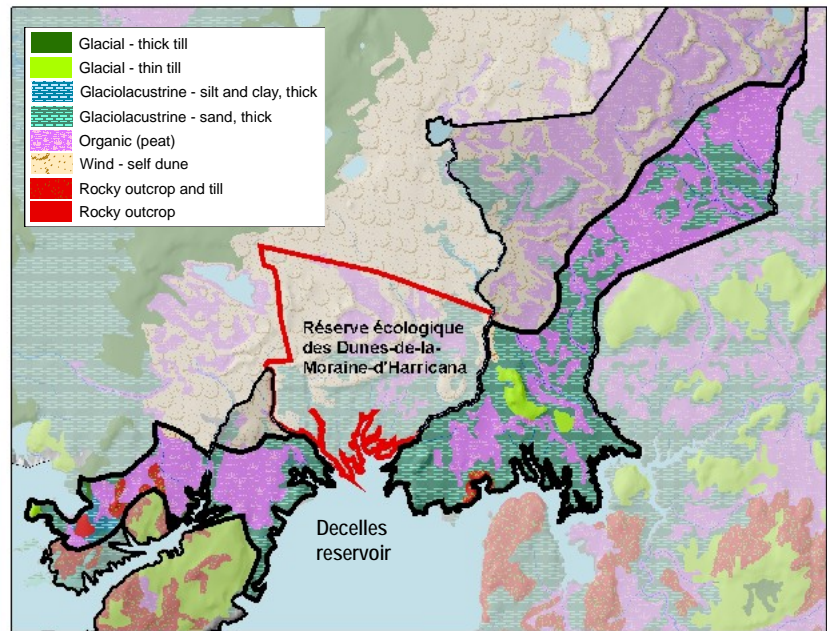
- Glaciolacustrine plain dotted with till mounds and depressions
- Sandy deposits spread by the action of the waves of the ancient Barlow and Ojibway lakes on the moraine
- Poorly drained depressions filled in with organic deposits (bogs)
- Elevation varying between 309 and 341 metres with an average of 320 metres
- Average difference in elevation of 10 metres

#### Watercourses and lakes

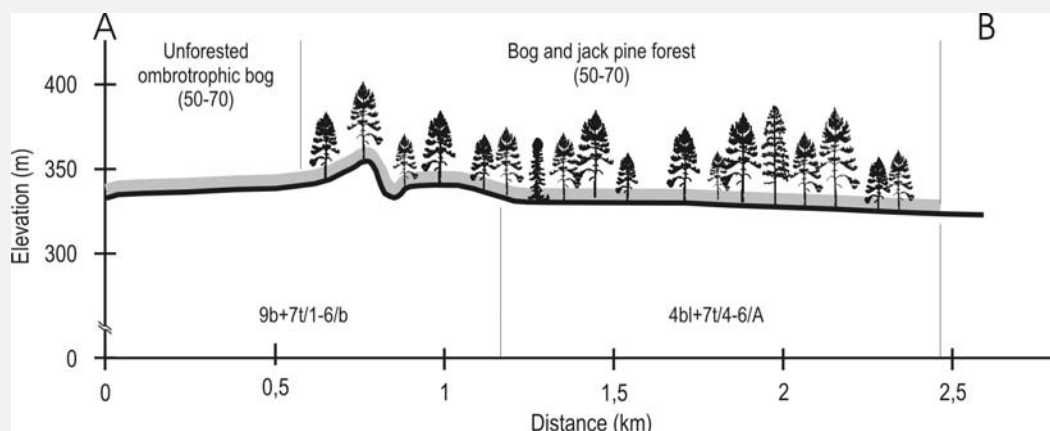
- No lake
- A few minor streams empty into the Decelles reservoir

#### Vegetation

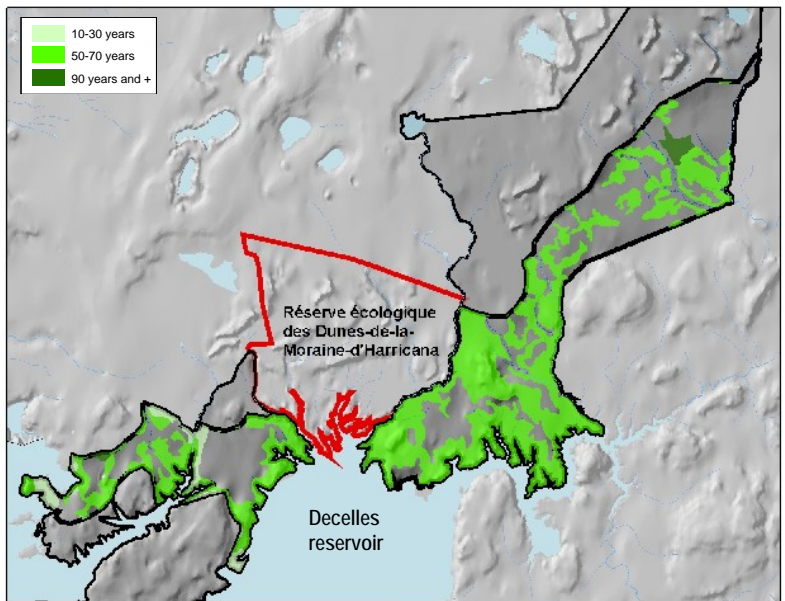
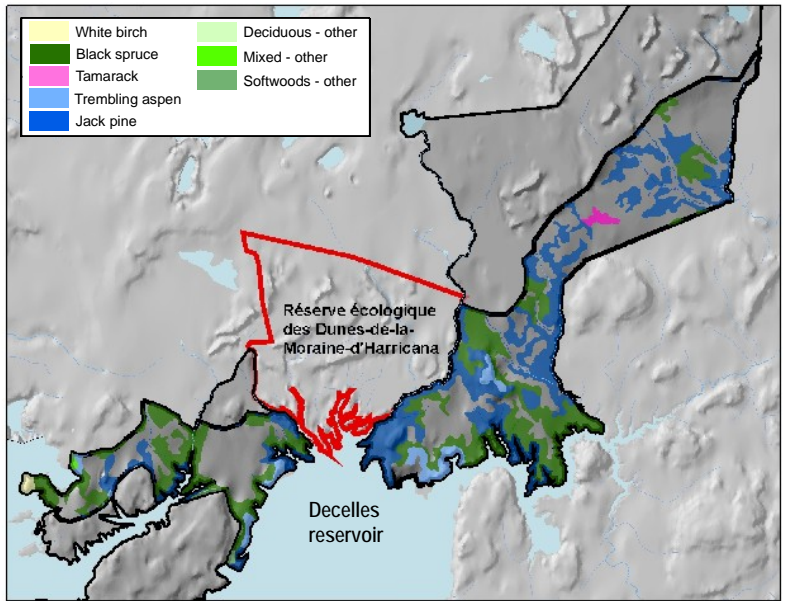
- The forest occupies two thirds of the unit's territory, the remainder is made up of bogs.
- The forests are almost entirely made up of softwoods.
- Only a few mixed stands are found on the till mounds.
- The age of the stands varies almost exclusively between 50 and 70 years.
- This unit is mostly occupied by jack pine and black spruce.
- There are a few aspen stands on the banks of the Decelles reservoir and on a till mound.
- A white birch forest is situated at the west end of the unit bordering the reservoir.



*Location of transect of units 4 and 5*







Jack pine in the better drained areas