



Photo 31. Lac Marin

4.6 Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent

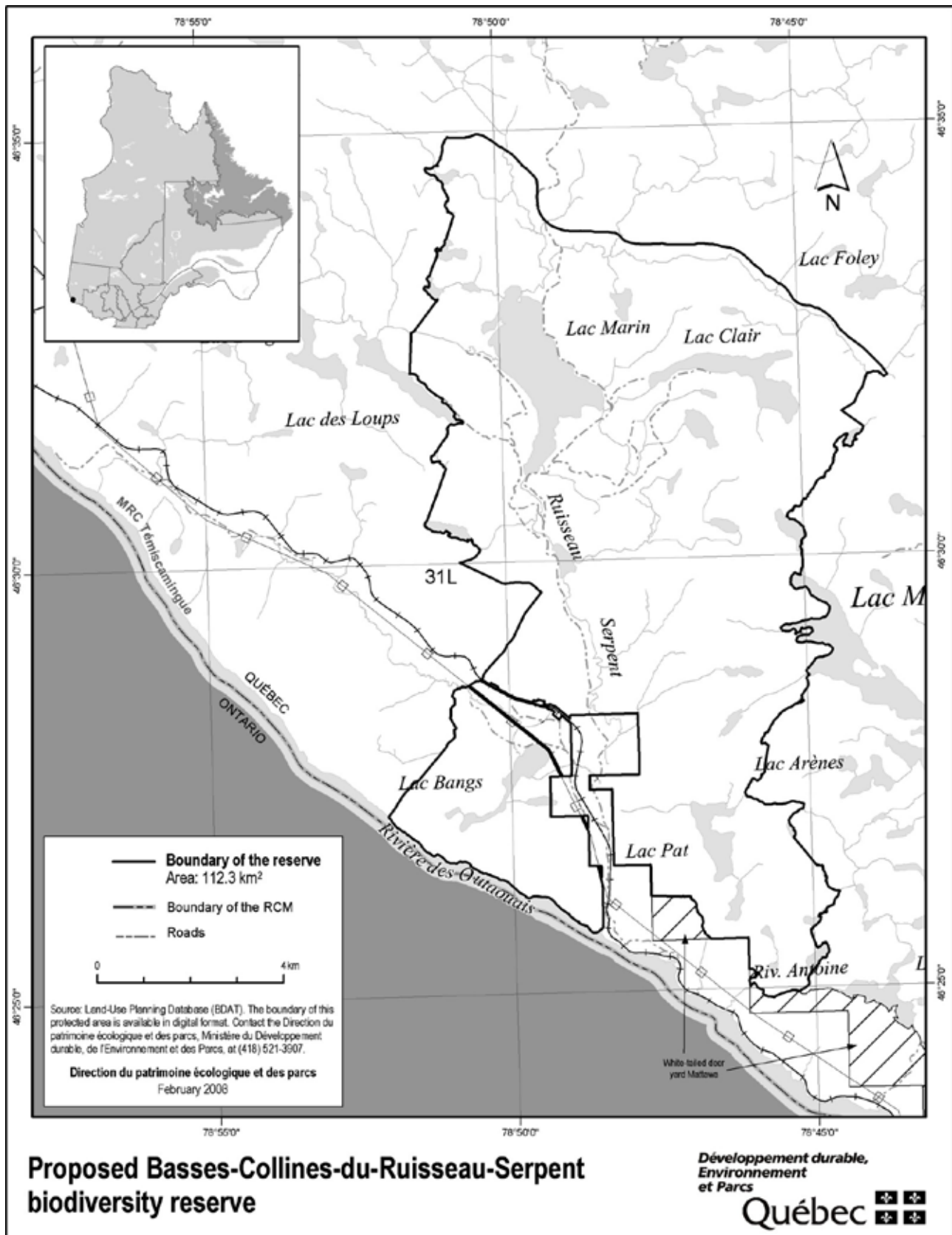
4.6.1 Location, boundaries and dimensions of the proposed reserve

The Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent is located in the Abitibi-Témiscamingue administrative region, between 46° 25' and 46° 35' north latitude and 78° 43' and 78° 52' west longitude, approximately 25 km southeast of the urban centre of Témiscaming. It covers an area of 112.3 km². It is partly located in the territory of the Ville de

Témiscaming and partly in the Lacs-du-Témiscamingue unorganized territory in the MRC de Témiscamingue. The southern boundary of the reserve has been set to take into account the critical maximum elevation of hydropower generating structures on the Ottawa River, set at 179.22 m, immediately upstream of Otto Holden electric power-station.

The proposed biodiversity reserve excludes private lots, a private railroad right-of-way, a power transmission line right-of-way, and mixed-tenure lots. However, the boundaries could be adjusted when information on the mixed-tenure lots is obtained.

Figure 116. Geographical location and boundaries of the Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent, as presented in the summary conservation plan



4.6.2 Legal framework

The territory described below has the status of a proposed biodiversity reserve, pursuant to the *Natural Heritage Conservation Act*. The same Act governs its regime of activities and its conservation plan.

4.6.3 Place name

The provisional place name is the Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent. The proposed place name for the granting of permanent protection status is the Réserve de biodiversité du Snake-Creek. The term refers to the historic place name both of the watercourse, originally called Snake Creek, then Rivière Serpent in 1972, then Ruisseau Serpent, but still commonly called Snake Creek, and the farming forest village of Snake Creek built in the 1940s. The term “Snake Creek” is the most

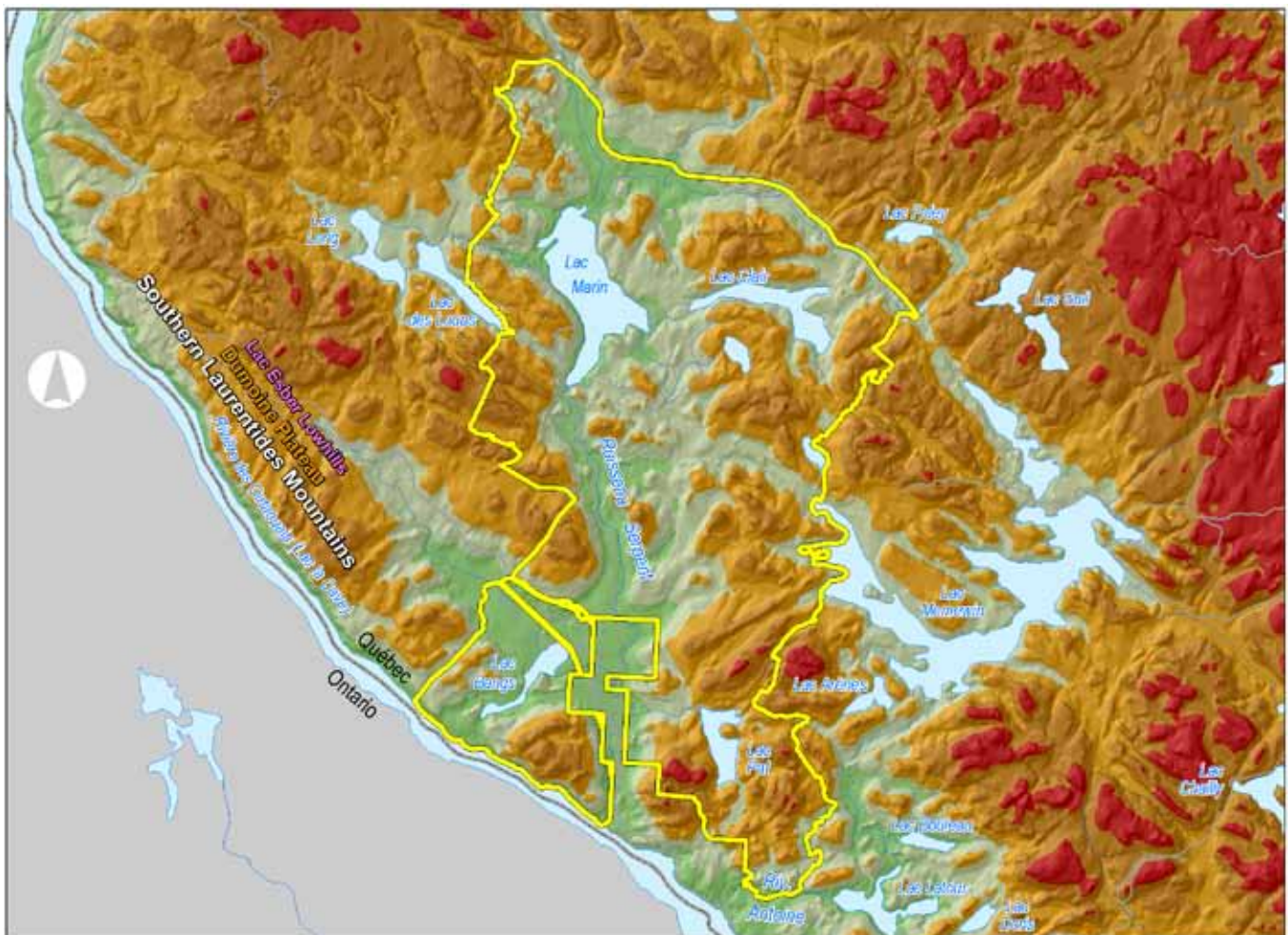
representative from a historical perspective and the individuals who frequent or occupy the territory today still use the term Snake Creek to designate both the area and the Ruisseau Serpent.

4.6.4 Ecology

Physical environment

As noted in the “Climate” section, the region of the proposed biodiversity reserve has a subpolar, subhumid climate with a medium growing season. The territory is located in the Grenville Geologic Province and its basement rock is entirely made up of granite gneiss, tonalitic gneiss and paragneiss. The landscape, which features low hills that dot the valley of the Ruisseau Serpent and Lac Marin, has a fairly rugged landform that ranges in altitude from 185 m to 400 m, with an average altitude of 300 m (Figure 117).

Figure 117. Topography of the Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent



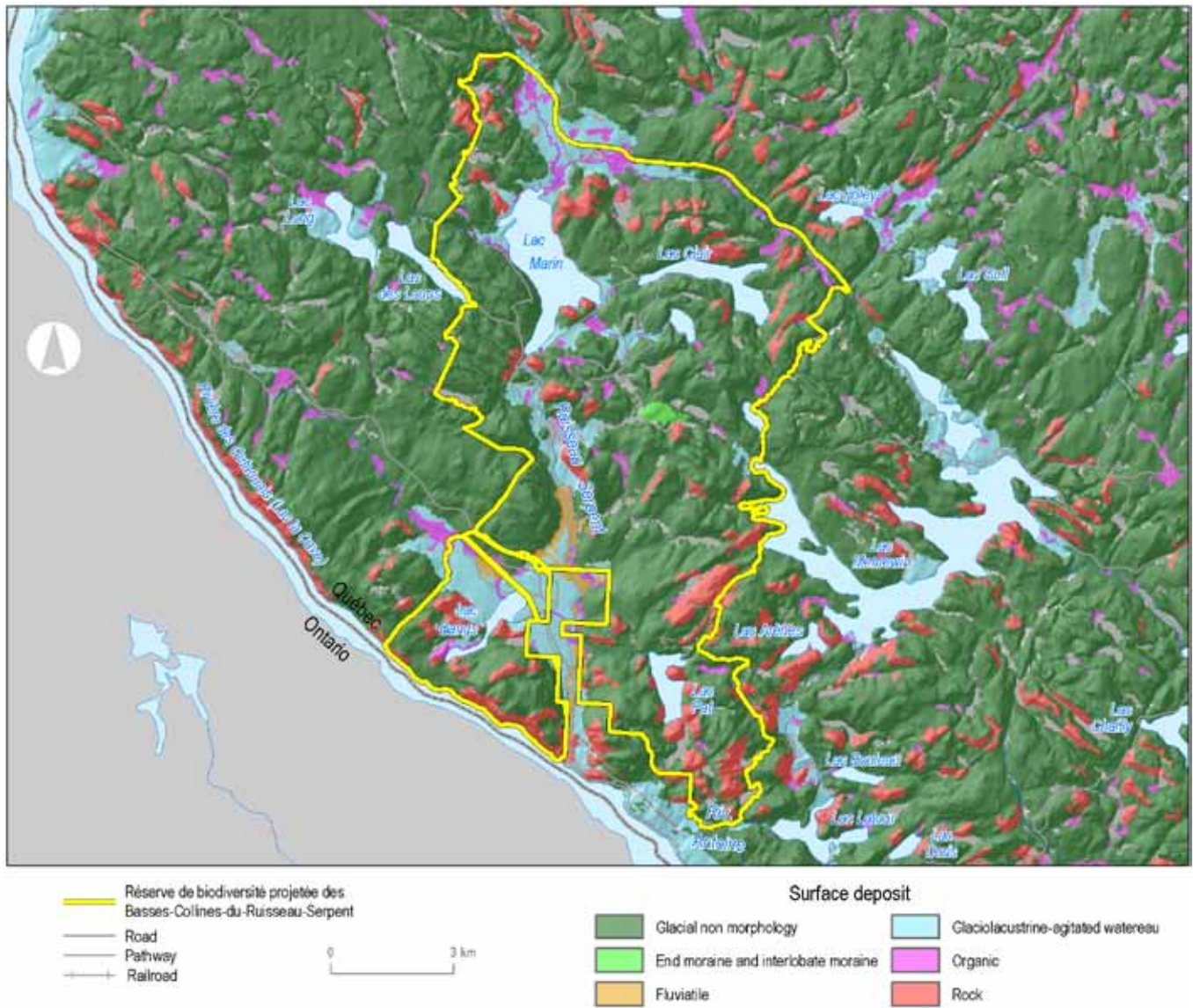
- Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent
- Road
- Pathway
- Railroad

- Ecological reference frameworks
- Natural province
 - Natural region
 - Physiographic ensemble

- Elevation
- more than 425 meters
 - from 325 to 375 meters
 - from 275 to 325 meters
 - from 225 to 275 meters
 - less than 225 meters

0 3 km

Figure 118. Geomorphology of the Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent



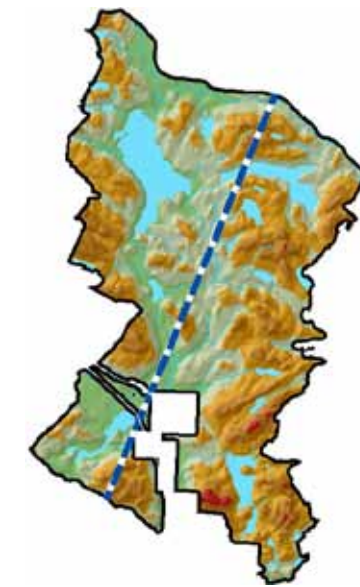
The Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent is located in the Dumoine Plateau natural region (Southern Laurentians natural province), more precisely in the Lac Esber low hills physiographic unit (Figure 117). The physiographic unit is a broad strip of lands north of the Ottawa River extending roughly from Fort-Coulonge to the Ville de Témiscaming. The reserve comprises a group of low hills and silt hummocks dissected by the valley of the Ruisseau Serpent, which flows from north to south (Figure 118). The peaks of the most prominent low hills display rock outcrops (Photo 32), while the bottom of the valley of the Ruisseau Serpent has thick sandy glaciolacustrine deposits and alluvial deposits (sand and gravel).

The Ruisseau Serpent physiographic sere illustrates the characteristics associated with the different environments (Figure 119)

Photo 32. Rocky outcrops populated by eastern white pines on steep walls

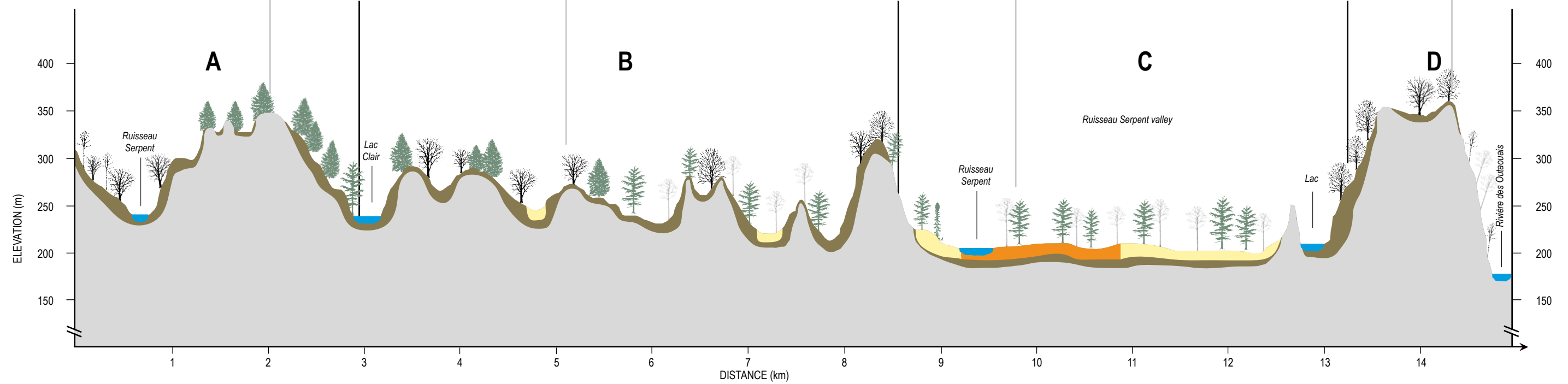


Figure 119.
Ruisseau Serpent physiographic sere



Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent

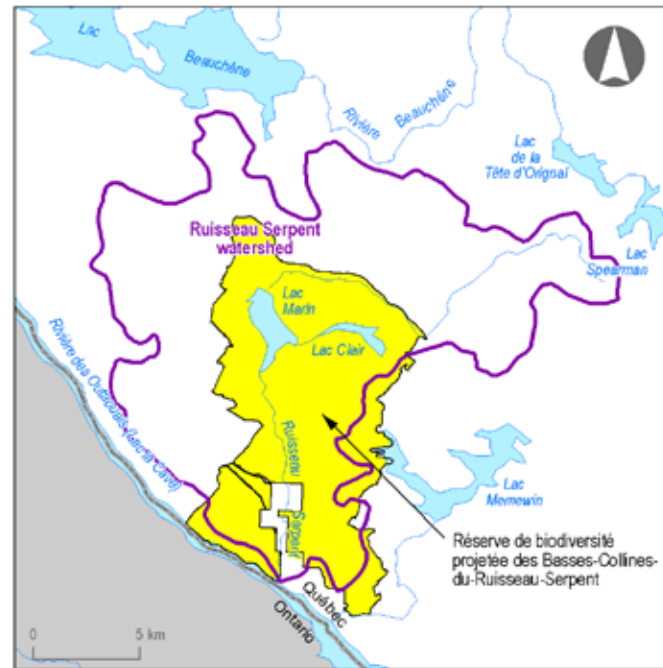
- Southern Laurentides Mountains natural province
- Dumoine Plateau natural region
- Lac Esber Lowhills physiographic ensemble



- Rock
- Till
- Glaciolacustrine sand
- Alluvium sand and gravel
- Sugar maple
- White birch
- Eastern white pine
- Aspen
- Yellow birch
- Hemlock

- A.** Hemlocks on thin till lowhills
- B.** Mixed forest (yellow birch and eastern white pine) on till knolls
- C.** Eastern white pine and aspen on sand and gravel
- D.** Black spruce on thin till lowhills

Figure 120. Drainage basin of the Ruisseau Serpent



Located near the Ottawa River, the proposed biodiversity reserve is part of the drainage basin of the Ruisseau Serpent (Photo 33), which is a sub-basin of the Ottawa River (Figure 120). The reserve protects 35% of the drainage unit of the Ruisseau Serpent, which has an area of 269 km². The territory of the protected area encompasses 199 lakes, of which only four are named. The two biggest lakes are Lac Marin and Lac Clair, with an area of 3.8 km² and 1.5 km², respectively. The aquatic environments overall have an area of 11 km², equivalent to nearly 10% of the proposed biodiversity reserve.

The reserve has few wetlands, usually located in valley bottoms, mainly shrub swamps and peat bogs, although floodplain swamps are found to the north and northwest of Lac Bangs. Wetlands have a total area of 7 km² and cover just over 6% of the protected area.

Photo 33. A peaty environment along the Ruisseau Serpent



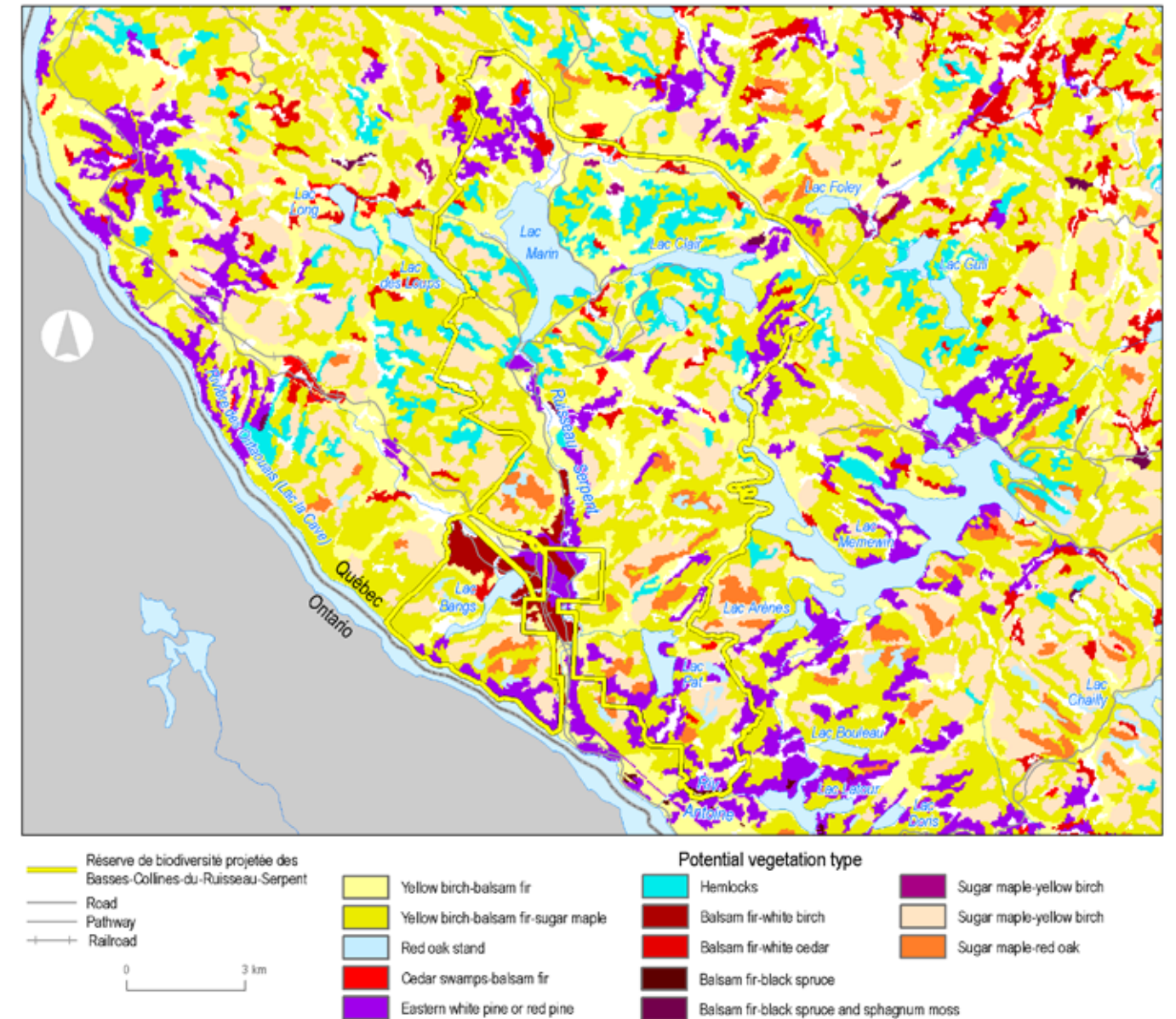
Biological environment

Vegetation

Located in the sugar maple-yellow birch climatic domain, the reserve protects territories in which the main potential vegetation is yellow birch-fir stands and yellow birch-sugar maple stands (Figure 121). The yellow birch forest ecosystems appear to normally occupy all of the low hills and hummocks in the reserve. In the valley, certain slopes and hillocks are suited to white pine stands and hemlock forests. Sugar maple forests and sugar maple-northern red oak stands are associated with certain peaks and slopes.

Given that the territory has witnessed various disturbances, the actual vegetation may vary and this is partly true of the reserve. Disturbances over the past 40 years have been mainly natural in origin (forest fires and, above all, windthrow), but certain sectors have been subject to logging, especially the western portion of the Ruisseau Serpent valley. It should be noted that the environments suited to hemlock forests (Photo 34) and to white pine stands are actually occupied by these tree species groups (Figure 122). However, environments devoted to yellow birch stands are scarcely occupied by such stands. Instead, eastern white pine, trembling aspen or black spruce stands predominate there. The disturbance regime may explain this situation.

Figure 121. Potential vegetation – Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent



← Unfold

Figure 122. Vegetation – Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent

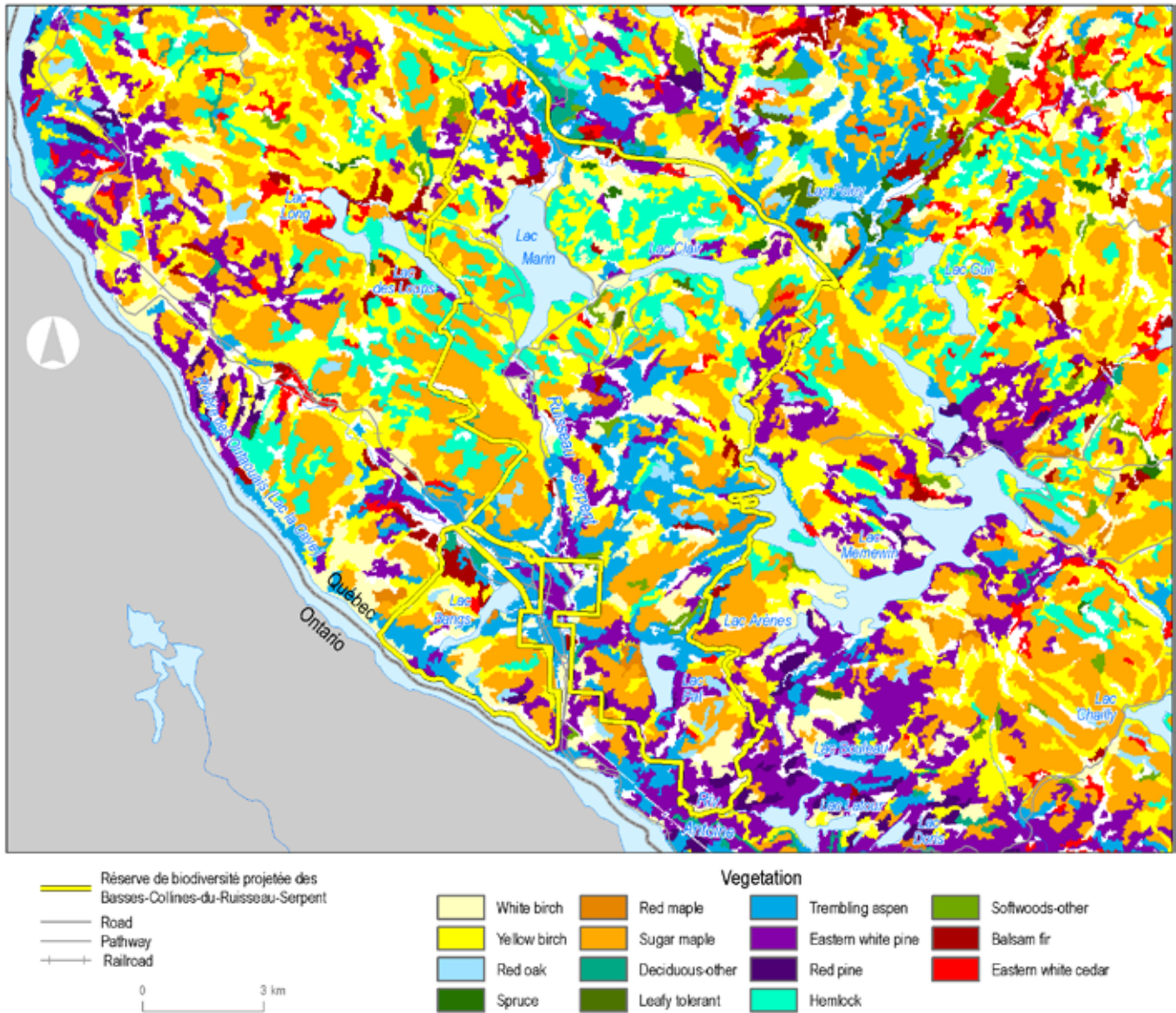


Photo 34. Hemlock



Forest cover occupies nearly 86% of the territory of the reserve, in which 22% of forest stands are young (under 40 years old) and 15% are middle-aged forest stands (between 40 and 80 years old). Forest stands between 80 and 110 years old cover 22% of the territory and forests 110 years old or over account for 40% of the forest cover (Figure 123). Furthermore, forest stands that are deemed to be old-growth forests, according to the criteria adopted in the "Portrait du réseau d'aires protégées au Québec – Période 2002-2009," apparently total 50% of the forest cover in the reserve (see Figure 12). However, certain sectors that are defined as old-growth forests based on data drawn from ecoforestry mapping, such as the southwestern portion of Lac Marin, were subject to partial cutting and selection cutting in the late 1980s and early 1990s. The stands may be high graded forest stands



white-tailed deer yards, a wildlife habitat recognized as a protected area, which affords the two protected areas and the Réserve de biodiversité projetée de la Vallée-de-la-Rivière-Maganasipi, located to the east and near the wildlife habitat excellent connectivity for the migration of the white-tailed deer population and other wildlife species in the natural environments.

Social environment

The Ruisseau Serpent area has a very rich history. Indeed, historic references abound for the territory, which was the site of a former farming forest village served by a railway station. Appendix 3 provides a detailed historic account of the territory, which is summarized below.

Prior to the colonization of the Témiscamingue region, the territory, which is linked to the Ottawa River, a major travel route for the Aboriginal peoples, may have been extensively occupied as a seasonal camp and frequented by numerous Aboriginals, especially the Anishnabeg (Algonquin). The mouth of the Ruisseau Serpent in the Ottawa River offered an ideal site for temporary or semi-permanent campsites. What is more, while the Ottawa River was used for travel, the Aboriginal peoples were frequently able to travel upstream on its tributaries in search of food. The Ruisseau Serpent thus afforded a route to the lands north of the Ottawa River to access new territories. Accordingly, while no archaeological site has been officially inventoried, the territory does offer archaeological research potential. In the wake of colonization, the Canadian Pacific Railway built a rail line between Mattawa and Témiscaming, called the Moccasin Line. The railroad line was completed in 1899 and facilitated the development later in the 20th century of the village of Snake Creek, built around a sawmill. It had up to 130 permanent residences, including farms. The village also had a store, a school and a post office (not officially inventoried).¹⁷ It should be noted that in the late 19th century and during the 20th century, all references to the territory bore the name "Snake," including the village of Snake Creek, Snake Creek (Ruisseau Serpent) and Snake Lake (Lac Marin). The territory was also the site of a stopping place, a private hunting and fishing club, and a castle (the Château Dunlap).

Seven vacation lot leases (Photo 35) and 13 shelter leases are located in the perimeter of the proposed biodiversity reserve (Figure 124). Two unspecified commercial rights are also found there. The proposed biodiversity reserve partly overlaps the ZEC Maganasipi. It adjoins five systems of traplines and a trapping camp has been built there. It is part of FAMU 01 and hunting area 13.

Photo 35. Holiday resort on a sandy point in Lac Clair



A barely developed network of unpaved trails crisscrosses the proposed biodiversity reserve, notably in the valley. In the southern portion of the reserve, an electric power transmission line and a rail line cross the territory. The main land access is the forestry road from Témiscaming, sometimes called the chemin du Snake Creek. All told, there are 109 linear km of roads in the territory.

No hiking or off-road vehicle (quad bike or snowmobile) trail is officially recognized in the territory.

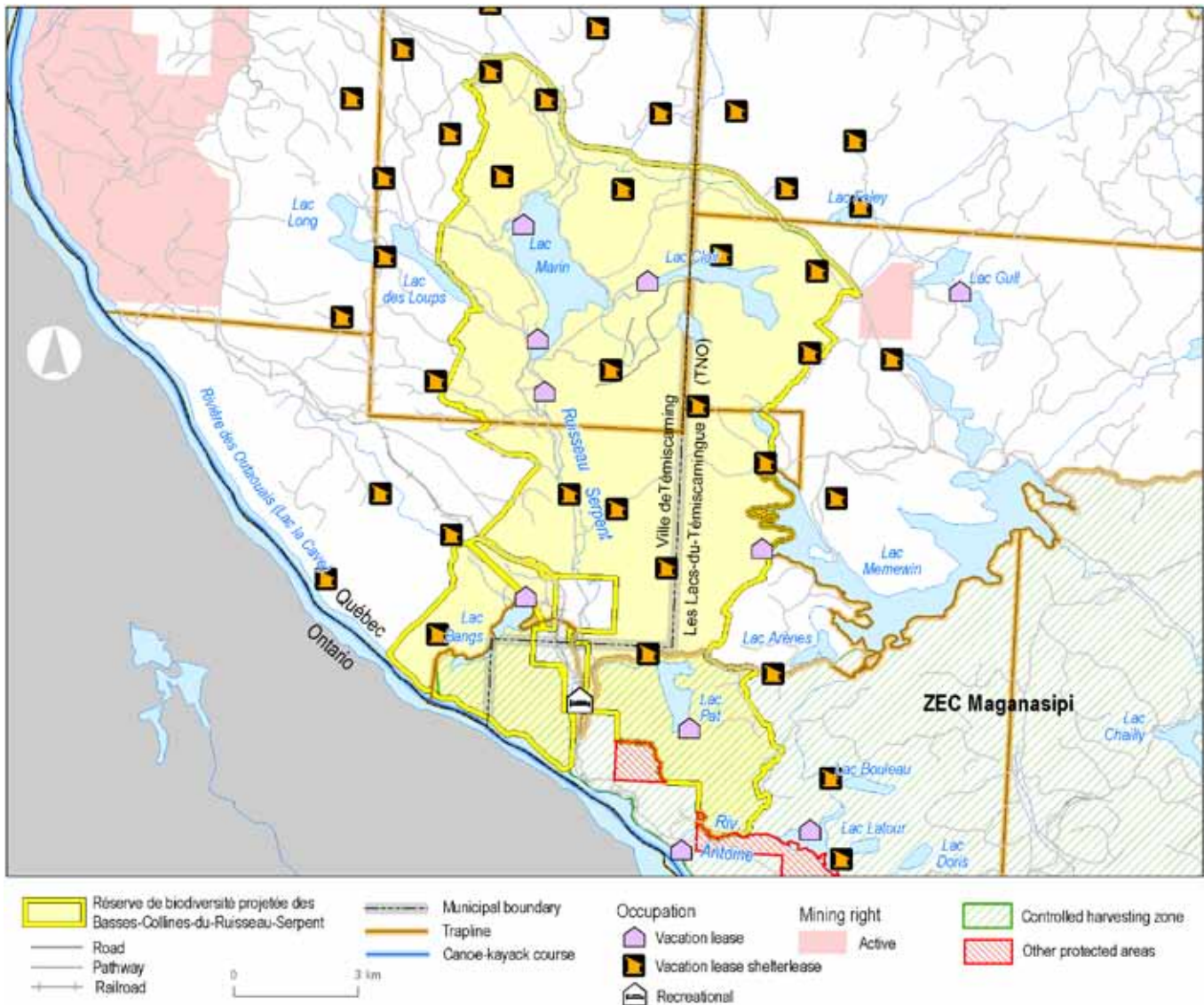
4.6.5 Contributions of the protected area

Representativeness

From the standpoint of the representativeness of the physical elements, the reserve is contributing to the protection of physiographic types in the Lac Esber low hills physiographic unit (C0103), but given its small geographic area, while it is protecting the low hills of till, this physiographic type is underrepresented in the physiographic unit. The reserve is contributing particularly to the protection of silt hummocks and valleys. As for the most common types of surface deposits in the Dumoine Plateau natural region, the proposed biodiversity reserve is contributing solely to the protection of glacial deposits and rock outcrops. In terms of rarer types of surface deposits, it is one of the only protected areas in the natural region to protect glaciolacustrine deposits.

¹⁷ <http://www.ghosttowns.com/canada/quebec/snakecreek.html>

Figure 124. Occupancy and use of the Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent



From a biological perspective and, more specifically, with regard to forest vegetation, the reserve is contributing to the protection of the most widespread types of potential vegetation, i.e. yellow birch-fir-sugar maple stands, yellow birch-fir stands, sugar maple-yellow birch stands, and white pine stands. It is also contributing greatly to the protection of hemlock forests, a rare type of potential vegetation, and maple sugar maple-northern red oak stands.

The proportion of old-growth forests is higher in the network of protected areas in this natural region than in the natural region overall. The Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent is contributing to their protection but to a lesser extent than the Réserve de biodiversité projetée de la Vallée-de-la-Rivière-Maganasipi or the Réserve aquatique projetée de la Rivière-Dumoine.

Efficacy

Human beings have left evidence of their passage through and presence in the territory, mainly stemming from forest harvests and logging roads. Hunting and fishing clubs, holiday resorts, hunters, and so on, still use the territory but occupation is limited and scattered. The general level of naturality of the protected area is relatively high since the traces of anthropogenic activities are generally inconspicuous. The following satellite image clearly illustrates the human footprint.

Forestry operations have affected approximately 24 km², equivalent to 21% of the territory of the reserve. The protected area has 109 linear km of roads, equivalent to a ratio of 0.97 km of road per km², a moderate density (0.43 to 1.06 km/km²).¹⁸

¹⁸ Quigley et al., 2001.

4.6.6 Conservation issues

The territory has development potential, including wildlife development in the portion located in the ZEC Maganasipi and historical development (interpretation) related to the extensive occupation over time of the territory. Its remoteness and limited accessibility mean that there is no assurance that the territory will actually be developed in the short and medium term.

Conservation issues chiefly concern the proper management of the ecosystems disturbed in the past through human activities in order to promote the ecosystems' resilience. Moreover, it is important for the waters of the Ruisseau Serpent and Lac Marin and Lac Clair to preserve their biochemical quality. The consideration of the drainage units of the Ruisseau Serpent is a key direction of the MDDEP, in particular when the drainage basin does not lie entirely within the protected area.

Since the territory is representative, the application of a fairly standard regime of activities should allow for the attainment of long-term protection objectives. However, special conditions might apply. From the standpoint of the boundaries, a challenge arises concerning the enhancement of the protected area (see the following section).

4.6.7 Theoretical expansions under study

Neither the railroad line and electric power transmission line rights-of-way nor the private lots may be included. However, when the actual boundaries between the public and private portions of the mixed lots are known, the protected area may be adjusted, although the modifications are minor.

Potential expansions have been studied to enhance the efficacy and representativeness of the protected area (Figure 126) and take into account the existing uses and rights in respect of the territory that may act as constraints to protection.

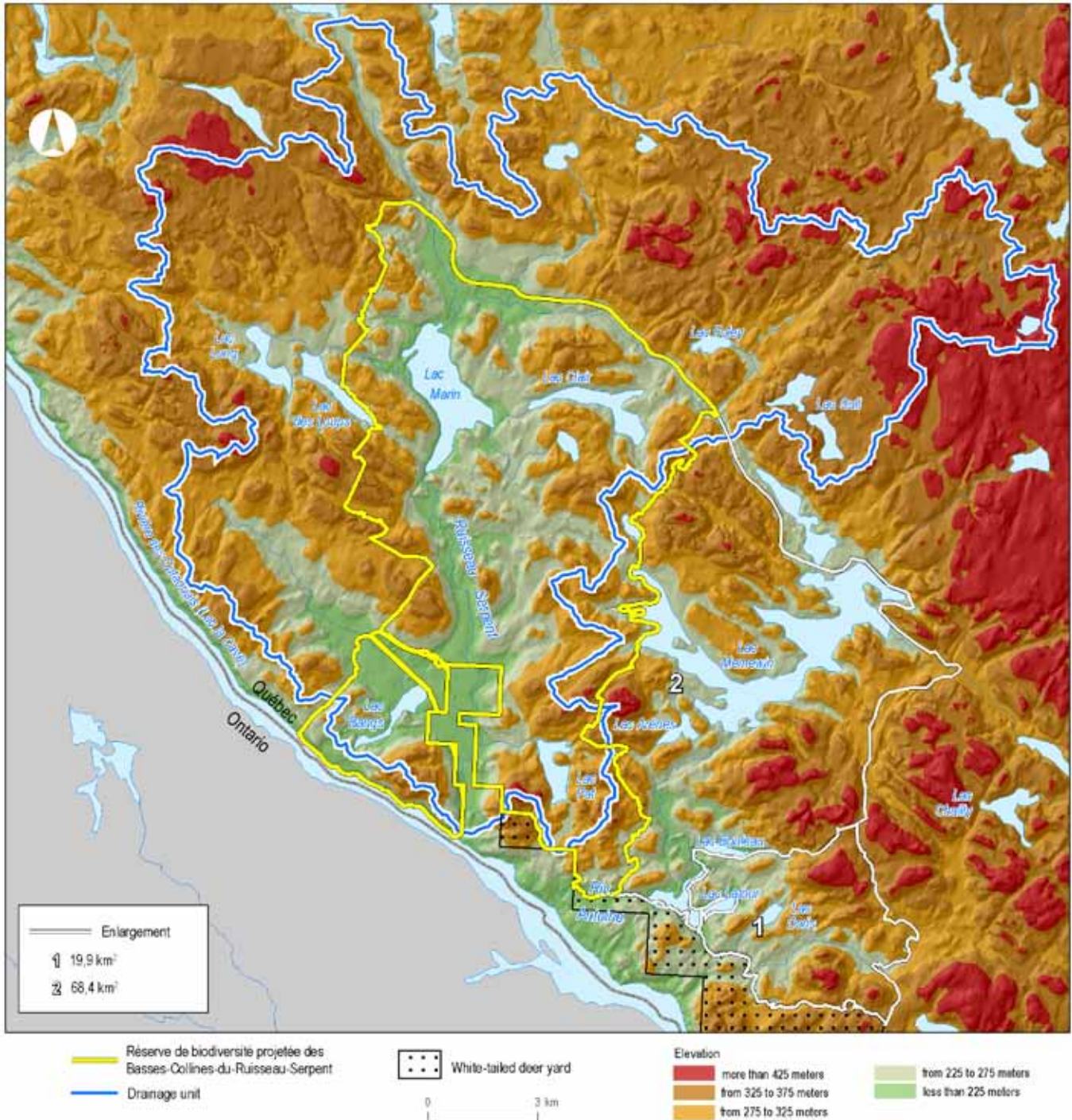
An analysis of the minimum drainage basins was conducted for the territory to determine the best modifications to the protected area's boundaries in order to maximize the protection of the Ruisseau Serpent and the water bodies associated with it in the reserve. Figure 126 illustrates the boundaries of the drainage units of Lac Marin and Lac Memewin and the Ruisseau Serpent. The analysis takes into account the context of use of the territory, especially peripheral forestry operations. Accordingly, the ideal theoretical configuration was not adopted since the scenario would require

considerable expansion and significantly affect forest planning in the area. The entire Ruisseau Serpent drainage basin has an area of 267 km². Furthermore, the determination of the landscape visible from the Ruisseau Serpent and Lac Marin and Lac Clair shows that most of the visible territory is already located in the protected area (Figure 127). This aspect was not, therefore, considered in the choice of the most relevant potential expansions to be presented.

The MDDEP presented two potential expansion zones, one to the west and the other to the east of the protected area, to the members of the Table GIRT de la MRC de Témiscamingue during the workshops that preceded the public consultations. However, in light of the comments and information received, the MDDEP did not choose the western zone, primarily because of the more significant forestry constraints, its lesser ecological interest and the less attractive quality of the natural environment. What is more, the physiographic unit and the FMU already have a high level of protected areas, i.e. approximately 14% of the physiographic unit and 12% of the FMU, respectively. The reactions to the potential expansions are presented in detail in the companion document entitled "Summary of the preparatory workshops for the public consultation and meetings: Granting of permanent biodiversity reserve or aquatic reserve status to eight territories in the Abitibi-Témiscamingue region" submitted to the BAPE Commission within the framework of this consultation. Briefly, the members of the Table de GIRT de la MRC de Témiscamingue indicated their desire to obtain better protection of natural environments through protected areas in the Témiscamingue region. While they did not reach a consensus in this respect, the participants seemed fairly favourable to expansions in particular. However, the ZEC Maganasipi, whose territory partly overlaps the proposed biodiversity reserve, sent a letter to the MDDEP expressing its doubts about the expansions to the east of the reserve, where overlapping occurs. The ZEC mentioned that in the event that there was no or limited impact on the ZEC's operations, it might reconsider its position concerning the expansion of the protected area in its territory.

The MDDEP focused on the portion of the territory located to the east of the reserve (Lac Memewin), since it offers numerous elements that allow for the enhancement of the protected area's efficacy and representativeness (Figure 126). Accordingly, this figure also illustrates polygon No. 3, which seeks to broaden the connectivity of polygon No. 2 with the white-tailed deer yard. However, polygon No. 3 has not been subject to an analysis of constraints to protection. The contiguous expansions located

Figure 126. Potential expansions of the Réserve de biodiversité projetée des Basses-Collines-du-Ruisseau-Serpent



east of the proposed reserve encompass low hills of till, the only physiographic type that is underrepresented in the physiographic unit and the natural region. Since till is a deposit of glacial origin, the expansion would also further enhance the representativeness of this type of deposit, which is the most common one in the natural region but is underrepresented.

From the standpoint of potential vegetation, the expansions to the east would mainly add yellow birch stands and several sugar maple forests, which are the types sought in the network of this natural region (see Figure 121). They also include white pine stands and hemlock forests, types of potential vegetation that are already well represented. According to ecoforestry mapping, the expansions have a high rate of mature forests and old-growth forests, generally white pine stands, yellow birch stands, and black spruce stands (see

Figure 127. Landscapes visible from Lac Marin, Lac Clair and the Ruisseau Serpent

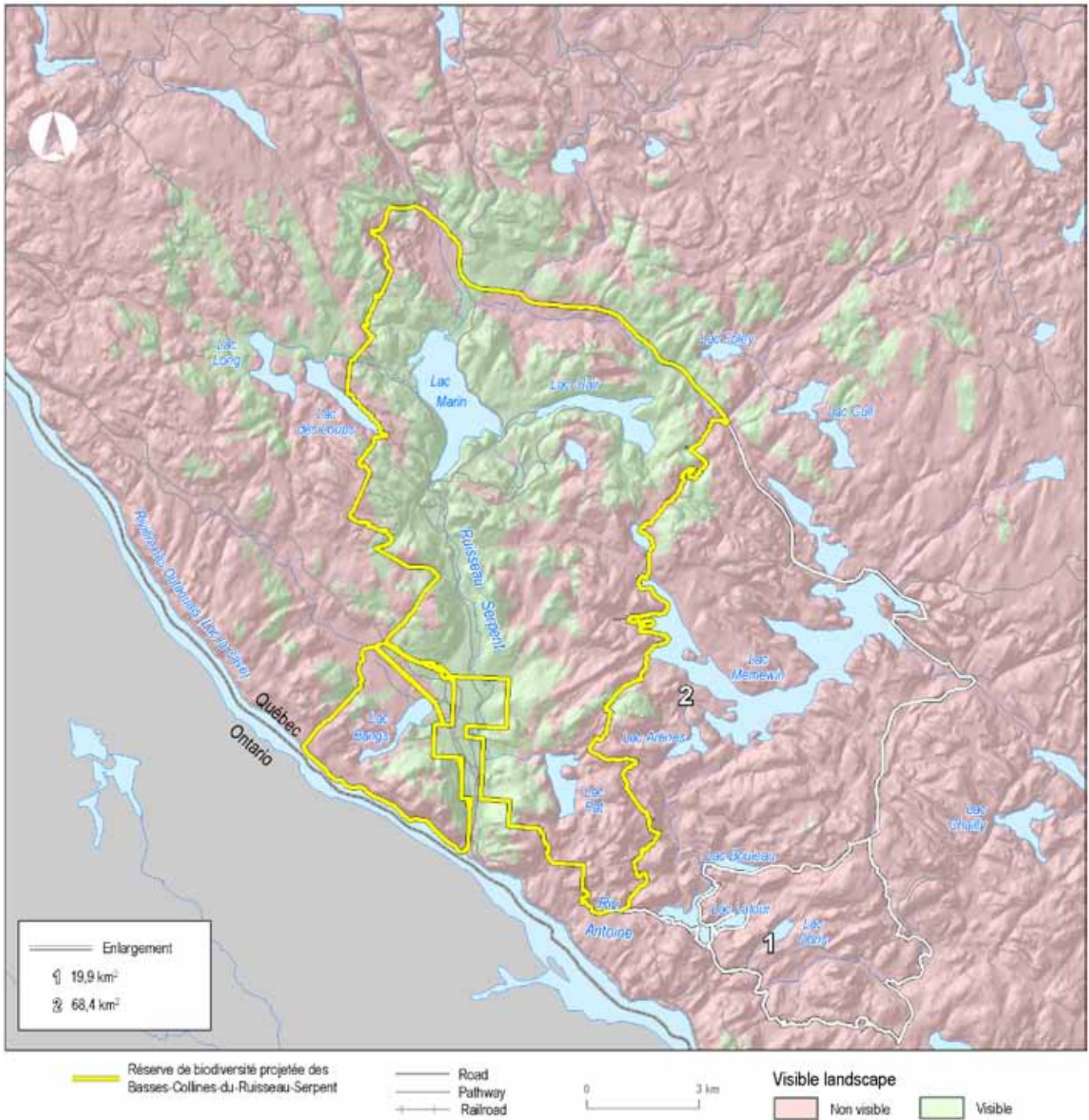


Figure 122 and Figure 123). The expansions apparently include few intolerant hardwood stands (white birch, trembling aspen). However, information on the forest stands must be validated in light of the most recent data.

The expansions that the MDDEP studied (polygons Nos. 2 and 3) have a total area of 88 km². The biodiversity reserve would have an area of 201 km², equivalent to an expansion of over 75%. The perimeter-area ratio would improve greatly, from 0.84 to 0.54.

4.6.8 Management of the permanent reserve

Once the biodiversity reserve obtains permanent status, it will be managed in such a way as to ensure the attainment of conservation objectives. Accordingly, the MDDEP's decisions pertaining to management will prioritize conservation. As for regulations, when the biodiversity reserve obtains permanent status, it will have a conservation plan in which a regime of activities will regulate all activities or initiatives in the protected area. The regime of activities will draw inspiration, by and large, from the regime of activities in the conservation plan of the proposed reserve. However, in the case of permanent status, the new conservation plan could make provision, as the case may be, for specific features to better structure activities and initiatives in order to ensure better protection of the territory, ecosystems and biodiversity. Because the territory partly lies in a controlled harvesting zone, the management approach could be adapted.

The conservation plan will stipulate that certain activities are allowed in the protected area, that others are strictly prohibited, and that a number of activities or initiatives whose compatibility with the protected area and its conservation objectives varies will be subject to authorization by the MDDEP. For more information, see the section entitled "The regime of activities explained" or the document entitled "Régime d'activités dans les réserves de biodiversité et les réserves aquatiques." When the MDDEP or any manager of the territory evaluates requests for authorization, it will take into consideration the objectives concerning the resilience of the forest ecosystems and those pertaining to the preservation of water quality in the lakes and Ruisseau Serpent. Special attention must be paid to the ecosystem assessment of any development to ensure that impact is maintained at an acceptable level.

As for the operational management that the MDDEP or any other partner carries out in the territory of the permanent reserve, it will lead to the installation of appropriate signage and surveillance of the protected area. A management committee comprising the key stakeholders concerned could be established to participate in the drafting of an action plan that defines the management priorities pertaining to the protected area, then collaborate on the action plan's implementation.

