



Protected areas
in Québec:

A Lifelong Heritage

Réserve de biodiversité Opasatica



CONSERVATION PLAN

Québec 

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Introduction

In 2004, the Gouvernement du Québec moved to protect Lac Opasatica and a portion of the land located to the west of the lake.

The legal and provisional status of proposed biodiversity reserve was officially granted to this territory in July 2004 under section 27 of the *Natural Heritage Conservation Act* (chapter C-61.01). The proposed biodiversity reserve was given the temporary name of Réserve de biodiversité projetée du Lac Opasatica.

On February 22, 2007 the Minister of Sustainable Development, Environment and Parks (MDDEP) mandated the Bureau d'audiences publiques sur l'environnement (BAPE) to hold a public consultation on the proposed protected areas of Lac Opasatica, Lac des Quinze, Forêt Piché-Lemoine and Réservoir Decelles. This mandate was given to the BAPE in accordance with section 39 of the *Natural Heritage Conservation Act*, which provides for a public consultation process before permanent protection status is recommended to the Gouvernement du Québec for a territory reserved for the creation of a new protected area. The BAPE's mandate began on March 8, 2007 and concluded on August 8 of the same year. The consultation was held in April and May 2007 in Val-d'Or, Rouyn-Noranda, Angliers, Lac-Simon and Winneway. The BAPE's inquiry and public hearing report (No. 244) was submitted to the Minister of the MDDEP on August 8, 2007 (BAPE, 2007). In its report, the commission recommended giving permanent protection status to Réserve de biodiversité projetée du Lac Opasatica (Réserve de biodiversité Opasatica).

By giving permanent protected status to Réserve de biodiversité Opasatica, the Gouvernement du Québec ensures the definitive protection of representative samples of the biological diversity of the Abitibi lowlands natural province; more specifically, of representative ecosystems of the

Lac Témiscamingue lowlands natural region; and more precisely still, of the Lac Roger plain physiographic complex. The reserve joins a network of representative and exceptional protected areas that protect the various types of ecosystems across Québec.

This biodiversity reserve was selected in large part for Lac Opasatica, and for its extensive area of organic soil on rock. The territory is also noteworthy for its diversity of plant communities, including stands of black spruce, white birch and jack pine. The reserve contains four exceptional forest ecosystems, along with a wildlife habitat on Lac Opasatica's Île Ronde where there is a large heronry.

Lastly, sixteen sites of interest for Québec's archeological heritage have been found in the reserve. The concentration of archeological sites of interest has led to the designation of three archeological areas within the reserve. They are located around Lac Buies, near Baie à Beaupré, and on the shore of Lac Opasatica, more precisely the west shore south of Baie Lamy.

1. The territory of Réserve de biodiversité Opasatica

1.1 Official toponym

Réserve de biodiversité Opasatica: the name reflects the presence of Lac Opasatica. As has been known since the early 20th century, "Opasatica" is of Algonquin origin, a fusion of "obié" or "opa", meaning "narrowed", and "satika", meaning "where there are aspens". The resulting compound means lake surrounded by poplars, poplar narrows, or lake enclosed by aspens (Commission de toponymie du Québec, 1996).

1.2 Geographical location, boundaries and dimensions

The location and boundaries of Réserve de biodiversité Opasatica appear on the map in Appendix 1.

Location: Réserve de biodiversité Opasatica is located, in large part, on the territory of the city of Rouyn-Noranda, in the administrative region of Abitibi-Témiscamingue, and extends between 47°50'35" and 48°10'15" north latitude and between 79°15'28" and 79°31'46" west longitude. About 12% of the reserve is in the township municipality of Nédélec, in the MRC de Témiscamingue. The reserve lies about 25 km southwest of downtown Rouyn-Noranda and abuts the Québec-Ontario border. It can be accessed from highways 117 and 101, which pass respectively to the north and east of the reserve. It is served by a network of forest roads that enter the territory from the north via highway 117 and from the southwest via highway 101.

Area and boundaries: The initial area of the proposed reserve when it was set aside in 2004 was 245 km². Following the public hearings, different expansion proposals were presented to the MELCC. In its analysis report No. 244, the BAPE recommended evaluating the possibility of expanding the proposed reserve to include the areas of interest presented, before granting permanent protection status (BAPE, 2007).

In its present form, the total area of the reserve is 334.4 km². The final boundaries were defined on the basis of natural or anthropic elements that are easily identified on the ground, such as watercourses, lakes, forest roads and the edges of bogs. For sections along the shores of Lac Opasatica, watercourses and other bodies of water, the real boundary is the natural high-water mark. The legal boundaries of the reserve are defined in the technical description and the survey map prepared by land surveyor Pierre Hains with the following minutes 11401 (November 24, 2017) and filed in the surveying archives of the Surveyor General of Québec (Greffé de l'arpenteur général du Québec),

Ministère de l'Énergie et des Ressources naturelles under document number 536698.

1.3 Ecological portrait

Réserve de biodiversité Opasatica is part of the Abitibi lowlands natural province. It protects representative ecosystems in the Lac Témiscamingue lowlands natural region and belongs to the Lac Roger plain physiographic complex. Among the elements described below, those of the greatest ecological interest are mapped in Appendix 2.

1.3.1 Representative elements

Geology: The biodiversity reserve is in Superior geological province, where the foundation rock is Archean (over 2.5 billion years old). The substratum is primarily intrusive igneous rock, i.e. granites. The western portion, near Lac Hébert, consists of sedimentary rocks in the form of conglomerate. The northern part consists of ultramafic volcanic rocks and metamorphosed metasedimentary rock in the form of paragneiss.

Geomorphology: When the Laurentide ice sheet melted, around 8500 years ago, it covered the bedrock with a thick layer of poorly drained glaciolacustrine sediments (silt and clay). Erosion by the waves of glacial lake Barlow-Ojibway stripped away the silt covering the tops of the highest mounds (Veillette, 2000).

Today the landscape is a plain punctuated with mounds and residual hillocks, gently sloping to the north.

Apart from outcrops here and there, the bedrock is covered by glaciolacustrine deposits or occasionally a thin layer of till. The relief is shallow, with an elevation ranging from 265 to 390 metres (average 300 metres).

A plant survey conducted in 2011 by FloraQuebeca noted two eskers on the territory of the reserve (FloraQuebeca, 2012). One is in the northwest portion and forms a small peninsula in Lac Dufay. The second esker lies along the eastern boundary of the reserve, near Passage à Paulson, and has a passable road running throughout its length (see map in Appendix 1 for the location of Passage à Paulson).

Réserve de biodiversité Opasatica is composed of four distinct ecological units, as defined by their landforms and surface deposits: Lac Opasatica, the northern terrestrial part of the reserve, the plateau south of it, and the western part of the reserve.

Due to its large size, Lac Opasatica constitutes a physical entity all on its own. As for the northern terrestrial part of the reserve, it is a glaciolacustrine plain composed of clay and silt, punctuated with hillocks of till. A few hollows are filled with organic deposits, forming shallow ombrotrophic bogs on till, and shallow wooded minerotrophic bogs on clay and silt. This unit is crossed by a ridge about 25 metres high running in an east-northeast/west-southwest direction. The ridge is a diabase dike created by differential erosion. Along its base are thin colluvial deposits on rock, colluvium being material that accumulates at the base of a steep slope.

South of the previous unit, a plateau rises 40 to 50 metres above the plain. The plateau has a large number of rocky outcrops with thin till. On its eastern side the plateau ends with an abrupt slope toward Lac Opasatica, where the soil consists of clay and silt. Hollows are filled with organic deposits, forming shallow ombrotrophic bogs on till and shallow wooded minerotrophic bogs on clay and silt.

According to the ecological reference framework of Québec (Li and Ducruc, 1999), the western part of the reserve is a complex of till hillocks of variable thickness, with rocky outcrops emerging from glaciolacustrine lowlands of clay and silt. A few hollows are filled with organic deposits forming bogs. To the south of Lac Hébert there are two areas of ice-contact fluvioglacial deposits composed of sand and gravel. The island in Lac Dufay consists of ice-contact fluvioglacial sand. Two areas of thin colluvium on rock are found to the west of Lac Hébert.

Hydrography: The biodiversity reserve is in the Rivière des Outaouais watershed. More precisely, the section to the west of Lac Opasatica is part of the Rivière Blanche sub-watershed. Lac Opasatica itself, together with the glaciolacustrine plain unit and the plateau unit, is in the Rivière Barrière sub-watershed.

Lac Opasatica is nearly 33 kilometres long, with a surface area of 48 km². In its northern part it is 6 kilometres wide and has large bays, some of which are named, including Klock, Lamy, Verte and À l'Original. In its southern extremity the lake is very narrow, less than a kilometre wide at Baie Solitaire. At this location the lake empties into Rivière Solitaire, which in turn feeds Lac Rémigny. This long and narrow lake occupies a fault zone in the bedrock and has a maximum depth of over 60 metres.

There are nine other named lakes in the reserve, the largest ones being lakes Hébert, Dufay, Montalais and Granville, along with Lac Bull Rock and Petit Lac Bull Rock. Aquatic environments account for about 20% of the area of the reserve.

Climate: The territory of Réserve de biodiversité Opasatica is subject to a mild continental subarctic climate, subhumid with a long growing season. Average temperatures range from 1.9°C

to 4.5°C. The average annual precipitation ranges from 800 mm to 1359 mm, and the average growing season is from 180 to 209 days.

The reserve is in the balsam fir-yellow birch bioclimatic domain, which extends in a band from west to central Québec between 47° and 48° north latitude. Mesic sites are occupied by mixed stands of yellow birch and conifers, including balsam fir, white spruce and cedar. Sugar maples are at the northern limit of their range here. Forest fires and epidemics of spruce budworm are the two main factors of forest dynamics. The abundance of yellow birch and pines diminishes from west to east, resulting in two subdomains. The reserve is in the western one, where yellow birch-balsam fir stands are omnipresent on mesic sites.

Forests: As mentioned earlier, the reserve is noteworthy for its four exceptional forest ecosystems:

- The Baie-à-l'Original rare forest (a black ash-red ash stand);
- The Lac-Opasatica old forest (a balsam fir-white birch-cedar stand);
- The Baie-à-Beaupré old forest (a black spruce-white pine-cedar stand);
- The Rivière-Granville old forest (a balsam fir-white birch-cedar stand).

Forest covers about 70% of the territory. It is composed primarily of mixed forests (49%) and coniferous forests (44%), the remaining 7% being deciduous. The principal woodlands are black spruce stands and shade-intolerant hardwoods, especially white birch. Jack pine stands dominate the plateau in the southeast. There is a concentration of eastern white cedar stands in the northern portion around Lac Opasatica and around lakes Hébert and Dufay. While 43% of the forest cover consists of medium age stands (40-80 years), and 36% of young stands (0-40 years),

the remaining 21% consists of mature and old stands. Those of medium age are primarily concentrated on the plateau to the southeast, while the more scattered mature stands are mostly found in the northern portion, on the glaciolacustrine plain, or more precisely in the exceptional forest ecosystems (the Rivière-Granville and Lac-Opasatica old forests) and their peripheral areas, and in the western part of the reserve, some being near lakes Dufay and Hébert, the others being to the southwest, in the area surrounding two biological refuges.

In the glaciolacustrine plain ecological unit, in the northern part of the reserve, colonies of white birch and black spruce occupy the hillocks of till. In contrast, the silty-clay plain is populated by mixed forests and stands of regenerating hardwoods. The exceptional forest ecosystems of the Rivière-Granville and Lac-Opasatica old forests are in this ecological unit. Also present are cedar stands on the shores of Baie Lamy. Though most of the forests are young (10-15 years), this unit contains a good number of the reserve's old forests.

The southeast plateau is mostly populated by stands of jack pine, with stands of white birch and trembling aspen in steeper areas. These shade-intolerant hardwoods also grow on the eastern slope toward Lac Opasatica and in areas of lower elevation. Medium age stands (50-70 years) comprise 95% of the plant cover here. Stands of jack pine occupy areas of rocky outcrops, while stands of black spruce are chiefly found in areas of rocky outcrops, but also in the northern part of this unit.

The complex of till hillocks, rocky outcrops and slopes in the western ecological unit features colonies of white birch and black spruce. There is also a white pine-red pine stand with the characteristics of a rare forest. Cedar stands

occupy the area between lakes Hébert and Dufay. There are also isolated stands of yellow birch, white pine, balsam fir and tamarack. The forests are mostly young, and though the total area of old stands is relatively large, they are small and scattered, not in forest massifs.

Flora: In 2011 a survey targeting specific parts of the reserve was conducted by FloraQuebeca. The survey identified 335 vascular species, including 23 species of interest, as well as 1 species of lichen, 3 species of mushroom and 1 species of bryophyte (FloraQuebeca, 2012). No comprehensive plant inventory has been done for the entire territory of the reserve. However, Baldwin (1958) and Rousseau (1974) studied the vascular flora of the clay belt of northeastern Ontario and northwestern Québec, where the reserve is located. Chiefly characterized by boreal vegetation, the clay belt covers most of Abitibi and northern Témiscamingue. The few surveys done after Baldwin's study indicate that the region is home to around 1000 vascular species, while its non-vascular species include 125 lichens, 30 liverworts and 159 mosses. No survey has been done for the region's mushrooms and algae.

Fauna: No inventory has been done for wildlife in the reserve. However, species mentioned in the literature as being characteristic of the balsam fir-yellow birch and balsam fir-white birch forests of western Québec include the following: snowshoe hare, black bear, red squirrel, Canadian beaver, muskrat, American porcupine, red fox, patched fox, American marten, weasel, fisher, American mink, coyote, wolf, river otter, Canadian lynx, moose, white-tailed deer, and seven species of bat, three of which are endangered. According to the literature, some fifty species of mammals could inhabit western Abitibi-Témiscamingue, and thus the territory of Réserve de biodiversité Opasatica.

At the same time, bird surveys indicate that the species frequenting the reserve are characteristic of the balsam fir stands, mixed forests and continuous boreal forests of western Québec. The reserve provides a habitat for around 109 bird species, including one that is vulnerable and two that are likely to be designated threatened or vulnerable. The bird survey was done by the Société du loisir ornithologique de l'Abitibi (SLOA). As mentioned earlier, Île Ronde has been designated as a wildlife habitat (heronry) and is protected by the provisions of the *Act respecting the conservation and development of wildlife* (chapter C-61.1). There are about 40 active nests in the heronry (2002 census).

Of the 24 species of fish found by the Ministère des Forêts, de la Faune et des Parcs (MFFP) in Lac Opasatica, the most important are walleye, northern pike, yellow perch, whitefish and smallmouth bass. Other species noted include brown bullhead, white sucker, emerald shiner, spottail shiner, burbot, trout-perch, sauger and slimy sculpin. There are walleye spawning beds in lakes Hébert and Dufay. Some of the area's streams are home to brook trout.

Among the herpetofauna (which include snakes, turtles, amphibians and salamanders), 22 species have been observed in Abitibi-Témiscamingue. Some could inhabit the lakes and watercourses of Réserve de biodiversité de la Moraine-d'Harricana (MRNF, 2007).

1.3.2 Outstanding elements

According to the Centre de données sur le patrimoine naturel du Québec (2014), no plant species that is threatened or vulnerable or likely to be so designated has been observed in the reserve. They could however be present. It should be noted that one threatened species and seven plant species likely to be designated

threatened or vulnerable have been found on the territory of Rouyn-Noranda. However, the plant survey conducted in 2011 by FloraQuebeca for certain parts of the reserve led to the discovery of six new species (for the region or Abitibi), two species whose presence represents an extension of their range, ten species that are rare in Abitibi, a new occurrence in the reserve for one species, and five species worthy of mention (FloraQuebec, 2012).

The bald eagle, considered vulnerable in Québec, frequents the northern part of the reserve. Again according to the Centre de données sur le patrimoine naturel du Québec (CDPNQ), there were five observations of three species at risk: the anatum peregrine falcon (a vulnerable species), southern bog lemming and short-eared owl. The last two are species likely to be designated threatened or vulnerable that were observed in the vicinity of the biodiversity reserve and could well frequent it.

The Ministère des Forêts, de la Faune et des Parcs has accorded exceptional forest ecosystem (EFE) status to three old forests and one rare forest in the reserve. They are: two stands of balsam fir-white birch-cedar, one black spruce-white pine-cedar stand and one black ash-red ash stand. The first EFE, with an area of 117 hectares, is to the west of Lac Opasatica, while the second, of 113 hectares, is on the eastern slope of the Rivière Granville valley. As for the black spruce-white pine-cedar stand, which covers 39 hectares, it is on the eastern shore of Lac Opasatica, where a rocky point protrudes into the lake between Baie Verte and Baie à Beaupré. Lastly, the rare black ash-red ash stand occupies 26 hectares on the west side of Baie à Beaupré. (See map in Appendix 1 for the location of bays in Lac Opasatica.)

The black spruce-white pine-cedar stand contains multiple micro-habitats favourable to acidophilic plant communities that are uncommon in the region. The plants that have been found include cave-dwelling species, one uncommon species (marginal wood fern) and a very rare species located at the northern limit of its range (bulblet bladder-fern). The old forest of Lac Opasatica is home to several species of interest in the undergrowth and on the rocky sides of outcrops, including large specimens of bristly black currant.

The greatest diversity of plants in the reserve is on the five rocky points of the peninsula west of Baie à l'Original. There are two aquatic species at the northern limit of their range (Nuttall's waterweed and spinose-spore quillwort), three species of orchid including one in abundance (lesser purple fringed orchid), numerous chanterelles, a hawthorn uncommon in Abitibi, a few colonies of marsh arrow-grass, and a fine population of American reedgrass.

Also worth nothing is the presence of fluvio-glacial materials on the main island of Lac Dufay and along the lake's north shore. Clay deposits are far more abundant in the southern part of the reserve, with a rich variety of plant life and large meadows.

It should also be mentioned that in the area to the northeast, adjacent to the reserve, there is a white-tailed deer yard.

Finally, there are sixteen sites of interest for Québec's archeological heritage. Their strategic position on the water route between the St. Lawrence and Hudson's Bay gave them an important role in Amerindian history. All contain remains of prehistoric Amerindian occupations, and some, the remains of Euro-Québec occupations. One site is about 4300 years old,

while another is among the rare archeological sites in Québec where rock paintings have been found. All the sites are well preserved, but they are very fragile because of their low depth in the soil. Any disturbance of the surface could result in their partial or total destruction. It should be noted that the reserve's archeological potential may be much greater than is known at present. Corporation Archéo-08 has conducted a number of archeological digs in the reserve, especially on the shores of Lac Opasatica. Begun in 1987, their work is still underway and has been conducted in close collaboration with the Ministère de la Culture et des Communications.

1.4 Land occupation and uses

The principal occupations and uses exercised in Réserve de biodiversité Opasatica are shown in Appendix 3.

One hundred and seven (107) land rights were granted within the boundaries of the reserve before it was set aside as a proposed biodiversity reserve. There are also 101 leases for temporary forest shelters (hunting camps), three resort leases (cottages) and three rights for activities complementary or accessory to a recreational trail for non-profit community use. These last are located along a network of multifunctional trails (cross-country skiing, snowshoeing, hiking) in the Passage à Paulson area.

Additionally, a snowmobile trail running north-south and marked by a snowmobile club crosses the western part of the reserve, along Lac Hébert.

Electrical transmission lines also cross the reserve. Their right of way is 12 metres wide.

The biodiversity reserve overlaps eleven trapping grounds in fur-bearing animal management units 04 and 02-B. The trappers responsible for them have not built any trapping camps in the reserve.

The following species have been harvested: weasel, beaver, coyote, squirrel, otter, Canadian lynx, American marten, fisher, muskrat, raccoon, patched fox (a cross between red fox and silver fox), red fox and mink.

Hunting is practised in the reserve; in fact, the harvest numbers for moose and black bear are twice the regional average (Ministère des Ressources naturelles et de la Faune, 2006). Due to the abundance of secondary trails to hunting camps, the natural environments surveyed in 2011 by FloraQuebeca were found to be quite fragmented. Many trails disturb the natural water flow in wetlands and encourage the propagation of invasive plant species.

With a depth of up to 60 metres, Lac Opasatica attracts a large number of boaters. The proximity of Rouyn-Noranda has led to cottage development along the east shore of Lac Opasatica. Forest roads leading in from highway 117 also provide access to lakes Pontleroy and Bull Rock. Every summer since 2008, monthly water quality monitoring has been carried out by local citizens, for Lac Opasatica and four of its headwater lakes (Évain, Fortune, King of the North and Mud). The results for conventional parameters suggest that the waters of Lac Opasatica are of good quality and not deteriorating. Monitoring for more toxic substances in the fish and surface waters of the Lac Opasatica watershed was done by a team from the Ministère de l'Environnement from the late 1970s to the early 1980s, and by the MDDEP on an occasional basis from 2009 to 2011. The results showed that toxic substances in the waters of the Lac Opasatica watershed, including metals, dioxins/furans and PCBs, are present but in negligible concentrations. Though slightly higher in the flesh of predatory fish caught from Lac Opasatica (walleye, sauger and northern

pike), concentrations of the same substances were below critical levels (MDDELCC, 2014, Guide de consommation du poisson de pêche sportive en eau douce).

2. Conservation and development of Réserve de biodiversité Opasatica

This section presents conservation and development guidelines, together with objectives specific to Réserve de biodiversité Opasatica.

2.1 Protection of biodiversity

To maintain the viability of ecological processes, management of the reserve should give priority to protecting the ecosystems present and the species that depend on them. This includes allowing the many ecosystems that have been disturbed to recover their dynamics and natural characteristics.

Existing occupations and uses that are compatible with the reserve's protection objectives will be maintained. Activities should be managed to ensure that they have as little impact as possible, and no long-term impact on biodiversity.

Specific objectives:

- ***Promote the resilience of disturbed forest ecosystems***

The total area of sections that were logged in the ten to fifteen years before the creation of the reserve is quite small. More in the past, a large proportion of the territory of the reserve was logged. That land is regenerating however, and is already populated with young and medium-age forests. The disturbed forest ecosystems should thus be able to recover their natural characteristics. The absence of any form of logging will facilitate that resilience. These environments have good productivity and will be

able to re-establish themselves in the coming decades, with no need for active management measures such as planting and restoration.

- ***Ensure the protection of intact forest ecosystems***

The forest ecosystems of the southern half of the reserve are relatively undisturbed. Most of the forests are of medium age. The jack pine stands on the plateau, where there are thin and very well drained deposits, are of particular interest. The soils supporting this ecosystem must also be well protected, especially those consisting of organic soil on rock. Any further fragmentation of the forest cover must be avoided. As for the mature and old forests, they should be given particular protection, avoiding impacts of any kind and thus any new fragmentation, intervention or development.

- ***Protect the lake ecosystems and riparian environments of Lac Opasatica***

There are over 500 cottages and residences around Lac Opasatica, most being on the east shore. Vacation activities can have impacts on aquatic and riparian environments, especially when sanitation facilities are ineffective, when banks are cleared too close to the water, or when boating activity is such that unstable or deforested banks are eroded by wave action.

The MELCC will ensure that lake and riparian ecosystems are well protected and that Lac Opasatica continues to have good quality water. Since most of the shoreline dwellings are outside of the boundaries of the reserve, the MELCC will pursue this objective by building awareness about good practices (with regard to logging, shoreline development, maintenance of sanitary facilities, and the use and maintenance of motor boats), and by ensuring the application of existing

and future standards for the protection of water bodies. The collaboration of shoreline residents outside the reserve in contributing to the protection of Lac Opasatica will be very important. To that end, cottagers and other users of the water bodies and riparian environments should be given the information needed to apply good practices, to equip them to participate in protection. The MELCC will develop communication tools to enable shoreline residents to be stakeholders in the protection of their living environment. The city of Rouyn-Noranda will be the principal partner in pursuing this objective.

On the subject of motor boat travel, there will be no new restrictions on navigation in Lac Opasatica. Regarding motorized water sports, the MELCC intends to encourage users to adopt better practices (speed reduction, appropriate motor choice, respect for fragile sites, proper maintenance of equipment, etc.). Appropriate documentation prepared by the MELCC will present good practices that users could adopt to minimize their impact on Lac Opasatica and its shoreline.

2.2 Knowledge acquisition and environmental monitoring

Knowledge acquisition, besides being crucial to the achievement of objectives specific to natural heritage protection, will make it possible to monitor the natural environment. The knowledge acquired could also be used in developing activities for nature discovery, education and public awareness. It will facilitate the analysis of development projects, and ensure that management partners have a common understanding of the issues.

Ecological knowledge, especially about the support capacity of natural environments, and about the impact of recreational and tourist

activities on ecosystems, must also be developed. This will be done to properly assess the wealth of the reserve's resources, to obtain representative data, and to develop the tools needed for good management, to ensure that the biodiversity specific to the reserve is conserved.

Specific objective:

- ***Perform targeted inventories and subsequent monitoring***

The MELCC will target certain needs related to knowledge building on biodiversity. For example, in summer 2011 a plant survey was done in parts of the reserve by FloraQuebeca. A list of terrestrial wildlife species that frequent the reserve could be created with the help of regional partners in the wildlife field. The same applies to fish species in Lac Opasatica. Other topics could be pursued, such as the resumption of regular water quality monitoring in Lac Opasatica. The subjects of surveys or research to prioritize will be determined later, and will be related to various existing or anticipated ecological problems.

2.3 Integrated and participative management

The characteristics of the reserve and its adjacent areas, in particular the eastern shore of Lac Opasatica, make imperative the adoption of a management approach based on stakeholder participation. This will facilitate the harmonious management of recreational activities while protecting the natural heritage.

Specific objective:

- ***Establish participative and collaborative management***

Inasmuch as part of what the reserve protects is a large lake, half of whose shoreline is privately owned and outside the protected area, the MELCC faces a challenge in integrated management. Another management challenge is the fact that the reserve adjoins an MRC, the city

of Rouyn-Noranda and two municipalities. To provide adequate protection to Lac Opasatica and the terrestrial ecosystems of the biodiversity reserve, the MELCC must engage the participation of the lake's users and residents, the holders of land rights, and the city of Rouyn-Noranda, the township municipality of Nédélec, and the MRC de Témiscamingue. The Algonquin community of Timiskaming will also be an important partner in managing the reserve.

The MELCC will encourage the creation of a conservation committee where issues related to protection of the reserve and the use of Lac Opasatica could be discussed by stakeholders, as well as measures to take in response. An action plan will be prepared by the MELCC in collaboration with management partners. Among other things, the plan will determine actions to be taken, the means advocated, actors chosen to perform those actions, performance horizons, and a mechanism for evaluating results.

3. Zoning

Réserve de biodiversité Opasatica occupies a territory adjacent to a vacation area that is excluded from the boundaries of the reserve. In the Passage à Paulson area, an enclave of private cottage lots is also excluded from the reserve. Furthermore, the biodiversity reserve is close to Rouyn-Noranda, so human pressure on the natural environment will need to be considered in the management of activities. Based on the ecosystems present, the occupation and use of the territory, the current state of the natural environment, and the reserve's protection and management objectives, the reserve has been divided into four zones. All four have a protection level and the same activity framework, but protection measures and development possibilities will reflect the specific features of each zone.

A map of the zones is provided in Appendix 4. This zoning, and the particular characteristics of

each zone, will be taken into account in the MELCC's management of the reserve and when evaluating authorization requests for activities and improvements.

The four zones are:

- Zone I: Lac Opasatica
- Zone II: Silty clay plain
- Zone III: Southern plateau
- Zone IV: Hillock complex

Zone I: Lac Opasatica

This zone consists of Lac Opasatica, its shores and a few areas of lowland associated with the lake and topographically isolated from the other zones. Zone I covers around 56 km², or about 17% of the territory of the reserve. Just outside the boundaries of the reserve, the significant human presence on the eastern shore of Lac Opasatica must be taken into consideration in the management of this zone.

Zone I can be considered a “humanized” zone, one in which the state of the natural environment is intimately linked to the presence and activities of humans. Maintenance of the zone's ecological integrity, and improvement of its natural character, will depend on interactions between the natural environment, neighbouring residents and cottagers, and users of the lake. A partnership between the MELCC, the city of Rouyn-Noranda and the people living around Lac Opasatica should make it possible to determine and implement appropriate conservation measures while respecting rights for occupation and use.

The conservation objective for Zone I is to maintain a balance between, on the one hand, the pressure exerted by human activities and impacts from the periphery, and on the other hand, the lake's capacity to maintain good water quality along with viable aquatic and riparian ecosystems.

Particular attention must also be paid to the conservation of the three protected areas in this zone: the heronry on Île Ronde and the two exceptional forest ecosystems.

Zone II: Silty clay plain

This zone of 54 km², covering about 16% of the territory of the reserve, corresponds to the great glaciolacustrine plain of clay and silt deposits, which is scattered with till hillocks and bog-filled hollows. A diabase dike left by differential erosion traverses the zone.

With the exception of its two exceptional forest ecosystems and their immediate surroundings, Zone II has undergone extensive logging in recent decades. The regenerating forest cover is slowly fighting back. Accordingly, the objective for this zone is to promote the resilience of its young forest cover. Any intervention that would cause further fragmentation and disturbance must be restricted. Luckily, the zone can only be accessed by a single forest road, or by water, reducing the risk of traffic and disturbances increasing.

Nonetheless, one of the main problems affecting this zone is that in winter, people cross Lac Opasatica by snowmobile and cut firewood for their homes and cottages. Yet no permits for firewood cutting have been granted by the MFFP in the territory of the reserve, so this activity is illegal, under both the *Natural Heritage Conservation Act* (chapter C-61.01) and the *Sustainable Forest Development Act* (chapter A-18.1).

Stumps of mature trees have been noted at the edge of one exceptional forest ecosystem. The measures to be taken to solve this problem must involve the collaboration of local actors and a common approach by the MELCC, the MFFP and the city of Rouyn-Noranda.

Due to logging done in the past, the human footprint is such that Zone II can be considered a “natural developed” zone. Management must

therefore be guided by a focus on the resilience of forest ecosystems and the need to keep further disturbance or fragmentation to a minimum. The goal pursued will be to increase the naturalness of the zone.

Zone II has about 97 linear km of roads and trails, for a fragmentation index of 1.8 km of road per km², which is high according to Quigley *et al.* (2001). With 25 temporary shelters (hunting camps), the zone has a relatively low occupation rate of one occupation per 2 km².

Particular protection from disturbance will be given to the two exceptional forest ecosystems along with the areas surrounding them.

Zone III: Southern plateau

This zone of 81 km², covering about 24% of the reserve, is the least disturbed part. Though mostly composed of medium age stands, the forest cover is relatively undisturbed, except for a few small sections that were logged just before the area was set aside as a proposed biodiversity reserve.

With 26 linear km of roads and trails, Zone III has a relatively low fragmentation index (Quigley *et al.* 2001), 0.3 linear km per km². There are twenty leases for temporary shelters and three leases for activities complementary or accessory to a recreational trail for non-profit community use. The occupation rate is low at one occupation per 3.5 km².

Covered with thin till, the southern plateau has numerous rocky outcrops with sparse vegetation. It includes the area of steep slopes leading down to the western shore of Lac Opasatica.

Due to its high level of naturalness, Zone III can be considered a “natural” zone, in which the natural character of ecosystems must be preserved. Zone III should be managed as the anchor of the reserve’s protection.

Zone IV: Hillock complex

This zone occupies the entire western portion of the reserve. It takes the form of a complex of hillocks rising above the clay lowlands. The zone covers 144 km², or about 43% of the reserve.

Zone IV is characterized by numerous recent cutblocks (logged sites) dating from a few years before the creation of the reserve. The cutblocks are interspersed with areas that escaped harvesting, where there are mature and old forests and indeed three biological refuges.

As with Zone II, Zone IV can be considered a “natural developed” zone and will need to be managed with a focus on the resilience of disturbed forest ecosystems. The fragmentation rate of the forest cover is similar to that of Zone II.

It will be particularly important to consolidate the residual blocks of old forest, which are present here in greater proportion than in the rest of the reserve. Elements that fragment the territory (forest roads and their rights of way) will be renaturalized if no longer used as access routes.

There are about 184 linear km of roads and trails in this zone, giving it a fragmentation index of 1.3 km per km², which is relatively high (Quigley *et al.* 2001). The road network reflects the presence of areas where logging was done before the creation of the reserve. There are 54 leases for temporary shelters and 2 resort leases, giving an occupation rate of one occupation per 2.6 km², which is relatively low.

At Lac Dufay, the MFFP is conducting scientific research on the walleye population. Such research is compatible with the reserve's conservation guidelines and can thus continue.

4. Activity framework applicable to Réserve de biodiversité Opasatica

The purpose of the reserve is to protect natural environments and their components. For this reason, activities that could have a significant impact on ecosystems and biodiversity, especially of an industrial nature, are prohibited. Less harmful activities and occupations, such as those involving recreation, wildlife, ecotourism or education, are however permitted in this type of protected area.

In sum, the biodiversity reserve should be considered as a territory dedicated to protecting the natural environment, to nature discovery and to recreation.

4.1 Activity framework established by the Natural Heritage Conservation Act

Activities carried out within the biodiversity reserve are primarily governed by the provisions of the *Natural Heritage Conservation Act* (chapter C-61.01).

Under the Act, the activities prohibited in an area with the status of biodiversity reserve are primarily the following:

- mining and gas or oil extraction;
- forest management within the meaning of section 4 of the *Sustainable Forest Development Act* (chapter A-18.1);
- the exploitation of hydraulic resources and any production of energy on a commercial or industrial basis.

Though fundamental to protecting the territory and its ecosystems, the above prohibitions do not cover all of the standards considered desirable to ensure the proper management of the reserve and the conservation of its natural environment. The *Natural Heritage Conservation Act* allows the Regulation to detail the legal framework applicable on the territory of a biodiversity reserve.

4.2 Activity framework established by the Regulation respecting the Réserve de biodiversité Opasatica

The provisions contained in Regulation respecting the Réserve de biodiversité Opasatica set out additional prohibitions beyond those already stipulated in the *Natural Heritage Conservation Act* (chapter C-61.01). They also provide a framework for certain permitted activities, to ensure the protection of the natural environment in accordance with the principles of conservation and other management objectives of the reserve. Certain activities are therefore subject to prior authorization by the Minister.

The measures presented in Regulation concern new interventions in particular, and generally do not affect activities that are already being practised or facilities that are already present. Many existing uses are thus preserved.

In listing the activities requiring authorization, Regulation does not identify which ones would be considered incompatible with the vocation of the reserve and could therefore be refused authorization. Basic information about the compatibility or incompatibility of each type of activity is provided in the document *Activity Framework for Biodiversity Reserves and Aquatic Reserves*, which available on the website of the MELCC at

http://www.mddelcc.gouv.qc.ca/biodiversite/aires_protegees/regime-activites/regime-activite-reserve-bio-aqua-en.pdf.

Note that certain activities are exempted from the requirement to obtain authorization. These exemptions are also presented in Regulation.

5. Activities governed by other laws

Certain activities that could potentially be practised in the biodiversity reserve are also governed by other applicable legislative and regulatory provisions, and some require a permit or authorization or the payment of certain fees.

Certain activities could be prohibited or limited under other laws or regulations applicable on the territory of the reserve.

In the territory of Réserve de biodiversité Opasatica, a particular legal framework may govern permitted activities under the following categories:

- **Protection of the environment:** measures stipulated by the *Environment Quality Act* (chapter Q-2) and its regulations;
- **Archeological research and discoveries:** measures stipulated by the *Cultural Heritage Act* (chapter P-9.002);
- **Exploitation and conservation of wildlife resources:** measures stipulated by the *Act respecting the conservation and development of wildlife* (chapter C-61.1) and its regulations, including provisions related to threatened or vulnerable wildlife species, outfitters and beaver reserves, and measures in the applicable federal laws and regulations, including the legislation and regulations on fisheries;
- **Plant species designated as threatened or vulnerable:** measures prohibiting the harvesting of such species under the *Act respecting threatened or vulnerable species* (chapter E-12.01);
- **Access and property rights related to the domain of the State:** measures stipulated by the *Act respecting the lands in the domain of the State* (chapter T-8.1) and by the *Watercourses Act* (chapter R-13);
- **Issuance and oversight of forest development permits** (harvesting of firewood for domestic purposes, wildlife development, recreational development); and **delivery of authorizations** (forest roads): measures stipulated by the *Sustainable Forest Development Act* (chapter A-18.1);

- **Travel:** measures stipulated by the *Act respecting the lands in the domain of the State* and by the regulations on motor vehicle travel in fragile environments, under the *Environment Quality Act*;
- **Construction and development standards:** regulatory measures adopted by local and regional municipal authorities in accordance with the applicable laws.

6. Management

6.1 Responsibilities of the Minister of Environment and the Fight against Climate Change

The Minister of Environment and the Fight against Climate Change is responsible for the management of the reserve. Among other things, the Minister sees to the application of the *Natural Heritage Conservation Act* (chapter C-61.01) and the Regulation respecting the Réserve de biodiversité Opasatica. In managing the reserve, the MELCC enjoys the collaboration and participation of other government representatives that have specific responsibilities in or adjacent to the territory.

6.2 Monitoring

As mentioned in section 2, “Conservation and development of Réserve de biodiversité Opasatica”, measures will be taken toward monitoring the status of the natural environment, in collaboration with the following local and regional partners: municipal stakeholders, partners in the areas of environment, recreation and education, and the occupants and users of the territory (cottagers, hunters, fishers, trappers, etc.).

6.3 Participation of stakeholders

As mentioned in section 2, “Conservation and development of Réserve de biodiversité Opasatica”, the MELCC will seek the

collaboration and participation of stakeholders in managing the reserve. Its intention is to draw up an action plan to guide management in protecting and enhancing the territory and its resources. The MELCC will prepare the plan in collaboration with the regional actors concerned. A participation and consultation mechanism for local stakeholders will be worked out by the MELCC on the basis of local and regional territorial realities.

Management of the biodiversity reserve will respect the following conservation principles:

- maintain natural ecosystem dynamics;
- restore or facilitate the restoration, where necessary and in the medium term, of damaged ecosystems;
- respect the support capacity of ecosystems;
- maintain non-industrial harvesting activities, without encouraging their development;
- gather and disseminate knowledge about the natural and cultural heritage;
- participate in the management of adjacent areas to ensure harmonization with the conservation objectives pursued within the biodiversity reserve.

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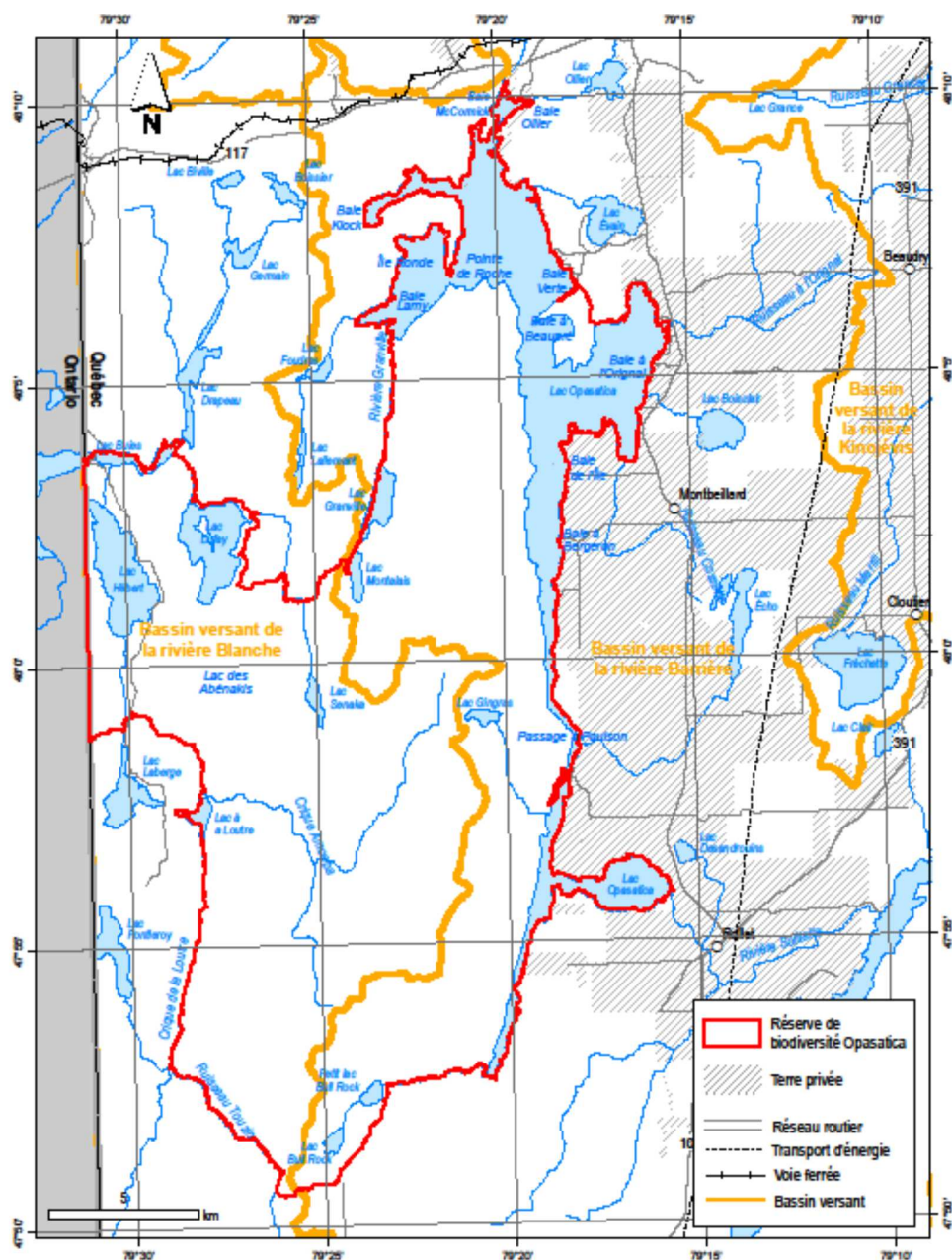
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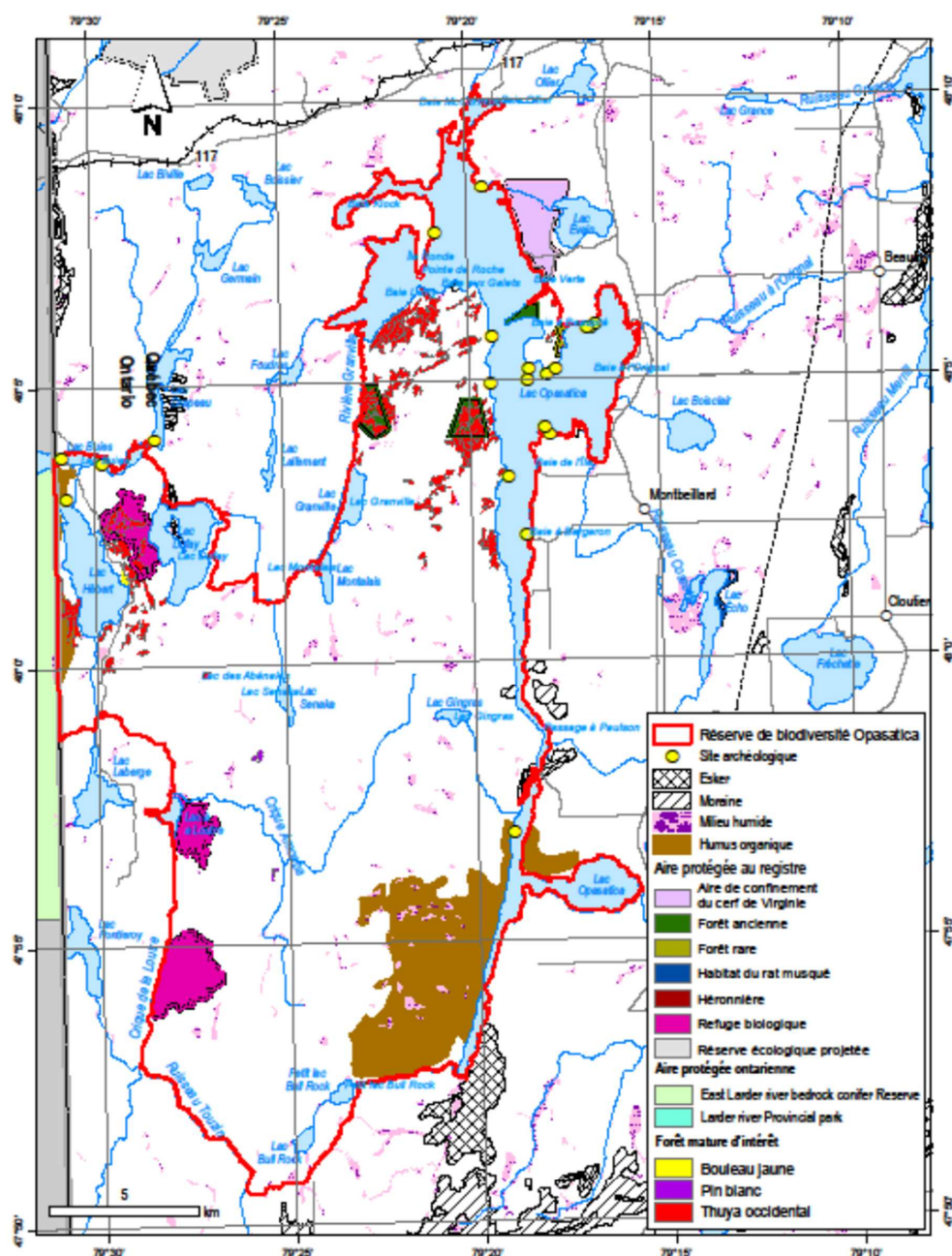
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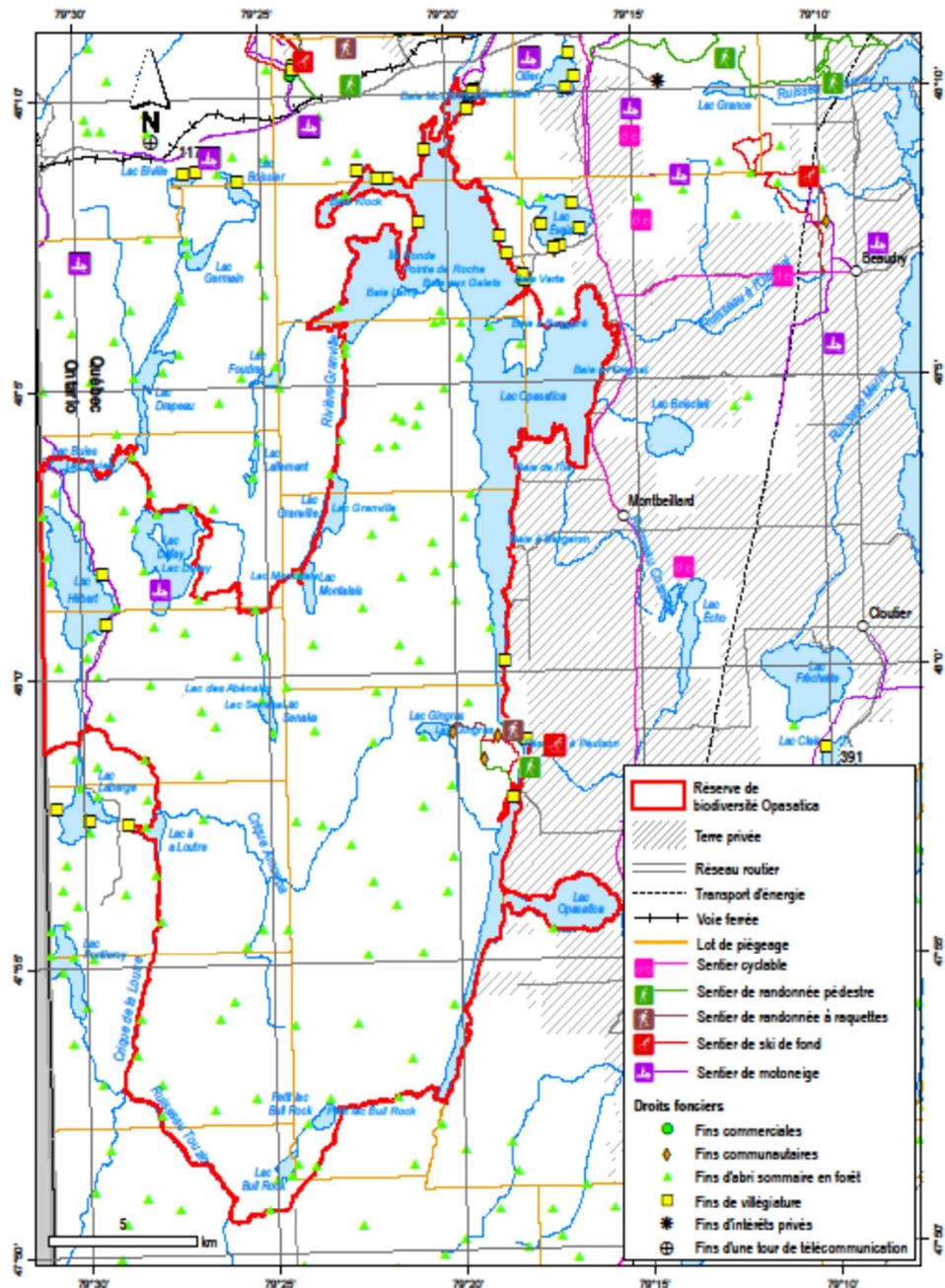
Appendix 1 — Réserve de biodiversité Opasatica: Boundaries and location



Appendix 2 — Réserve de biodiversité Opasatica: Elements of ecological interest



Appendix 3 — Réserve de biodiversité Opasatica: Land occupation and uses



Appendix 4 — Réserve de biodiversité Opasatica: Zoning

