



Protected areas  
in Québec:

A Lifelong Heritage

## Réserve de biodiversité des Buttes-et-Buttons- du-Lac-Panache



CONSERVATION PLAN

Québec 

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## CONTENTS

### Introduction

- 1 The territory of Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache
  - 1.1 Official toponym
  - 1.2 Boundaries and location
  - 1.3 Ecological portrait
    - 1.3.1 Physical environment
    - 1.3.2 Biological environment
    - 1.3.3 Ecological representativeness
  - 1.4 Land occupation and uses
    - 1.4.1 Particular heritage element
- 2 Conservation and management issues
  - 2.1 Introduction
  - 2.2 Protection of biodiversity
  - 2.3 Protection of archeological sites
  - 2.4 Development activities
  - 2.5 Knowledge acquisition and environmental monitoring
  - 2.6 Conservation and management objectives
- 3 Zoning
- 4 Activity framework applicable to Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache
  - 4.1 Activity framework established by the Natural Heritage Conservation Act
  - 4.2 Activity framework established by the Regulation respecting the Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache
- 5 Activities governed by other laws
- 6 Management
  - 6.1 Responsibilities of the Minister of the Environment and the Fight against Climate Change
  - 6.2 Monitoring
  - 6.3 Participation of stakeholders

### Bibliographical references

#### Appendix 1 — Boundaries and location

#### Appendix 2 — Occupation and uses

#### Appendix 3 — Existing vegetation and potential vegetation

#### Appendix 4 — Zoning

## Introduction

By Order in Council No. 445-2008 of May 7, 2008, pursuant to section 27 of the *Natural Heritage Conservation Act* (chapter C-61.01), the government authorized the Minister of Sustainable Development, Environment and Parks to create Réserve de biodiversité projetée des Buttes-et-Buttons-du-Lac-Panache, and approved the boundaries and conservation plan proposed for it. The creation of this provisional protected area by the ministerial order of May 29, 2008 (2008, G.O. 2, 2124) came into force on June 11, 2008 for a duration of four years. This provisional protection status was extended to June 11, 2020 by order of the Minister of Sustainable Development, Environment and Parks on May 11, 2012 (2012, G.O. 2, 1552).

On January 26, 2012 the Minister of Sustainable Development, Environment and Parks (MDDEP) mandated the Bureau d'audiences publiques sur l'environnement (BAPE) to hold public consultations on ten proposed protected areas in the Saguenay–Lac-Saint-Jean region, one of them being Réserve de biodiversité projetée des Buttes-et-Buttons-du-Lac-Panache. 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 February 13, 2012 and concluded on July 20 of the same year. The consultation was held in March and April 2012 in Saguenay and Saint-Félicien. The BAPE's inquiry and public hearing report (No. 287) was

submitted to the Minister on July 20, 2012 (BAPE, 2012).

With a view toward granting the territory permanent protection status, the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC), in collaboration with Le Domaine-du-Roy MRC and in accordance with the BAPE's report, modified the boundaries of the protected area along the shore of Lac aux Iroquois, to exclude a larger area for resort purposes. The MELCC, the MRC and the Ministère de l'Énergie et des Ressources naturelles (MERN) also worked out a process for dealing with resort leases that are not in compliance with regulations. Additionally, the protected area was enlarged by 5.8 km<sup>2</sup> in response to proposals at the public hearings, notably by forestry company Produits Forestiers Résolu.

## **1 The territory of Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache**

### **1.1 Official toponym**

The toponym “Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache” reflects the features that define the relief of the area, as well as the name of its largest lake.

### **1.2 Boundaries and location**

The boundaries and location of Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache are shown on the map comprising Appendix 1. Covering an area of 129.2 km<sup>2</sup>, the reserve lies between 48° 13' and 48° 25' north latitude and between 72° 28' and 72° 42' west longitude, about 25 km southwest of Roberval. It is partly in the unorganized territory of



Lac-Ashuapmushuan and partly in the municipality of Sainte-Hedwidge (northeastern point), both of which are in the heart of Le Domaine-du-Roy MRC, in the administrative region of Saguenay–Lac-Saint-Jean. The reserve is divided into two sections by the exclusion of the right of way for power lines 7024 and 7025.

Wherever possible, the boundaries of the reserve 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 banks of a water body (e.g. Lac Merlin in the northwest), the real boundary is the natural high-water mark. Where the boundary runs along a forest road, the right of way of the road is excluded from the protected area. 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 11677 (May 9, 2018) 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 536703.

### **1.3 Ecological portrait**

#### **1.3.1 Physical environment**

The biodiversity reserve is in the Southern Laurentian natural province, near its northeastern boundary (Li and Ducruc, 1999). This ecological unit corresponds to a segment of Grenville geological province, the roots of a chain of mountains formed nearly a billion years ago. At a more precise level, the reserve is in the Windigo massif natural region. In the northwestern part of the massif, where various tributaries of the Saint-

Maurice arise (including the Windigo, Trenché, Pierriche and Croche rivers), the highest mountains reach an elevation of 734 metres. The overall surface of the massif gently dips toward the southeast, where it is more or less horizontal until its contact with the Lac-Jacques-Cartier massif natural region, which lies to the east. The reserve itself is at the bottom of that gentle slope, and its elevation ranges between 350 and 525 metres. The landforms of the natural region here consist predominantly of mounds or large hillocks with rounded summits (elevation 450 to 500 m) separated by valleys (elevation 350 to 400 m).

The bedrock of the natural region consists of metamorphic rocks (migmatite and gneiss) along with igneous rocks (granitoids), created before the Grenville orogeny, in an orogenic cycle known to geologists as the "polycyclic allochthonous". The bedrock of the reserve itself consists essentially of granitoid orthogneiss, migmatite and orthopyroxene granitoids, the last of which underlie the northern part of Lac Panache and the low hill north of it, whose summit is the highest point in the reserve.

The dominant surface deposits of the reserve (67.8%) are undifferentiated till (glacial deposits with no particular morphology). Fluvio-glacial and fluvial deposits cover 16% of the reserve, concentrated around Rivière Croche, Ruisseau Frog and lakes Iroquois and Panache. Lastly, organic deposits account for 4.9% of the reserve, while rocky outcrops and thin soil with frequent outcrops account for another 4.5%. More than 82% of the soils of the reserve enjoy good to moderate drainage.

Occupying 6.3% of the territory, the hydrographic network includes nearly 200 bodies of water, most of them quite small, with a great number being the product of beaver dams. Lac Panache (173 ha) and Lac aux Iroquois (59.4 ha) are the largest lakes. The reserve protects the headwaters of Rivière aux Iroquois, which flows toward Lac Saint-Jean, and Rivière Croche, which empties into the Saint-Maurice. In the southeast part of the reserve, a few areas drain into the Rivière Ouïatchouaniche watershed, which flows toward Lac Saint-Jean.

According to Gerardin and McKenney (2001), the territory of the reserve is subject to a subarctic continental climate, subhumid with a medium growing season. Average temperatures are on the order of -1.5 to -1.9°C. The average annual precipitation ranges from 800 mm to 1359 mm, while the average growing season is from 150 to 179 days.

### 1.3.2 Biological environment

The reserve lies in a band where the natural vegetation is balsam fir/white birch forest, between the fir/yellow birch zones of Saguenay–Lac-Saint-Jean and Mauricie. It is in the bioclimatic subdomain of the western part of the fir/white birch forest, reflecting a dryer continental climate, with a relatively short forest fire cycle. Productive forest environments dominate the landscape, with woodlands occupying 82% of the area of the reserve (Table 1). However, old-growth forests (> 90 years) are nearly absent (just 2.1% of the reserve), while young and regenerating forests predominate (97.9%), as a result of the many natural and anthropic disturbances of the last century.

*Table 1: Forest summary of the territory of Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache (MFFP, SIEF, 4<sup>th</sup> ten-year survey)*

Type of cover		Area (ha)	Proportion(%)
Forest	Deciduous	1891.1	14.6
	Mixed	3259.5	25.2
	Coniferous	4749.5	36.7
	Regenerating	712.8	5.5
Other	Alder stands	213.7	1.7
	Wet barrens	545.5	4.2
	Dry barrens	684.3	5.3
	Water	816.6	6.3
	Island	2.8	0.0
	Flooded	45.3	0.4
	Other	0.4	0.0
<b>Total</b>		<b>12 932.8</b>	<b>100.0%</b>

Fires and logging have largely determined the forests that are found today, consisting primarily of grey pine stands (35.9%) and shade-intolerant deciduous stands (35.6%). Practically all the reserve's woodlands have been disturbed in the last century, and 9% of the territory was logged quite recently (1993-2015).

In 2009 the MELCC did a summary plant survey in the territory of the reserve. The following species were observed: lowbush blueberry, Indian-root, large-leaved aster, paper birch, leatherleaf, Canada fly-honeysuckle, creeping snowberry, yellow clintonia, goldthread, bunchberry, northern bush-honeysuckle, trailing arbutus, mountain maple, black spruce, sheep laurel, Labrador tea, twinflower, flat-branched

tree-clubmoss, Canada mayflower, tamarack, interrupted fern, white wood-sorrel, trembling aspen, early meadow-rue, grey pine, red pine, broad-leaved meadowsweet, sessile-leaved twisted-stalk, northern starflower, and wild raisin.

These observations confirmed those made at five observation points studied in 1991 for the MFFP's ecological inventory program (1986-2000), which also reported the following species: velvet-leaved blueberry, serviceberry sp., wild sarsaparilla, American green alder, pin cherry, reindeer moss, lady's slipper, fork moss sp., northern oak fern, skunk currant, knight's-plume moss, red-stemmed feathermoss, running clubmoss, mountain holly, horsetail sp., haircap moss sp., bracken fern, shinleaf, willow sp., goldenrod sp., American mountain-ash, rusty peat moss, peat moss sp., and painted trillium.

Aquatic environments occupy 6.3% of the reserve, while bogs account for 3.9%, one of them being an ombrotrophic bog of nearly 100 hectares, beside Lac Plat in the western part of the reserve. The Ruisseau Frog sector, near the western boundary, is another area of interest for the preservation of wetlands.

#### **ECOLOGICAL INTEGRITY**

*The condition of a protected area that is considered characteristic of its natural region and likely to persist, including abiotic [non-living] components and the composition and abundance of native species and biological communities, rates of change and supporting processes.*

Adapted from the definition in the Canada National Parks Act (S.C. 2000, c. 32).

#### **CONSERVATION NUCLEUS**

*An area where the protection of biodiversity, ecological integrity, the natural environment and other similar values take precedence over usage values.*

Brassard et al., 2010.

With regard to wildlife, no survey specific to the territory of the reserve has been done. Besides the species commonly exploited for fishing, hunting and trapping, the reserve is likely home to a representative sample of species that frequent the southern part of the boreal forest (balsam fir/white birch), except for those more associated with old-growth forests. There are brook trout in nearly every body of water, along with monkfish, minnows (lake chub and common shiner), suckers (white and longnose), fallfish and yellow perch

### **1.3.3 Ecological representativeness**

Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache will enrich the representation of the characteristic ecosystems of the Windigo massif natural region in Québec's protected areas network. Together with Réserve écologique J.-Clovis-Laflamme, the reserve forms a conservation nucleus of nearly 140 km<sup>2</sup> whose biodiversity components (types of physical environments and assemblages of associated species) will be assured greater ecological integrity as time goes by (see sidebar).

Expanding a conservation nucleus helps to ensure its long-term effectiveness in protecting ecosystem functionality, while reducing its vulnerability to natural disturbances and changes in the surrounding landscape.

In terms of configuration, the edge effect can have a significant impact on protected areas, depending on their size and shape. Ideally, a protected area should be round, limiting the ratio of perimeter to contained area. In addition, conservation biology theory posits that a protected area should be large enough to contain all the successional stages of forest ecosystems, larger therefore than any disturbance that could affect it. However, with its 129.2 km<sup>2</sup> (139.4 km<sup>2</sup> including the ecological reserve), the biodiversity reserve is less than half the size of two forest fires that swept nearby in recent decades (fires of over 300 km<sup>2</sup> in 1983 and 1995, both less than 100 km away).

At level 3 in the ecological reference framework of Québec, the reserve is part of the Buttes-du-lac-des-Commissaires physiographic complex. At level 4 it overlaps four ecological districts, all characterized by the presence of mounds covered by deposits comparable to those in the reserve. Thus, in physiographic terms the reserve is representative of the ecosystems present in these ecological units. Its various types of deposits are also represented in similar proportions to those of the natural region. Its proportion of aquatic environments is slightly greater than that of the natural region (6.3% versus 5.6%, likely due to its location at the bottom of a slope). However, its general

hydrography (numerous lakes of small size) is comparable to that of the natural region.

On the other hand, in biological terms the present-day forest landscapes of the reserve and environs are very different, in both structure and composition, from the natural landscapes that would normally be there (Grondin *et al.* 2010). The latter authors recommend that the white birch/balsam fir stands typical of the Lac St-Jean area (western mixed forest) be the focus of forest restoration efforts, to gradually bring their structure and composition closer to those of natural landscapes. The rarity of certain types of environment (especially old-growth forest and balsam fir stands) and the over-abundance of shade-intolerant deciduous stands, bear out the fact that the present-day situation is not what it should be.

#### **1.4 Land occupation and uses**

The principal occupations and uses of the territory of Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache are shown on the map comprising Appendix 2.

Except for a small area to the south of Lac Panache, the reserve is almost entirely inside the ZEC de la Lièvre controlled harvesting zone, which dates from 1978. It is easily accessed by a class 1 forest road that leads to the ZEC's main reception post, about seven kilometres east of the eastern boundary of the biodiversity reserve. In winter, section 83 of the Trans-Québec snowmobile trail between Lac-Saint-Jean and Mauricie runs along two stretches of the northern boundary. Aside from the class 1 forest road, a number of secondary and tertiary forest roads

also provide access to parts of the reserve, particularly in the north, where large areas were stripped of forest just before provisional protection status was granted.

Apart from hunting and fishing, which are managed by the De la Lièvre ZEC, there are a fair number of cottages (44 resort leases) plus three temporary shelters (MRNF, 2012). Excluded from the reserve are the cottage sites along the shores of Lac aux Iroquois and Lac Philippe, the rights of way of power transmission lines MAD 19T and MAD 265T, and experimental forest 1083-Ross "C", where silviculture research is done. There is also single-phase distribution line RBV 237.

The reserve is part of fur-bearing animal management unit 48 (MFFP, Saguenay–Lac-Saint-Jean), and overlies six trapping grounds (leases with exclusive trapping rights). A canoe-kayak route crosses the reserve via Rivière Croche, then continues through Lac Panache. There is a backcountry campground in the northwest extremity of the reserve. ZEC de la Lièvre hopes to further develop recreational activities on its territory, and has prepared a plan to that end (Ouellet and Côté, 2005).

Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache is located entirely in the Nitassinan of the Mashteuiatsh Innu First Nation, as demarcated in Schedule 4.1 of the *Agreement-in-Principle of General Nature between the First Nations of Mamuitun and Nutashkuan and the Government of Québec and the Government of Canada*. In the sector containing the biodiversity reserve, there are territorial overlaps between the Mashteuiatsh Innu First Nation and the Attikamek

First Nation, under the Comprehensive Land Claim Negotiations (MRNF, 2012).

#### 1.4.1 Particular heritage element

The Lac Panache area is rich in Amerindian archeological sites from prehistoric times (12 000 to 450 years B.C.). In the 1960s, Abbé Robert Simard identified 19 archeological sites around Lac Panache (Simard, 1967). His report mentions that his own father, who worked in logging camps there in the early 1900s, had met Aborigines who spent the winter there. He also reports that log driving was done on Rivière Croche and that there was a system of locks on Lac Panache.

The Mashteuiatsh's Innus (also called Pekuakamiulnuatsh or Montagnais) refer to *Rivière Panache*, *Ishkin shipi* [eshkan shipi] in their documentation. A number of documents refer to their occupation of this area. The 1983 study by the Atikamekw Montagnais Council reveals that they too came to Lac Panache. Even in 1926, Montagnais families went to the Lac Panache and La Croche area each year. In 1980 the trip was done by car to the Panache forks, the rest of the journey being on foot through the brush. Historic paths and portages have been identified, notably between lakes Lucien and Philippe, Lac Souche and Grand lac Verreault, and between Ruisseau Frog and Lac de la Galette. Based on data from the Ministère de la Culture et des Communications, there are 21 known archeological sites around Lac Panache. The whole area is a very important part of the heritage of the Mashteuiatsh Innu First Nation (Pekuakamiulnuatsh Takuhikan, 2012).

## **2 Conservation and management issues**

### **2.1 Introduction**

Generally, a biodiversity reserve is dedicated to protection of the natural environment, nature discovery and recreation. For this reason, activities that could have a significant impact on ecosystems and biodiversity, particularly of an industrial nature, are prohibited. Less harmful activities, such as those involving recreation, wildlife, ecotourism or education, are permitted in this type of protected area. However, the management framework to which they are subject is conditioned by conservation issues specific to each biodiversity reserve. The conservation and other issues to be taken into account for Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache, and the orientations and objectives to which they give rise, are set out in the sections that follow.

### **2.2 Protection of biodiversity**

#### **Restoration of forest ecosystems**

The first conservation issue concerns the need to gradually restore the characteristic ecosystems of the Windigo massif natural region. The absence of industrial activities will allow the average age of forest stands to slowly increase. The reserve already includes a territory designated as a “biological refuge” (#02251R025, see Appendix 2) under the *Sustainable Forest Development Act*. Created in 2008, the refuge has preserved one of the rare areas of old-growth forest in the reserve. Based on the ecological types (and potential vegetation) identified in the ecoforestry information system, it can be expected that coniferous forests will eventually

dominate the territory of the reserve. Ultimately, balsam fir stands (fir/black spruce and fir/white birch) could cover up to 55% of the reserve, with black spruce stands occupying another 30%. Fir stands should occupy the uplands, while black spruce stands should be more common on the lower slopes. Appendix 3 illustrates the expected long-term theoretical evolution of the reserve's forest cover. The corresponding objective for this conservation issue is: *Avoid any development that could reduce the age of the forest cover.*

#### **Protection of lacustrine ecosystems and near-shore environments**

Containing the headwaters of the Croche, Aux Iroquois and Ouiatchouaniche rivers, the hydrographic network of the reserve has great ecological integrity and excellent water quality. Accordingly, maintaining the integrity of aquatic, wetland and near-shore environments is another conservation issue for the reserve. The corresponding objective is: *Avoid any new development that could degrade the quality of aquatic, wetland or near-shore environments.*

### **2.3 Protection of archeological sites**

A crucial management issue for the reserve is to ensure the protection of the shores of Lac Panache, where there is a concentration of archeological sites. The corresponding objective is: *Prohibit any new development around Lac Panache.*

### **2.4 Development activities**

Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache offers numerous attractions for recreation (hunting, fishing, vacationing, canoeing). It is readily accessible by a class 1

forest road, and is less than 30 km from provincial Route 169. It is mostly frequented by hunters, fishers and trappers, along with cottagers. ZEC de la Lièvre is responsible for wildlife development, harvesting and conservation, and for facilitating access to users.

Practised in accordance with the applicable laws and regulations, these activities by users of the territory are compatible with the status of biodiversity reserve, and can continue to be practised normally.

The MELCC wants all concerned stakeholders to be involved in preparing an action plan and refining the zoning outline in the present conservation plan. This will help ensure the achievement of the conservation objectives, in particular the protection of sensitive or fragile natural environments, the recovery of old-growth forest and the protection of Amerindian archeological sites. To encourage participation by all stakeholders who use the territory, the following objectives have been set: (1) *Establish participative and collaborative management.* (2) *Inform all users as to the conservation and management objectives being pursued in the protected area.*

## **2.5 Knowledge acquisition and environmental monitoring**

As sketched in section 1.3, existing knowledge about the ecosystems of the reserve is fragmentary, so knowledge acquisition will be essential with regard to all objectives concerning the natural heritage. The knowledge acquired will facilitate monitoring of the natural environment, and 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.

### **Specific objectives:**

- Perform targeted surveys and subsequent monitoring.

The MELCC will target needs related to knowledge gaps about biodiversity. With the help of regional partners, the MELCC will establish an inventory of the plant and animal species found in the reserve. The subjects of surveys or research to prioritize will be determined later, but will reflect existing or anticipated ecological problems.

## **2.6 Conservation and management objectives**

Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache is a “protected area” as defined in the *Natural Heritage Conservation Act*, and appears in the *Registre des aires protégées du Québec* constituted under the Act. Thus, it was primarily created to ensure the protection and maintenance of the area’s biological diversity, with the associated natural and cultural resources. In addition, protecting this territory enhances the representativeness of the national and regional protected areas network, since it holds numerous ecological components of interest that are representative of the characteristic ecosystems of the Windigo massif

natural region. For the government, the protection of these components and ecosystems, described in section 1.3, is a major objective. However, it is important to note that this protection will allow the pursuit of traditional activities by members of the Aboriginal communities who frequent the land, as well as the recreotourism activities currently practised there.

Taking into account the issues set out in sections 2.1 to 2.4, and the geographical sectors of interest corresponding to the elements described in section 1, the conservation and management objectives specific to the reserve are as follows:

- Promote the restoration of forest stands typical of the balsam fir/white birch domain.
- Protect wetlands and maintain water quality.
- Prohibit any additional development around Lac Panache.
- Establish participative and collaborative management.
- Inform all users as to the conservation and management objectives being pursued in the protected area.

To achieve those objectives, the conservation and management of the reserve will be guided by an activity framework whose several dimensions are set out in sections 4, 5 and 6 of this plan.

### **3 Zoning**

Taking into account the ecosystems, occupation and use of the territory, along with the present condition of the natural environment and the protection and management objectives, the biodiversity reserve has been subdivided into three zones. While all three enjoy the same degree of legal protection and have the same activity framework, their protection measures and

development possibilities reflect their respective features

The three zones are presented in the map comprising Appendix 4. The MELCC will take this zoning into account in managing the reserve and when evaluating applications for authorization concerning activities or developments.

The zones are:

Zone I: Lac Panache low hill

Zone II: Lac Plat basin

Zone III: Lac aux Iroquois mounds and hillocks

#### ***Zone I: Lac Panache low hill***

This zone includes all the southern part of the reserve, including Lac Panache and the low hill to the north of it. The main concern in this zone is to protect the known archeological sites and the general archeological potential. The thinness of surface deposits on the heights, and the presence of a few old forests in the south (notably in biological refuge 02251R025), demand special attention in this zone.

#### ***Zone II: Lac Plat basin***

North of the previous zone and west of Réserve écologique J.-Clovis-Laflamme, this zone features an abundance of wetlands along with fluvioglacial and fluvial deposits. It has been heavily disturbed by logging, but a few middle-age forests remain. The main concern in this zone will be to protect the wetlands and aquatic environments. Natural restoration of the forests and the maintenance of a buffer around the ecological reserve are also important issues here.



### **Zone III: Lac aux Iroquois mounds and hillocks**

Zone III contains the eastern part of the reserve, and borders on the south and east boundaries of Réserve écologique J.-Clovis-Laflamme. Crossed by a major hydroelectric line, and almost wholly in the municipality of Sainte-Hedwidge, Zone III is the main gateway to the biodiversity reserve. The proximity of the reception post of ZEC De la Lièvre and the Lac Brousseau campground mean that it will be especially important to build awareness about conservation issues. Of all the zones, this is the most heavily disturbed by logging. The area of cottages along Lac aux Iroquois is in this zone, but excluded from the reserve. As with Zone II, restoring natural forests and maintaining a buffer around the ecological reserve are especially important issues here, given the significant human presence. The MELCC will seek the collaboration of all stakeholders in preserving the few remaining old-growth forests and wetlands, and in promoting the natural restoration of regenerating woodlands.

## **4 Activity framework applicable to Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache**

The activity framework applicable to Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache follows from the provisions of the *Natural Heritage Conservation Act* and the Regulation respecting the Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache.

### **4.1 Activity framework established by the Natural Heritage Conservation Act**

Activities carried out within the reserve are primarily governed by the provisions of the *Natural Heritage Conservation Act*.

Under the Act, the principal activities prohibited in a territory with the status of biodiversity reserve are the following:

- mining and gas or oil extraction or exploration;
- forest management within the meaning of section 4 of the *Sustainable Forest Development Act* (chapter A-18.1);
- the development 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 des Buttes-et-Buttons-du-Lac-Panache**

Accordingly, the provisions set out in Regulation respecting the Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache present additional prohibitions beyond those already stipulated in the Act. Their purpose is to set conditions for the performance of certain permitted activities, thus ensuring better protection of the natural environment in accordance with the principles of conservation and other management objectives for the biodiversity reserve. Certain activities are therefore subject to prior authorization by the Minister.

The measures contained in Regulation specifically concern new interventions. They do not affect activities that are already being practised or facilities that are already present, so many existing uses are therefore preserved.

However, for activities subject to authorization, the provisions set out in Regulation do not identify which activities could be refused authorization, being considered incompatible with the vocation of the biodiversity reserve. 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 is 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](http://www.mddelcc.gouv.qc.ca/biodiversite/aires_protegees/regime-activites/regime-activite-reserve-bio-aqua-en.pdf).

For certain activities, Regulation also includes exemptions to the requirement for prior authorization.

## 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.

Within the biodiversity reserve, a particular legal framework may govern permitted activities under the following categories:

- **Protection of the environment:** measures set out in particular by the *Environment Quality Act* (chapter Q-2) and its regulations.
- **Archeological research and discoveries:** measures set out in particular 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 relating 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 set out in particular by the *Act respecting the lands in the domain of the State* (chapter T-8.1) and the *Watercourses Act* (chapter R-13).
- **Issuance and oversight of forest development permits** (harvesting of firewood for domestic purposes, wildlife development, recreational development); **delivery of authorizations** (forest roads) and **protection of biological refuges:** 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 the Environment and the Fight against Climate Change**

The Minister of the Environment and the Fight against Climate Change is responsible for the management of Réserve de biodiversité des Buttes-et-Buttons-du-Lac-Panache. 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 des Buttes-et-Buttons-du-Lac-Panache. In its management, the MELCC enjoys the collaboration and participation of other government representatives that have specific responsibilities in or adjacent to the territory. Since the territory is accessible and frequented by humans, the MELCC intends to take a “participative” approach to management. The principal local and regional stakeholders concerned will be invited to participate in management activities. Depending on needs, their participation could take place through the creation of a management committee, zoning refinements, the development and implementation of an action plan, and follow-up on actions taken.

### **6.2 Monitoring**

As mentioned in section 2, measures will be taken toward monitoring the status of the natural environment, in collaboration with the various stakeholders. Botanical and wildlife surveys may also be conducted.

### **6.3 Participation of stakeholders**

To fulfill its management responsibilities, the MELCC will seek the collaboration and participation of the main stakeholder, including Le Domaine-du-Roy MRC, Aboriginal communities whose members frequent the territory, the municipality of Sainte-Hedwidge, ZEC De la Lièvre, the holders of land rights, and the regional units of other government departments that have responsibilities in the biodiversity reserve.

## Bibliographical references

Brassard, F. A.R. Bouchard, D. Boisjoly, F. Poisson, A. Bazoge, M.- A. Bouchard, G. Lavoie, B.Tardif, M. Bergeron, J. Perron, R. Balej et D. Blais. Portrait du réseau d'aires protégées au Québec. Période 2002-2009. Ministère du Développement durable, de l'Environnement et des Parcs, 2010, 229 p.

Gerardin, V. et D. McKenney, 2001. *Une classification du Québec à partir de modèles de distribution spatiale de données climatiques mensuelles : vers une définition des bioclimats du Québec*, ministère de l'Environnement du Québec, Service de la cartographie écologique no 60, 2001, 40 p. [En ligne : <http://www.mddelcc.gouv.qc.ca/changements/classification/model-clima.pdf>]

GRONDIN, Pierre, Denis HOTTE, Yan BOUCHER, Patrice TARDIF et Jean NOËL, 2010. Comparaison des paysages forestiers actuels et des paysages forestiers naturels du sud de la forêt boréale du Québec à des fins d'aménagement écosystémique. Mémoire de recherche forestière n° 158. Ministère des Ressources naturelles et de la Faune, Direction de la recherche forestière. 96 p.

Li, T. et J.-P. Ducruc, 1999. *Les provinces naturelles. Niveau I du cadre écologique de référence du Québec*, ministère de l'Environnement, 20 p.

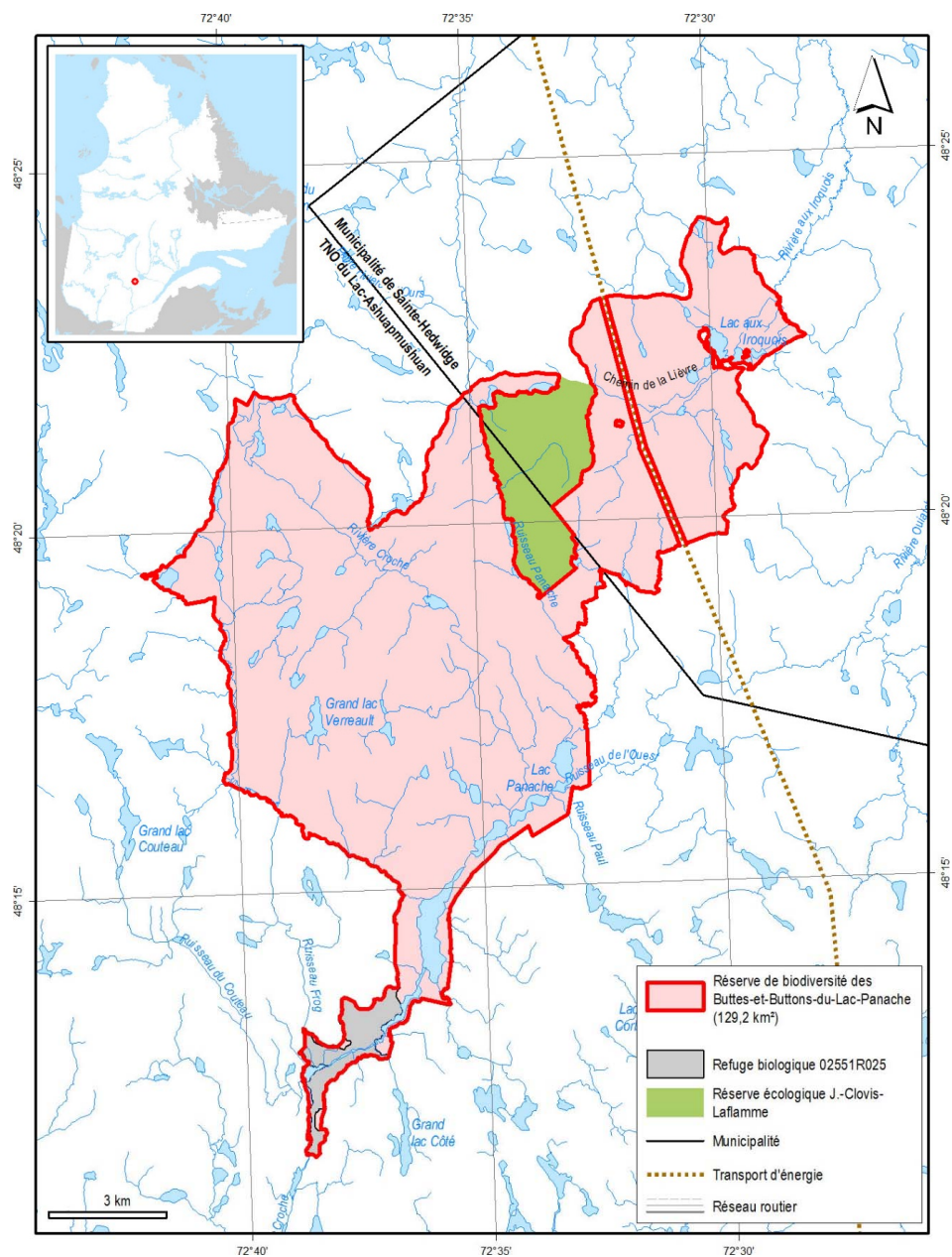
Ministère des Ressources naturelles et de la Faune, 2012. Plan d'affectation du territoire public : Saguenay–Lac-Saint-Jean. Direction des affaires régionales du Saguenay–Lac-Saint-Jean. 820 pages + cartes [En ligne : [http://mern.gouv.qc.ca/publications/territoire/planification/cartes\\_saguenay/saguenay-patp.pdf](http://mern.gouv.qc.ca/publications/territoire/planification/cartes_saguenay/saguenay-patp.pdf)]

Ouellet, N. et P.-M. Côté, 2005. Plan de développement d'activités récréatives - zec de La Lièvre. Regroupement régional des gestionnaires de zecs du Saguenay–Lac-Saint-Jean, 114 p.

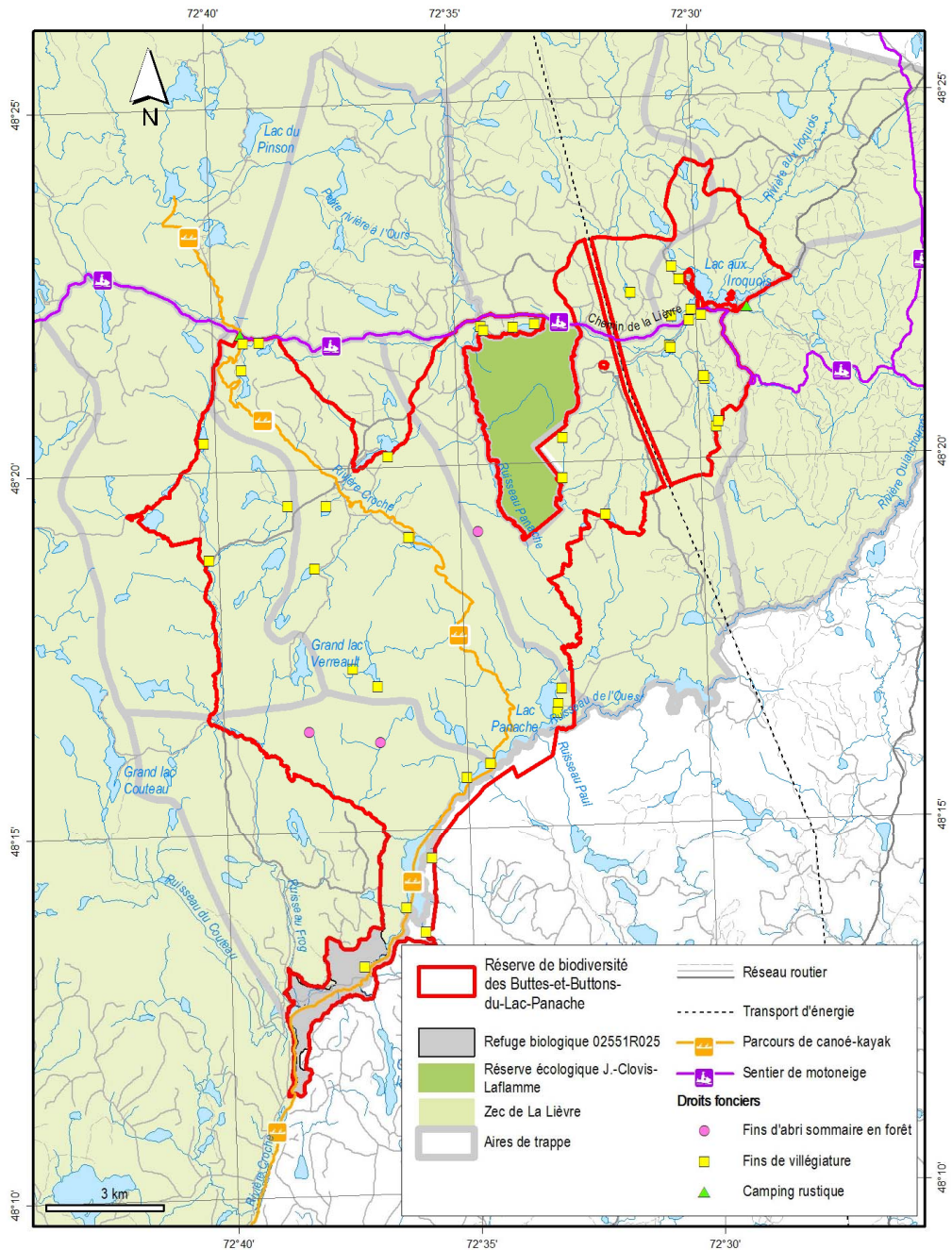
Pekuakamiulnuatsh Takuhikan, 2012. Mémoire pour l'audience publique du BAPE de 2012 sur les 10 aires protégées projetées dans la région 02. 2 avril 2012, 18 p. [En ligne : [http://www.bape.gouv.qc.ca/sections/mantats/10reserves\\_saguenay-lac-saint-jean/documents/DM12.pdf](http://www.bape.gouv.qc.ca/sections/mantats/10reserves_saguenay-lac-saint-jean/documents/DM12.pdf)]

Simard, R., 1967. Notes sur les sites de la Grande décharge et du lac Panache. Ministère de la Culture et des Communications. 1 page.

## Appendix 1 — Boundaries and location

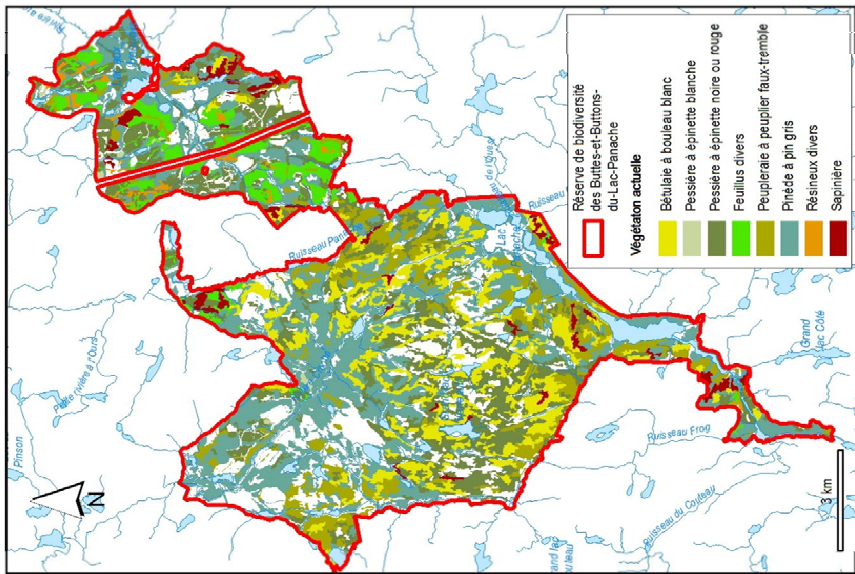
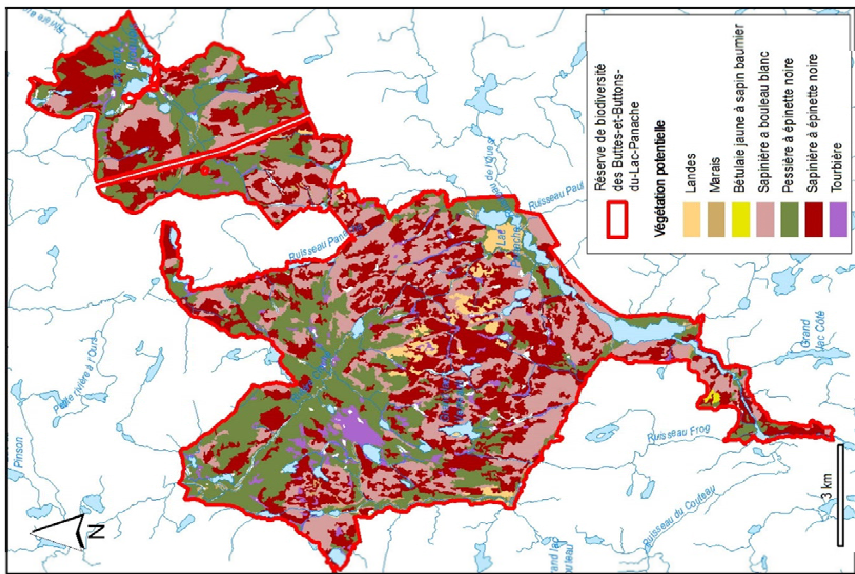


## Appendix 2 — Occupation and uses





## Appendix 3 — Existing vegetation and potential vegetation



## Appendix 4 — Zoning

