



Frontenac

Background Information ~ Summary

Introduction

Frontenac Provincial Park had its origins as a park reserve in the 1960s when planners and citizens recognized the need for outdoor recreational opportunities in southeastern Ontario and the wisdom of protecting large tracts of land in the Frontenac Axis lake country. A park planning study was initiated in 1973; this resulted in Frontenac's regulation as a Natural Environment class park under the *Provincial Parks Act* in 1974, and approval of a Master Plan Report (now known as a management plan). The 1974 Master Plan Report is currently under review, and will be replaced by a new management plan.

Planning and management policies for provincial parks state that Natural Environment class parks *incorporate outstanding recreational landscapes with representative natural and historical features to provide high quality recreational and educational experiences*. The Master Plan Report introduced Frontenac as a "Threshold Wilderness", with the vision that the park would provide an alternative to developed, facility-intensive recreation, with opportunities for visitors to develop the skills, knowledge and behaviour necessary for personally rewarding and environmentally sensitive wilderness travel experiences. Park activities have come to include backpacking, hiking, canoeing, cross-country skiing and interior camping. Over the years, the park has attracted a dedicated clientele.

Since 1974, the Ministry of Natural Resources (MNR) has evolved its mandate for sustainable development and ecological sustainability through the conservation of biodiversity. As a branch of the MNR, Ontario Parks plans, develops and manages the provincial parks system to ensure that significant natural, cultural and recreational environments are protected, while providing a variety of outdoor recreational opportunities. Since the Master Plan was created, park policy has evolved along with Ontario's mission toward preserving and restoring healthy, functioning natural ecosystems.

A management plan outlines management policies for an individual park relating to resource stewardship, development and operations. It states how individual parks will contribute to achieving the objectives of the provincial parks system, and sets out policies that will maintain or enhance that contribution over a 20-year period. A management plan is reviewed or amended as needed to provide the flexibility to accommodate changes required by new circumstances affecting the park.

This summary provides a brief overview of the key features and values of the park described in detail in the *Frontenac Provincial Park Background Information* document. This information will be used in subsequent stages of the management planning process and is essential to the production of a management plan.

Frontenac's Setting and Use

Frontenac Provincial Park is located approximately 30 km north of Kingston, 240 km east of Toronto, and 120 km southwest of Ottawa. With over 5,200 ha of lakes, creeks, streams and diverse Precambrian terrain to explore, the park has become a popular recreational destination. Opportunities for outdoor activity abound at the park, including hiking, cross-country skiing, snowshoeing, nature viewing, swimming, backcountry camping, picnicking, canoeing, kayaking and fishing. Power boats may only be operated on boundary lakes. Hunting is not permitted in the park.

There is only one designated entry point to the park; nearby, the Trail Centre is the park's only permit-issuing office. Unauthorized park access through other locations—including boundary lakes—has raised concerns about damage to sensitive natural features and trespassing on private lands, and is an on-going problem for the park.

Half of all park visitors come from the large urban centres of Toronto, Ottawa and Montréal. A local market area of Frontenac County and the City of Kingston accounts for about 21% of visitors, while most other visitors (24%) come from smaller centres in southern Ontario. Visitor use of Frontenac Provincial Park grew steadily from its inception until the mid 1990s when use levels reached a plateau. Since 1995, the park has attracted, on average, 18,400 day use visits and 29,500 total visits annually, and camper-nights have grown to more than 11,000. Park use has levelled to an average 1% increase annually, with day users accounting for 62% of park visitors and campers, 38%.

Adjacent Land Use

Land around the park is, for the most part, privately owned. Surrounding land uses include farming, seasonal and year-round homes, tourist accommodation, small business services and utilities. There are some large conservation properties nearby, as well as several smaller parcels of privately-owned conservation land.

In 1998 the geographic townships of Bedford, Loughborough, Portland and Storrington amalgamated. An Official Plan for the newly-formed Township of South Frontenac was approved in 2003. Frontenac Provincial Park straddles the boundary between the geographic townships of Loughborough and Bedford, and while the Official Plan does not specifically address the park, its goals for natural heritage, cultural heritage and recreation generally support the natural heritage goal of the park.

Frontenac Provincial Park is adjacent to the Frontenac Arch Biosphere Reserve, which was officially designated in 2002 by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The park's location within the Frontenac Axis puts it within the area of the Algonquin to Adirondacks (A2A) conservation initiative.

Park Land Tenure and Boundary

The park currently encompasses an area of 5,214 ha regulated under the *Provincial Parks Act* as Frontenac Provincial Park. An additional parcel of approximately 7 ha was acquired in 2000, but has not yet been regulated. The planning area includes both of these parcels, as well as some Crown islands in Big Clear and Buck Lakes. In the future, Crown lands adjacent to the park boundary and Crown islands in boundary lakes may be considered for addition to the park.

The Park Superintendent and the South Eastern Zone administrative office of Ontario Parks are responsible for the lands and waters within the park boundary. In many locations, however, the park boundary is not clearly marked on the ground or water. This ambiguity has resulted in encroachments, timber harvest, cattle grazing, hunting, trespass and other concerns along the park boundary. A clear definition of the boundary would help resolve many of these concerns.

Existing Park Facilities and Zoning

The park has limited development, in keeping with the “Threshold Wilderness” concept advocated in the 1974 Master Plan. Most of the Park is currently designated as natural environment zone, with several nature reserve zones in areas of highest ecological significance. Zoning will be reviewed through the management planning process. Development in the natural environment zone is limited to 48 interior campsites. These are located in clusters at 13 sites, and can be reached by canoe or via the park’s network of 170 km of hiking trails.

An access zone extends along the road from the Park Office and Trail Centre to the Big Salmon Lake access point. The Trail Centre provides parking for 30 cars. A 20-car parking lot for hiking access and additional vehicles is located at Arab Lake. The access point at Big Salmon Lake provides a staging area to launch canoes, as well as parking for 30 cars. All visitors and vehicles require a valid permit from the Trail Centre to enter the park.

The Trail Centre was built during the 1980s and contains facilities for registration and administration, as well as visitor information and interpretive displays. Inside, a small amphitheatre overlooking South Otter Lake provides space for seminars and information sessions presented by park staff, members of the Friends of Frontenac Provincial Park, and other occasional instructors of wilderness skills programs. A small indoor theatre is used to present films and slide shows. Ontario Parks also sells merchandise, park maps and a limited array of camping supplies at the Trail Centre.

Day use activities focus on the area surrounding the Trail Centre, and include picnicking, interpretive trails, and canoeing opportunities on South Otter Lake, Big Salmon Lake and nearby lakes linked by portages. During the winter, an approximately 4 km cross-country ski trail is maintained along Big Salmon Lake Road.

Social and Economic Context

Frontenac Provincial Park provides near-wilderness experiences close to the major east-west transportation route of the province and to major population centres. The park supports a growing economic sector in the local area and several establishments depend on the park for part of their business. Businesses in nearby towns all receive direct benefits from park patrons who travel through these villages and purchase food, fuel, camping and fishing supplies, and meals. Country inns, bed-and-breakfast facilities and motels offer park users an alternative to camping as a base for exploring the park. Several cottage resorts and private campgrounds in the vicinity also benefit from the presence of the park, and nearby canoe and kayak rental businesses serve park users.

Climate

Frontenac’s climate is similar to other areas in southeastern Ontario. However, variation in elevation, topography, vegetation, and the presence of numerous lakes, including Lake

Ontario to the south, all affect local weather conditions, and the microclimate can vary greatly from the southern end of the park to the northern sections.

Earth Science Features and Hydrology

Bedrock Geology

Frontenac Provincial Park is located on the Frontenac Axis (or Frontenac Arch), a southerly extension of the Precambrian Shield that extends from Algonquin Provincial Park in Ontario to the Adirondack Mountains of New York State. The Frontenac Axis is made up of shallow till and rock ridges, and is noticeably different from the flat topography of the surrounding limestone plain. Although detailed geological mapping of the rock units within the park has not been done, general compilation maps suggest that the following rock types are present within the park:

- Lower Gneiss and Granulite through the middle of the park;
- Major Marble in the northern portion of the park.
- Migmatites through the southern portions of the park, associated with the edges of the plutonic rocks;
- Diorite-Gabbro and the Anorthosite Suite Plutonism, the youngest rocks in the region, along the west-central portions of the park.

Detailed inventory is required to verify the presence and distribution of these rock units within the park.

Twenty-eight abandoned mica mine sites are known within the northern part of the park. In the past, a pyrite claim was staked at the west end of Big Salmon Lake and an iron ore claim at Black Lake.

Features related to the park's bedrock geology that are of interpretive and educational interest include:

- a band of fractured marble striking southwesterly from Desert Lake through the north side of Birch Lake, northeasterly to Gibson Lake and into Devil Lake;
- marble exposures on the north shore of Birch Lake and a small cave on the shoreline of the south shore;
- the Moulton Gorge formed along the bedrock fault;
- the Labelle Gorge on the north side of Labelle Lake, where there is a good exposure showing granite alternating with diorite;
- the ridge and valley topography on the northeastern side of Slide Lake; and
- the unusual folding of marble in Devil Lake's Hardwood Bay.

Surficial Geology

The most recent ice age removed most of the overburden and exposed the bedrock. Only a thin, discontinuous layer of soil was deposited when the glaciers retreated for the last time, with the deepest deposits generally localized to the valleys in the park. However, Frontenac is within a transition zone between two physiographic regions. Big Salmon Lake forms the approximate boundary between the southeast region, with its outcrop ridges with sparse soil and intervening valleys with deeper soils, and the northwest region, with its somewhat deeper soils, fewer exposed outcrops, and higher hills.

Soils

Sand or sandy loam soils predominate most of the park, except one area of clays and silts

south of Slide Lake. Rock outcrops are frequent and soil cover above bedrock is less than 30 cm deep over most of the park area, but is deeper in pockets that lie in valleys between ridges. Only five areas of the park contain deeper soil in the range of 1-2 m. Deep clays also occur in small, isolated pockets. A few pockets of organic peat occur in wetlands.

Hydrology

Frontenac is a headwater area, with all water flowing out of the park and into the Rideau Lakes system and the Cataraqui River. The pattern of flow is determined by the surface configuration of the bedrock because the overburden is so thin. Drainage patterns are somewhat convoluted, but follow a roughly circular flow around the park's perimeter.

There are no large creeks in the park. The numerous lakes and beaver ponds contribute small flows to creeks; despite this, many creeks flow intermittently. Beaver ponds fluctuate in depth depending on whether the pond has an active colony. All lakes on the park's boundary are affected by the annual drawdown of lake water levels each fall, controlled by the Kingsford Lake dam, the Bedford Mills dam controlling Devil Lake and the Massassauga Creek dam controlling Buck Lake.

Life Science Values

Vegetation Communities

The park's ridge and valley topography supports dry and wet microhabitats on acidic and basic substrates. The thin soil, frequently blocked drainage, numerous wetlands, lakes, bedrock exposures, rock barrens, cliffs and escarpments is typical of the Frontenac Axis, and supports a variety of vegetation communities.

Past activities and events such as agriculture, timber harvest, forest fires and cattle grazing have also influenced the present structure of the park's vegetation communities. Frontenac's large beaver and deer populations are a dynamic factor on the local landscape and have significantly influenced community structure through intense browsing and hydrological change.

The park has three main vegetation communities:

- The northern third of the park has a continuous mature forest on deeper soils, with occasional swamps and outcrops. The forest is primarily deciduous, dominated by Sugar Maple and Oak, with a sparsely vegetated understorey. This zone contains the oldest communities in the park, with some stands approaching 100+ years. Mature forested swamp communities and several fern glades are also found here, each containing several uncommon and rare species.
- The central area of the park contains a diverse mix of forest types and rock barrens in a ridge and valley topography. Dominant tree species are Sugar Maple and Ironwood. Grasses, goldenrod and sedges comprise the dominant groundcover. The average age of these stands is 40+ years, reflecting the history of grazing and agriculture in this section of the park. Relative to the other associations, this area contained the fewest number of rare species.
- The south central area of the park includes the most extensive wetlands and rock slide

vegetation, and the shallowest soils, creating an open forest canopy in most areas. Toward the southeast are rock barrens, which are succeeding into pine and mixed pine-deciduous forests. Common groundcover includes species adapted to dry conditions. The most widespread and diverse network of wetlands is found within this section of the park, including a number of bogs and Tamarack-Black Spruce coniferous swamps, which are uncommon for the region and contain several rarities.

Within these broad landscapes, three large (50-400 ha) and 37 small (2-25 ha) sites were identified as having *distinct ecological value*, based on key park ecotypes, species diversity and rarity, sensitivity to disturbance and the major landforms of the area. Among these important sites are: the Labelle Gorge and Arab Lake Gorge areas, Tamarack-Black Spruce Coniferous Swamps, heronries, and the marble cliffs at Birch Lake.

Not all of the park's significant sites are presently protected in a nature reserve zone.

Flora

Frontenac Provincial Park has a high plant species diversity because of its location on the Frontenac Axis, and the resulting affinities with the southern deciduous forest region as well as northern affinities typical of the Canadian Shield. Over the years, 789 vascular plant species have been reported for Frontenac Provincial Park. Some records date back several decades and have not been confirmed recently. A 2002-03 survey documented 630 plant species, including four species listed as *Endangered* and one species designated as *Special Concern* in Canada. Eighteen additional species are considered either rare, very rare, or extremely rare in Ontario.

Fauna

In-depth faunal surveys have not been conducted at the park, but over the years 39 species of mammal, 197 species of bird, 15 species of reptile, 17 species of amphibian, 43 species of butterfly, and 45 species of fish have been reported in Frontenac Provincial Park. This level of wildlife diversity is considered to be high.

The local White-tailed Deer population has increased, and is now roughly estimated to be between 200 and 400 animals, although more accurate estimates are needed. Fishers appeared in the park in the mid-1990s, causing a rapid decline in the Porcupine population, which had previously been very high. Raccoon rabies has been an issue in southeastern Ontario since 1999, and has led to a successful bait dropping program within the park.

Of the 197 bird species reported for the park, 126 are possible, probable, or confirmed breeders. Of these, five are Species at Risk (SAR) in Ontario. Twenty species reported for the park are listed as provincially rare. Several heronries are known to exist in the park, and six of the reported reptile species are designated as Species at Risk. Insects and other invertebrates have received little attention, and further study is necessary to gain a proper understanding of their diversity in the park.

Fisheries

Fishing has been a popular activity on the park's lakes since before the park was established. At least 22 lakes entirely or partly within the park are known for sport fisheries. The natural Lake Trout population in Big Salmon Lake is the most significant sport fishery in the park, although Lake Trout occur naturally in six other lakes. Several lakes have been

stocked by the MNR over the years; species stocked and level of stocking has varied annually. No assessment of the park's fisheries has taken place since 1995 and little is known of fish populations in the park.

Fire Management

A fire weather station at the Trail Centre records daily precipitation, temperature, wind speed and direction. These data are used to assess fire risk, as expressed on the Fire Danger Rating sign at the park entrance. On several recent occasions excessively hot and dry conditions in the park have necessitated a fire ban. Frontenac Provincial Park has a forest fire evacuation plan, but no approved fire management plan; more specific fire management direction will be defined during the management planning process.

Cultural Heritage

Frontenac Provincial Park is rich in history. It is believed that Aboriginal peoples used the area for seasonal hunting, fishing and food gathering. Greater evidence exists for non-indigenous settlement that occurred in the 19th century. The shallow soils found in the region yielded only marginal farmland, so settlers turned to small-scale mining, logging, trapping, hunting, and maple syrup production to augment their farm income. During the park's inception in the early 1970's, evidence of prior human settlement was still visible throughout the park, and a number of historical zones were designated in the 1974 Master Plan Report.

Over thirty years later, most of the farming, mining and logging structures have deteriorated into ruins—fragments of foundations, vestiges of fences, depressions in the earth and the occasional scattered implement—having succumbed to the substantially regenerated landscape. A 2002 cultural report on Frontenac Provincial Park assessed the relative significance of the park's cultural features and described significant sites. Given that no archaeological survey has been undertaken in the park, it is impossible to properly evaluate the significance of indigenous pre-1850 heritage, therefore native presence and influence within the park has not been assessed. However, substantial records exist on the park's European settlement history and early lifestyles, and these provide the opportunity to develop an interpretive program to illustrate Frontenac Provincial Park's rich history.

The Friends of Frontenac Provincial Park

The Friends of Frontenac Provincial Park was established in 1992 as a volunteer cooperating association. Their mission is *“to undertake activities appropriate to protect and enhance the natural qualities of Frontenac Provincial Park.”* The Friends have partnered with the park to produce publications, help present wilderness skills training programs, lead guided hikes, stage special events, conduct biological inventories and fund research and the purchase of materials for use in maintaining park campsites and trails.

Natural Heritage Education

Natural heritage education (NHE) in provincial parks is intended to develop visitors' awareness and appreciation of Ontario's natural and cultural heritage, fostering a commitment to protecting that heritage for all generations. The NHE program at Frontenac Provincial Park is designated at the *major activity* level.

Frontenac's NHE programs focus on wilderness skills training themes that promote responsible recreation. Currently, about 20 educational programs and events are scheduled each year, including winter camping, wilderness first aid, canoe and paddle instruction

workshops, canoe trip certification and map and compass workshops. The park aims to provide visitors with the skills necessary to minimize their impact on the environment when camping and travelling through the park.

There is no NHE staff at Frontenac Provincial Park, but some support for the NHE program is received from the Senior Natural Heritage Education Leader at Charleston Lake Provincial Park. The Friends of Frontenac offer several seasonal nature walks and events and winter camping instructional weekends.

Research

Post-secondary institutions, government organizations and citizen scientists use the park to conduct approved research on various topics. Although some studies are short-term, many programs involve long-term monitoring, including the Forest Bird Monitoring Program, the Ontario Hardwood Forest Health Survey, acid rain monitoring, and FrogWatch.

Park staff is also involved in research within the park. A recent project assessed the impacts of firewood collection on both healthy and dead trees around campsites, and a long-term study is monitoring the impacts of deer browse on park vegetation. Research, monitoring and recovery planning for Species at Risk and other rarities is ongoing.