Critical Resources Inventory Mapping in the Chapleau Crown Game Preserve: Identifying Areas of Potential Opportunity

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Prepared for the Northeast Superior Regional Chiefs' Forum by Ecotrust Canada
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Part 1: Report

Overview

The Northeast Superior Regional Chiefs' Forum (NSRCF) has been working for many years to promote a transitional shift in redefining forestry geography towards a more ecological balanced approach (Conservation Economy). This work has resulted in a number of successes that are transforming the way in which First Nations, municipalities, forest companies and government work together in the Northeast Superior region. Notably, the NSRCF principles approach was used by the MNR to modernize its forest tenure policy framework, resulting in a provincial commitment to support and resource a pilot project for an Enhanced Sustainable Forest License (eSFL) in the Northeast Superior Region.

The pending formation of a regional table to manage the affairs of the new eSFL pilot project, which is anticipated to include most if not all of the 7000 square kilometers[1] of the Chapleau Crown Game Preserve, has heightened industry, government, municipal, and First Nations interest in achieving a fulsome and shared understanding of the current status of resources, current uses, areas of ecological and cultural significance, and aspects appropriate for alternative economic development.

We looked at three proposed activities for the Chapleau Crown Game Preserve:

- Birch syrup production;
- Remote tourism, specifically remote lakes; and
- Wild blueberries

and asked: ***where are the areas of potential opportunity? What do those opportunities look like?***

To answer these questions, we created a series of maps that display the potential areas, and two feasibility studies addressing birch syrup and remote tourism.

This report describes how we came up with the "what" and "where" – the data that was used in map production and analysis; the criteria that inform the site selection of each alternative economic activity; and the distribution of potential sites by Forest Management Unit. The feasibility studies are available as separate documents.

[1] Equal to 700,000 hectares or approximately 2.5 times the size of Manitoulin Island

Acronyms & Glossary of Select Terms

ABIR – An Aboriginal Background Information Report is prepared for each forest management plan and contains information on the current and historic uses of forests in the FMU, forest management issues and concerns, and other features of interest to Aboriginal communities.

CanVec—Topographic maps of Canada that are produced by Natural Resources Canada.

CCGP – Chapleau Crown Game Preserve

Depleted site – Forest site which had timber removed by clear-cut harvesting or natural causes such as fire, blowdown, ice damage, insect and disease.

FMP – Forest Management Planning. Plans that are conducted jointly by the forest management unit operating body and MNR to ensure future forestry operations are maintain the long term health of the forest and land base.

FMU – Forest Management Unit. The FMUs that overlap the Chapleau Crown Game Preserve are: Nagagami, Hearst, Gordon Cosens, Magpie, and Martel.

FRI – Forest Resources Inventory. An MNR led study that gathers information about tree species composition, range, age and distribution.

GIS – Geographic Information System; a computer mapping software that allows users to create, analyze, and disseminate spatial information about the world around us.

LIO – Land Information Ontario, a data warehouse for Ontario.

MNR – Ontario Ministry of Natural Resources and Forestry

NRCan – Natural Resources Canada

NSRCF – Northeast Superior Regional Chiefs' Forum

OMNDM – Ontario Ministry of Northern Development and Mines

Primary Road – A permanent main access road for forest management units; serves as a unit's main road system. This is a universally used term among forest management bodies such as Tembec and MNR.

Secondary Road – Roads that provide access to, through or between areas of operations. These roads are also referred to as branch roads as they fork off of existing primary, or other secondary roads.

Stocking Rate – A qualitative measure of the density of tree cover in a forest stand ranging from zero, for recently depleted stands, to a maximum of 4.00, although 2.50 is the typical maximum value encountered in the field.

Tembec – Tembec Inc. manages the Martel, Hearst, and Gordon Cosens forests.

Data and Methods

Data was gathered and compiled from secondary sources, except for information on areas of aboriginal interest collected directly by Ecotrust Canada through a mapping exercise. Data may be collected, owned, and maintained by different sources, and there can be concerns with sharing sensitive data. Ecotrust Canada signed data agreements to obtain critical information on the Chapleau Crown Game Preserve with NSRCF, Tembec, and MNR which guided the use and sharing of data we acquired for this project.

The following table outlines the layers that were used in the map series with the year of data creation and its custodian. When determining which data sources to use, we defaulted to the most current data available. Forest Management Plans contain FMU layers that include such fields as species, age class, dominant species, when harvesting occurred, reforestation type and year, and stocking levels. FMPs are usually based on data that was collected 2 years prior to the year of publication. Thus, Martel FMP11 is based on data that was collected in 2009.

Layer	Dataset / Year	Custodian
ABIR	2012	NSRCF
Areas of aboriginal interest	Ecotrust Canada mapping exercise 2014	NSRCF Elders
Chemical tending	2014	LIO
Gordon Cosens FMU	FMP 2015	Tembec
Hearst FMU	2013	MNR
Lakes in CCGP	CanVec 2008	NRCan
Magpie FMU	FMP 2013	MNR
Martel FMU	FMP 2011/FMP 2016	Tembec
Mining claims	2015	OMNDM
MNR's remote lakes	Martel FMP 2011	Tembec
MNR Road Segment	2013	LIO
Nagagami FMU	FMP 2013	MNR
Nesting sites	2014	LIO
Tembec Roads	2015	Tembec

Roads: the gateway to accessing resources

Understanding how to access different areas of the CCGP is important in figuring out whether the resources in those areas can be utilized. Roads on the CCGP are managed and maintained by multiple organizations: Tembec, MNR, the Ontario Ministry of Transportation, and jointly managed. We received detailed information on current use classification, road restrictions, road type, road access considerations, and planned roads construction. Data from the various data custodians were merged together in a GIS to create a comprehensive view into the road network, as some of the road information was provided by MNR, and some by Tembec. Due to the complexity and quality of the road classification values from Tembec and MNR, and the varying levels of detail provided for roads in those datasets, scores for accessibility were combined based on a number of different fields from each dataset. The following fields were derived (Table 1 – Road Accessibility Descriptions):

Access Class	Description
Accessible	Two wheel drive access; all seasons; road is not gated or decommissioned
Inaccessible	Roads are winter haul only; gated or decommissioned; trails or private roads
Planned Access	Roads may be re-opened and continually used until 2021[2]
Planned Inaccessible	Roads may be closed or decommissioned until 2021[1]
Unknown	Roads that have no recording of type or access consideration from any dataset providers.

Table 1 – Road Accessibility Descriptions

Over half of all roads (56%) on the CCGP are considered inaccessible, compared to 42% deemed accessible. The other 2% of roads are captured as planned accessible, planned inaccessible, and unknown (Figure 1).

Two important classifications for the next phase of the project are road type and road modifications, or road access. Tembec keeps very detailed information on these classifications for roads they use and manage, but MNR does not have the same level of detail. Both classifications are very important to consider if field visits plan to use these roads for ground-truthing, and further down the road, implementation of economic alternatives. Figure 2 – Distribution of Road Type on CCGP shows the distribution of Road Types across the CCGP.

In planning future activities on the CCGP, crews should request more detail from Tembec about the road types that make up a larger share of the network across the CCGP: trails, tertiary roads, winter haul roads, and clay/mineral haul roads. After merging the MNR and Tembec datasets to get a sense of all roads on the CCGP, 92% of all road segments came from the Tembec dataset. Of that 92%, 65% was made up of trails, clay/mineral haul roads, winter haul roads and tertiary roads. If greater access to potential sites is needed, finding more detailed information about the status and access parameters of these road types may increase the amount of accessible sites.

[2] Planned Roads were only available for Martel Forest FMP 2011 – Planned 10 Year Roads

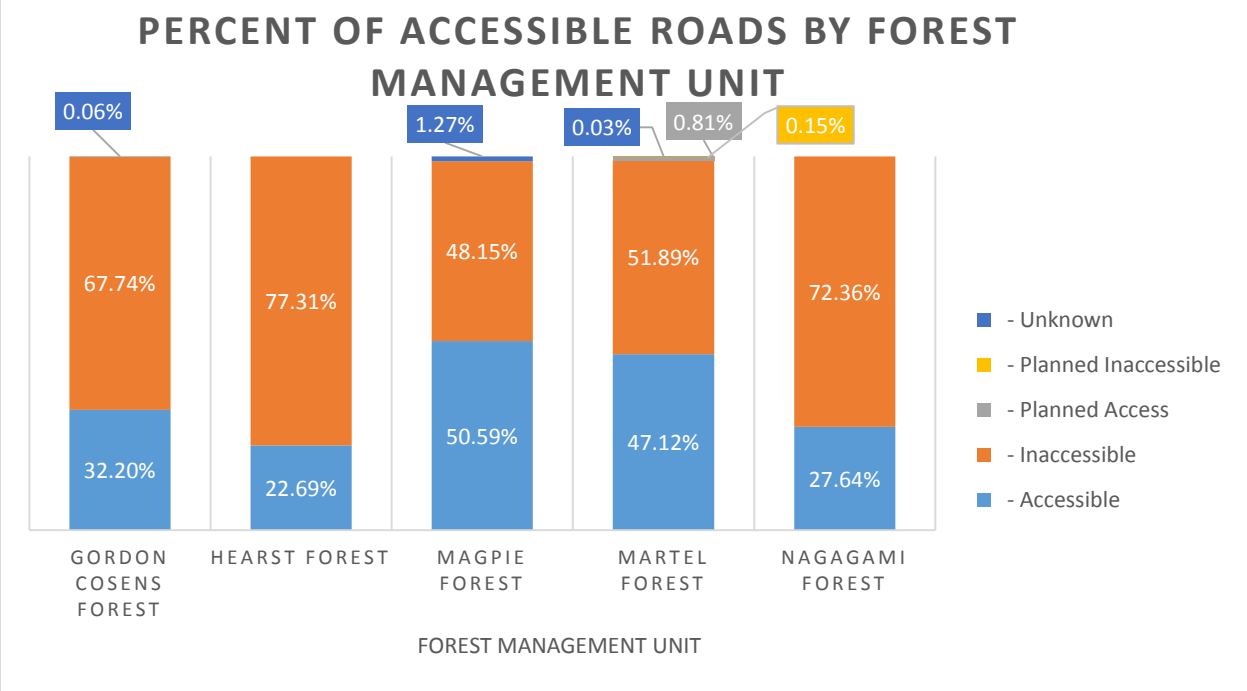

Figure 1 – Road Accessibility on the CCGP

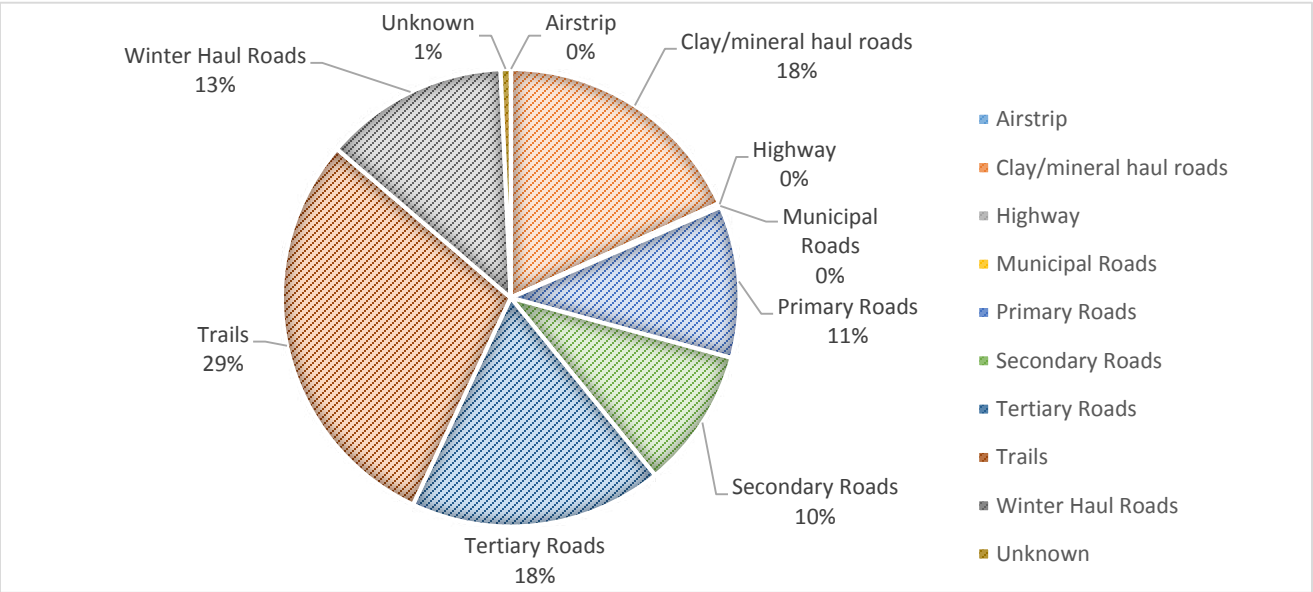

Figure 2 – Distribution of Road Type on CCGP

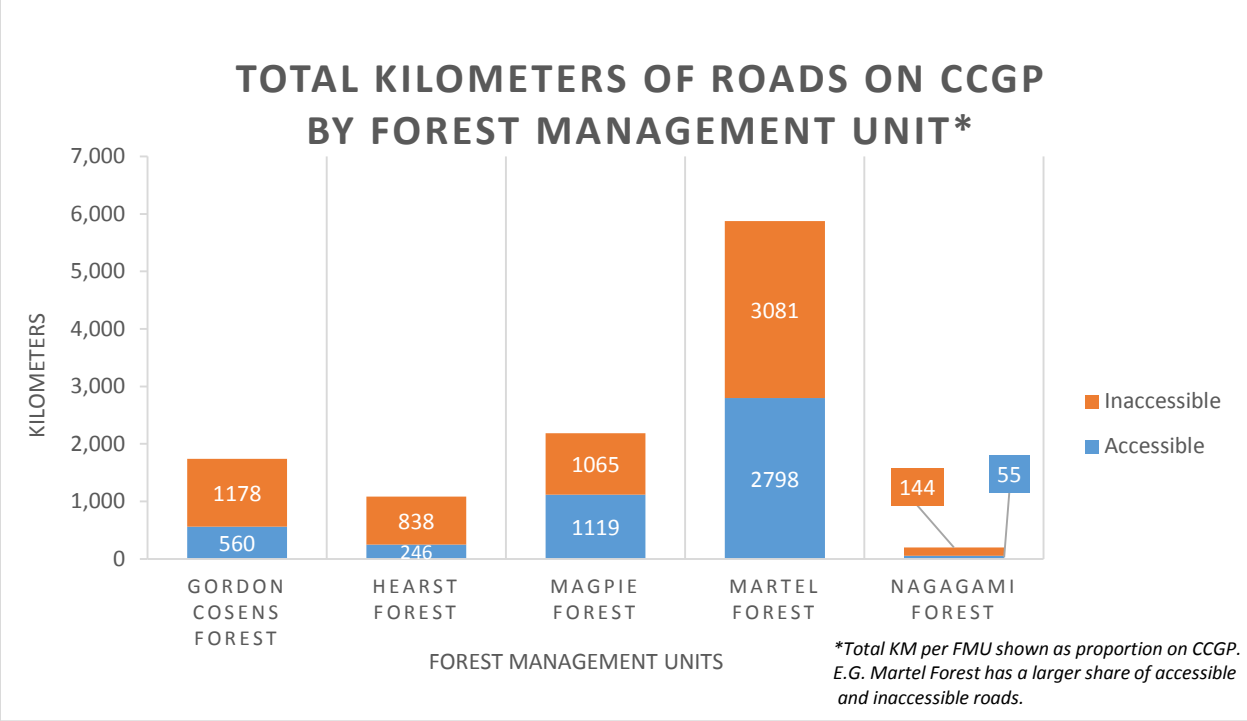

Figure 3 - Total Kilometers of Accessible and Inaccessible Roads on CCGP

Limitations

There were some limitations of the data:

- ***Lack of current data regarding the Magpie Forest Management Unit***

Since Dubreuil Forest Products Limited stopped managing the Magpie Forest in 2009, and the tenure went back to the MNR, there has been a lack of data gathered on this FMU. This resulted in limited information particularly in relation to forest inventory, roads, and roads condition. We recommend that further exploration of economic opportunities in the Magpie should include a rigorous ground-truthing process.

- ***Datasets for different Forest Management Units were collected between 2008 and 2014***

Datasets were created in different years, and forest operations have continued to change the landscape in ways that may not be reflected in the data. For example, a roads layer from 2009 will not show roads that have deteriorated and become inaccessible since then. Further, the analysis relies on data from different years and therefore it is only true to the time of data collection. For example, the layer of birch stands throughout CCGP includes information that was collected between 2009 (Martel) and 2013 (Gordon Cosens).

- ***Datasets for different Forest Management Units contained different information***

Because data was collected by different parties, the level of detail between FMUs varies. For example, some but not all FMUs had information on planned road construction. Another limitation was the lack of harvest planning information for each FMU. In order to determine potential sites for Birch and Blueberry presence, and project their productivity, long term harvest planning is required.

These limitations are raised to caution that areas of economic development potential should be visited to confirm what resources are there, and the state of the resources, before investing in major capital equipment and purchases.

Areas of Potential Opportunity

Three maps were created to provide a regional overview, and identify key features (roads and streams) on the CCGP for context. *Reference **Map 1** - Overview map of the Northeast Superior Region; **Map 2** - Accessible and Inaccessible Roads on Chapleau Crown Game Preserve; and **Map 3** – Detailed Streams and Waterbodies on Chapleau Crown Game Preserve.*

Birch

*Reference **Map 4** - Suitable Birch Stands for Birch Syrup Production*

Over the past decade, interest in the production and marketing of birch syrup has grown in North America. The period of suitable sap production is relatively short, estimated 3-5 weeks, but will vary according to weather conditions. Due to lower sugar content in the sap, it takes 80-120 litres of sap to make 1 litre of birch syrup (compared to approximately 40 litres of maple sap to make maple syrup).

- On average, one tree will produce 84 litres of sap
- An average commercial production requires more than 300 trees
- A 600 tap operation would cost approximately $20,000 in fixed costs
- The average retail value of 1 litre birch syrup is $90

These criteria apply to all potential birch sites:

- located on productive forest on crown land
- contain 70-100 percent mature white birch stands (25 years or older)
- stocking rate 0.6 or greater
- high productivity potential (height growth rate faster than CCGP's average height growth)
- have no accessibility issues in terms of legal, political or land use policy
- not located on parks or protected areas
- not located on areas of aboriginal interest (ABIR)
- within 1km from accessible road
- did not receive chemical spraying

Sites that were eligible for harvesting by 2031 on Martel and by 2020 on Gordon Cosens were omitted from the selected sites. This information was not available for the other FMUs.

The potential suitable area for birch sap extraction covers 1352 ha throughout Chapleau Crown Game Preserve of which 878 ha are within 1 km from accessible roads, and 474 ha are located near inaccessible roads or further than 1 kilometer from accessible roads.

The majority of road-accessible sites are located within Martel (630 ha), Magpie (135 ha) and Nagagami (85ha) followed by Hearst (22 ha) and Gordon Cosens (5 ha) (Figure 43).

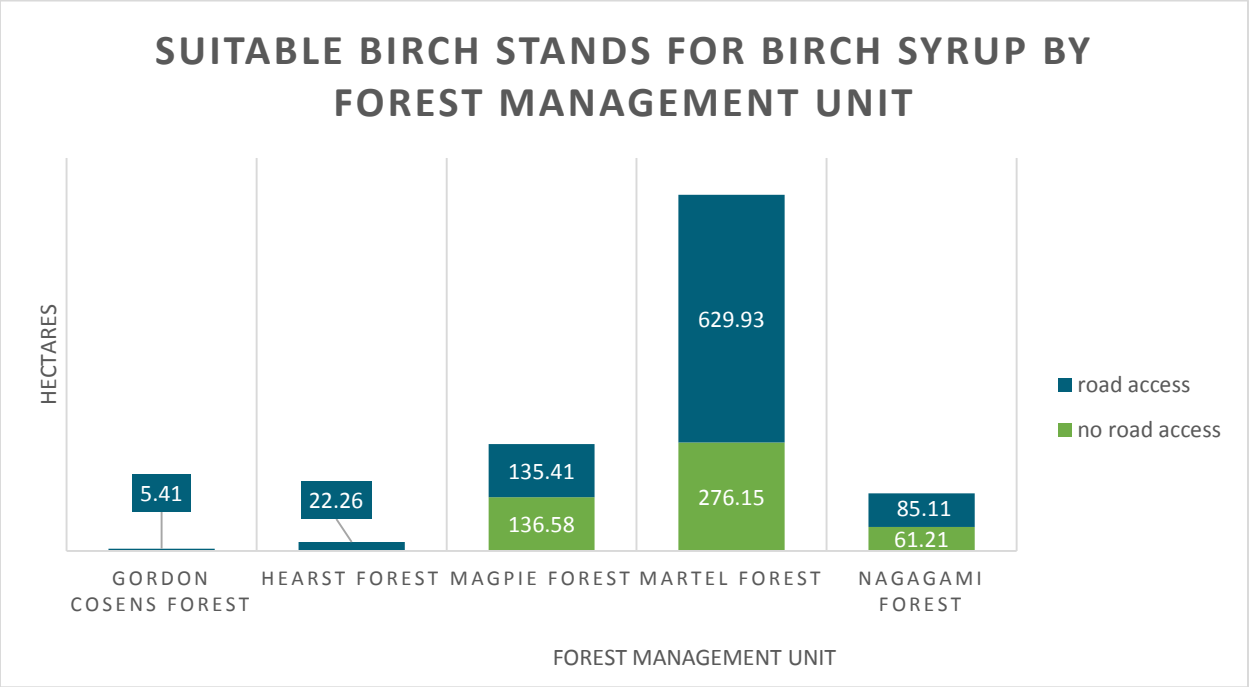

Figure 4 – Suitable Birch Stands

If birch syrup production is going to be explored, we recommend field visits to potential sites to verify the data, and tapping a small number of trees in different locations to determine the average quantity of sap per tree.

The birch stands that are suitable for sap extraction may also contain chaga—a fungus found on birch trees—that could be harvested for commercial purposes. First Nations people have known the medicinal power of chaga for hundreds of years, and recently there is a growing awareness of and demand for chaga in North America. There may be concerns with making chaga available for commercial harvest, and we recommend getting direction from the NSRCF Elders' Council before exploring further.

Remote Tourism

*Reference **Map 5**: Remote Tourism Lakes*

Chapleau Crown Game Preserve has many remote lakes that can support tourism initiatives. There are 492 lakes that fit these criteria:

- more than 1km away from sites that were depleted in 1990 or later
- more than 1km away from parks and protected areas
- more than 1km away from mining claim areas
- more than 1km away from all roads
- are not currently designated by MNR as remote lakes as they are already assigned

Of the 492 lakes, only twenty-four (24) lakes are larger than 20ha, with the largest being 116 ha:

- 12 lakes on Magpie
- 11 lakes on Martel, and
- 1 lake on Hearst

Should it be decided to further explore the option of remote tourism, it is recommended to perform a ground-truthing of several lakes in order to determine availability of fish stock and fish species. Overall, the identified lakes are much smaller than many operational fly-in lakes in Ontario. Few of the 24 lakes are in close proximity to nesting sites and aboriginal areas of interest. It is recommended that remote tourism include elements of aboriginal culture and leverage the growing demand for tourism products based in authentic aboriginal culture.

Blueberries

*Reference **Map 6** - Suitable Sites for Wild Blueberry Harvesting; and **Map 7** - Suitable Land Slope for Wild Blueberries on the Chapleau Crown Game Preserve*

Blueberries are common components of forest ecosystem in the Northeast Superior Forest. Blueberry markets are constantly expanding as consumers appreciate its taste and many health benefits.

The optimal growing sites for blueberries are on land slopes of up to 6% and Map 7 - Suitable Land Slope for Wild Blueberries on the CCGP, shows the potential distribution just based on land slope. However, a number of other criteria can come together to give a greater potential for blueberry sites (Map 6):

- Located on sites where jack pine are the most dominant species
- located on productive forest on crown land
- not located on parks or protected areas
- have no accessibility issues in terms of legal, political or land use policy
- recently depleted by harvest or natural causes and received no regeneration treatment
- depleted in year 2000 or later and have a stocking rate of 0
- have no physical or ecological accessibility restrictions such as being surrounded by wetland
- within 1km from accessible road
- did not receive chemical spraying

The potential suitable areas for blueberry production cover 2183 ha throughout Chapleau Crown Game Preserve of which 1895 ha are within 1 kilometer of accessible roads, and 288 ha are located near inaccessible roads or further than 1 kilometer from accessible roads.

The majority of road-accessible sites are located within Martel (827 ha), Gordon Cosens (696 ha) and Magpie (307 ha) forests followed by 65 ha in Nagagami. No suitable sites were identified on Hearst.

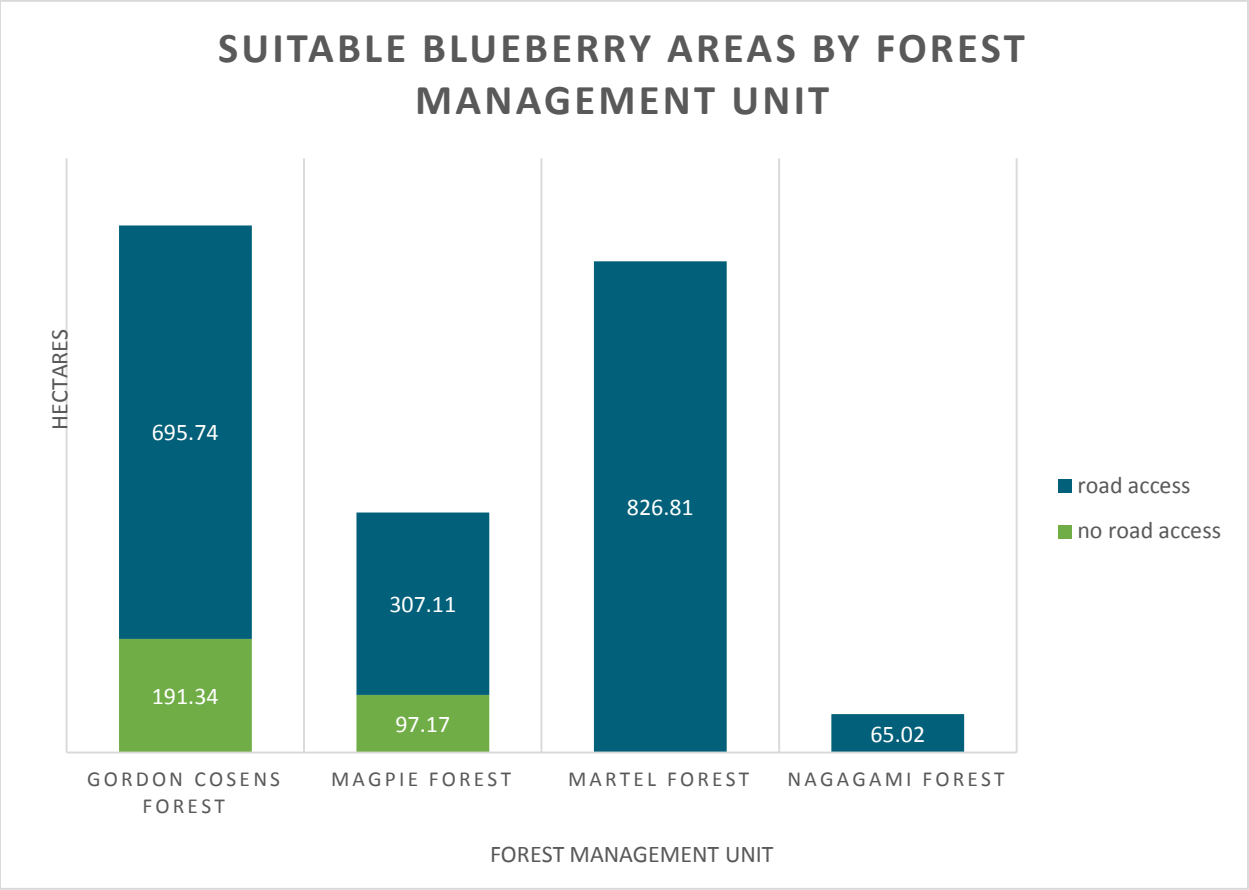

Figure 5 – Suitable Blueberry Areas

If blueberry production is to be explored further, we recommend that field visits to several sites occur during the blueberry harvest season in order to determine site quality and availability of wild blueberries on site.

Areas of Aboriginal Interest

*Reference **Map 8**: NSRCF Traditional Use and Occupancy*

First Nation people have occupied the lands of Northeastern Ontario for centuries, and have interest in, and feel a stewardship responsibility for, forests and other resources. The 2010 Aboriginal Background Information Report (ABIR) and Ecotrust Canada's 2014 mapping exercise with NSRCF Elders Council yielded 144 areas of aboriginal interest within Chapleau Crown Game Preserve – the 'nucleus' of NSRCF's geographic area. Seventy-six (76) areas of interest are located on Martel and 68 areas are located on Magpie.

These areas include:

- hunting sites
- medicinal plants sites
- fishing sites
- plant gathering sites
- cemetery and burial sites
- trapping sites
- trails and water routes
- sacred sites

We caution that the 144 areas of aboriginal interest **do not** represent all aboriginal areas of interest within Chapleau Crown Game Preserve since not all First Nations within CCGP participated in the mapping exercise. The Mushkegowuk Council collected land use and occupancy data that should be used for future ABIRs.

Next Steps

The maps represent areas of *potential* opportunity that require ground-truthing and further investigation and discussion.

Acknowledgements

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Part 2: Map Atlas

Map 1: Overview map of the Northeast Superior Region

Map 2: Accessible and Inaccessible Roads on Chapleau Crown Game Preserve

Map 3: Detailed Water and Roads on Chapleau Crown Game Preserve

Map 4: Suitable Birch Stands for Birch Syrup Production

Map 5: Remote Tourism Lakes

Map 6: Suitable Sites for Wild Blueberry Harvesting

Map 7: Suitable Land Slope for Wild Blueberries on the Chapleau Crown Game Preserve

Map 8: NSRCF Traditional Use and Occupancy