Loch Garry Forest Inventory

Final Report 2013

List of Abbreviations

Species Codes

Ab	-	Black ash
Ag	-	Green ash
Aw	-	White ash
Bd	-	Basswood
Bf	-	Balsam fir
Bw	-	White birch
Cb	-	Black cherry
Ea	-	American elm
Hb	-	Bitternut hickory
He	-	Eastern hemlock
Id	-	Ironwood
La	-	Tamarack
Mh	-	Hard maple
Ob	-	Bur oak
Po	-	Poplar species
Pw	-	White pine
Sw	-	White spruce

Forestry & Environmental

AGS	-	Acceptable Growing Stock
ANSI	-	Area of Natural and Scientific Interest
BAF	-	Basil Area Factor
DBH	-	Diameter at Breast Height
GIS	-	Geographic Information System
PSW	-	Provincially Significant Wetland
UGS	-	Unacceptable Growing Stock

Statistical Symbols

n	-	Sample Size
$\sum$	-	Summation
$\bar{x}$	-	Average

Loch Garry Forest Inventory

Final Report 2013

Prepared for: The Township of North Glengarry
Prepared by: Normand Génier, RRCA
Date: March 20, 2013

RAISIN REGION CONSERVATION AUTHORITY
OFFICE DE PROTECTION DE LA NATURE DE LA RÉGION RAISIN

Introduction

In November 2012, the Raisin Region Conservation Authority was commissioned by the Township of North Glengarry to conduct a forest inventory of the forest area within the Loch Garry Management Area. The objective was to update the forest species composition information for specific sections of the Loch Garry Management Area that may contain or may have the potential of producing merchantable timber in the future. The forest inventory began in December 2012 and was later completed in late February 2013.

The inventory will provide the Township of North Glengarry with the following:

- updated forest species composition for each forest compartment inventoried
- average age, average height and basal area for each forest compartment inventoried
- a total of 57 permanent sample plots, with potential long term monitoring opportunities
- the classification of trees by size-class and by quality using the Acceptable Growing Stock / Unacceptable Growing Stock (AGS / UGS) system

The inventory report for the Loch Garry Management Area will provide the Township of North Glengarry the information required to improve the management of the forests in the Loch Garry Management Area as well as help identify forest compartments with merchantable timber potential.

Site Description

The Loch Garry Management Area is located south-west of the Town of Alexandria in the Municipality of North Glengarry, in the old township of Kenyon (Figure 1). The most eastern perimeter is located on Lot 7 / Concession 2 and stretches westerly to Lot 17 / Concession 2. The total area, which for the most part is considered to be a Provincially Significant Wetland (PSW) and an Area of Natural and Scientific Interest (ANSI), encompasses approximately 420 hectares (Figure 2, 3). The total forested area measures approximately 130 hectares and consists of 30 forest inventoried compartments (Figure 2).

Methodology

In the beginning of the project, 94 sample points were identified throughout the entire project area based on a 2% sampling rate. Additional sample points were allocated to compartments with higher merchantable timber potential. The location of each plot was determined using GIS mapping and some plots were subsequently removed if they were located in a wetland or if they were stocked with immature forests.

Once the plot center was determined on site, the following methods were used to collect the data from each sample plot

1. The plot center was marked using a steel pin with an attached blue flagging tape with the individual plot number written on it.
2. A prism sweep was conducted with a metric glass prism with a Basil Area Factor (BAF) of 2, which would determine the number of trees in the plot to be assessed.
3. Each tree was numbered with blue paint, starting from the north in a clockwise direction while facing the plot center.
4. The diameter at breast height (DBH) of each tree was measured using a tree diameter caliper as well as a diameter tape measure for larger trees.
5. Two representative trees were selected at each plot to determine the average age and height of the stand. The ages of the trees were determined using an increment borer, and the heights of the trees were determined using a digital clinometer.
6. A series of photos were then taken of the plot from the plot center.

Comp.'t #	# of Plots	Area (ha)	Latitude	Longitude	Avg Age (yrs)	Avg Height (m)	# of Trees	Basil Area (m^2)	Species Composition
1	1	3.06	45.273	-74.699	19	12.5	21	42	Pw10
2	2	6.48	45.274	-74.699	42	12.7	31	31	Ce5Mh1Bf1Ea1Id1Sw1
3	1	1.72	45.277	-74.697	73	16.9	20	40	Ce5Aw2Mh1He1Bd1
4	4	5.12	45.275	-74.694	59	18.7	55	28	Aw3Bd3Hb2Id1Mh1
7	1	6.64	45.272	-74.697	66	15.7	26	52	Ce7Bd2Bf1
11	2	7.46	45.269	-74.693	49	14.7	38	38	Ce9La1
13	3	1.62	45.266	-74.691	26	14.9	66	44	Pw9Ea1
14	1	2.26	45.267	-74.693	29	16.2	14	28	Po4Ce3Ea1Bw1La1
15	1	2.11	45.269	-74.689	80	22.3	29	58	Ce6Sw3Mh1
16	4	3.05	45.268	-74.688	61	18.6	44	22	Mh8Ea1Bd1
17	1	2.21	45.270	-74.686	72	19.1	37	74	Ce9La1
24	1	3.94	45.268	-74.687	51	16.5	11	22	Mh9Ea1
25	1	2.85	45.269	-74.687	42	16.6	6	12	Mh7Ab2Ea1
26	1	0.81	45.267	-74.681	74	15.6	32	64	Ce5Mh2Po1Id1Bd1
28	1	1.79	45.264	-74.681	33	10.6	16	32	Ce9Id1
29	2	1.29	45.267	-74.677	47	12.8	27	27	Ce4Bd3Ea1Mh1Ab1
30	2	6.65	45.264	-74.689	76	18.8	25	25	Mh7Hb2Aw1
32	2	3.02	45.265	-74.679	45	15.7	82	82	Ce10
33	2	5.05	45.264	-74.675	49	14.0	29	29	Ce10
34	3	4.07	45.264	-74.677	42	18.8	45	30	Bd6Ea2Id1Ab1
35	1	5.53	45.263	-74.678	45	17.1	8	16	Ea5Ag3Mh1Ab1
36	1	1.07	45.262	-74.681	57	21.4	16	32	Aw4Mh3Bd3
37	4	4.61	45.262	-74.682	47	21.0	74	37	Mh4Bd3Hb1Aw1Bw1
39	1	1.77	45.263	-74.669	62	12.6	32	64	Ce10
40	2	1.03	45.268	-74.652	55	16.5	19	19	Mh3Aw2Bd2Po1Ab1Ce1
42	1	4.97	45.270	-74.653	103	12.7	25	50	Ce6Bd2Bw2
44	2	5.08	45.278	-74.661	65	20.2	25	25	Mh4Aw3Ob1Id1Hb1
45	1	0.74	45.276	-74.660	44	17.5	12	24	Bf4Bd2Bw2Aw1Sw1
46	5	9.97	45.275	-74.655	67	18.4	47	19	Mh4Ea1Bd1Bw1Hb1Ab1Aw1
48	3	6.67	45.276	-74.653	70	19.4	41	27	Mh4Bd2Ab1Id1Ce1Aw1
n = 30	Σ = 57	Σ = 112.6			$\bar{x}$ = 55	$\bar{x}$ = 16.6	Σ = 953	$\bar{x}$ = 36	Ce4Mh2Bd1Pw1Aw1Ea1

Table 1: Compartment and Plot Locations in Loch Garry Management Area

Results and Discussions

In total, 953 trees were sampled, 57 permanent sample plots were created in 30 individual forest compartments (Table 1). Over all it is estimated that 35% of the tree cover in the project area is eastern white cedar (Ce) along with hard maple (Mh) at 19%, basswood (Bd) at 11%, white pine (Pw) at 8%, white ash at 6% and American elm at 5% (Figure 4). Therefore, the overall species composition is Ce4Mh2Bd1Pw1Aw1Ea1 (Figure 4). Other significant species include; bitternut hickory (Hb) 4%, white birch (Bw) 2%, ironwood (Id) 2%, black ash (Ab) 2%, poplar (Po) 2%, balsam fir (Bf) 1%, white spruce (Sw) 1%, tamarack (La) 1% and black cherry (Cb) 1%. Several of the following three species were also found throughout the area to a lesser extent; eastern hemlock (He), bur oak (Ob) and green ash (Ag).

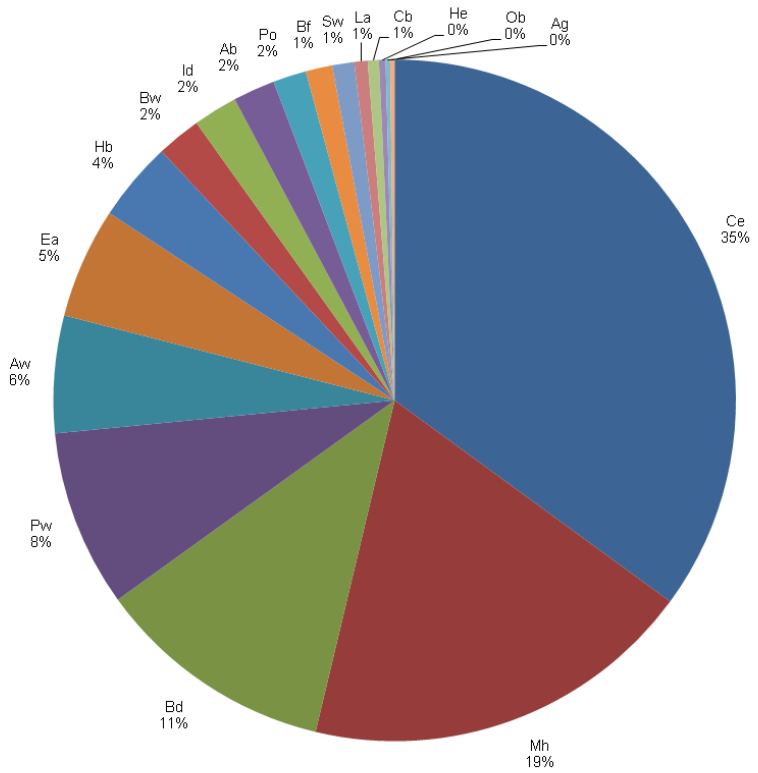

Figure 4: Species Composition in Loch Garry Management Area

White pine Plantations

A total of 2 white pine plantations were discovered during the inventory. One plantation occupies a small area in Compartment 1 and the other is located on both the north and south sides of Lakeshore Road in Compartment 13 (Figure 2). The average age of the plantation in Compartment 1 is 19 years, the average height is 12.5 meters and the basil area is 42 m2. The average age of the plantation in Compartment 13 is 26 years, the average height is 14.9 meters and the basil area is 44 m2. Both plantations have

been affected by White pine weevil however, Compartment 13 has been most severely affected with a total UGS of 95% (See Compartment 1 & 13 Summaries).

Cedar Forests

It is estimated that the project area consists of 35% eastern white cedar (Ce) and most of the trees sampled are considered in good quality. Out of 191 White cedar sampled in compartments 11, 28, 32, 33, 39, a total of 161 or 84% were considered as AGS (Figure 2). The average age of the cedar forests varies from 33 to 62 years old, the average height is 10.6 to 15.7 meters and the basal area varies from 32 m2 for Compartment 28 to 82 m2 for Compartment 32 (See Compartment 11, 28, 32, 33, 39 Summaries).

Old Growth Hard maple

Located in Compartments 16 & 24 are scattered mature Hard maples that may be considered old-growth and worth preserving (Figure 2). The largest Mh sampled measured 96 DBH and is located in Compartment 16. The oldest Hard maple was found in Compartment 24 and is estimated at 110 years old (See Compartment 16, 24 Summaries).

Butternut

Although no butternuts were located within any of the actual sample plots, butternuts were noticed sporadically during the inventory throughout the project area. One Butternut in particular measuring 20 DBH with no apparent signs of the butternut canker disease was discovered near Plot 50 in Compartment 26. A second healthy Butternut was also discovered near Plot 82 in Compartment 36 (Figure 2). Although some healthy specimens were occasionally discovered during the inventory, most butternuts generally showed signs of infection (See Compartment 26 & 36 Summaries).

Conclusion

The future management of the Loch Garry Management Area should focus more on improving wildlife habitat, preserving natural heritage features (i.e. old growth trees), developing recreational opportunities and less on the production of forest products. Also, the Loch Garry area is located for the most part (74%) within a Provincially Significant Wetland (PSW) and/or Area of Natural Scientific Interest (ANSI). Any development within a PSW may require a review and/or permit process from the RRCA. A planning application within an ANSI may also require a review by the RRCA. The Ministry of Natural Resources may also require a permit under the Endangered Species Act as several species at risk have been documented throughout this area. In any event, harvesting in a sensitive area such as a PSW or ANSI is not recommended.

It is estimated that 76% of the trees sampled are located within the Polewood category and only 1% in the Large Sawlog category (Table 2). One of the only worthwhile

	Polewood 10-24 cm		Small Sawlog 26-36 cm		Medium Sawlog 38-48 cm		Large Sawlog 50 cm +		Total		Total Trees	%
Species	AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS	AGS	UGS		
Ab	8	6	3	1	1	0	0	0	12	7	19	2%
Ag	2	0	0	0	0	0	0	0	2	0	2	0%
Aw	24	11	12	3	3	0	0	0	39	14	53	6%
Bd	69	14	22	1	1	0	1	0	93	15	108	11%
Bf	9	0	2	0	1	0	0	0	12	0	12	1%
Bw	8	7	5	0	0	0	0	0	13	7	20	2%
Cb	0	4	0	0	1	0	0	0	1	4	5	1%
Ce	221	67	28	17	0	1	0	0	249	85	334	35%
Ea	28	4	14	1	3	0	0	0	45	5	50	5%
Hb	17	8	9	2	0	0	0	0	26	10	36	4%
He	0	0	1	0	2	0	0	0	3	0	3	0%
Id	12	7	1	0	0	0	0	0	13	7	20	2%
La	1	0	4	0	1	0	0	0	6	0	6	1%
Mh	77	36	30	15	4	3	10	2	121	57	178	19%
Ob	0	0	2	0	0	0	0	0	2	0	2	0%
Po	5	3	5	1	1	0	0	0	11	4	15	2%
Pw	17	54	1	8	0	0	0	0	18	62	80	8%
Sw	4	0	2	0	4	0	0	0	10	0	10	1%
Grand Total	502	221	141	49	22	4	11	2	676	277	953	100%

Table 2: Species by size class and quality in Loch Garry Management Area

markets available to the Township of North Glengarry at this time may be the cedar post market. However, to determine if this is feasible or if any other local market opportunities exist, more research and discussion with local forest market experts would be required.

It is highly recommended that a forest management plan be prepared for the entire area and that the Township of North Glengarry as well as local stakeholders be active during the development and future implementation of a plan.

Loch Garry Forest Inventory

Forest Compartment Summaries

RAISIN REGION CONSERVATION AUTHORITY

OFFICE DE PROTECTION DE LA NATURE DE LA REGION RAISIN

Loch Garry Forest Inventory

Figures