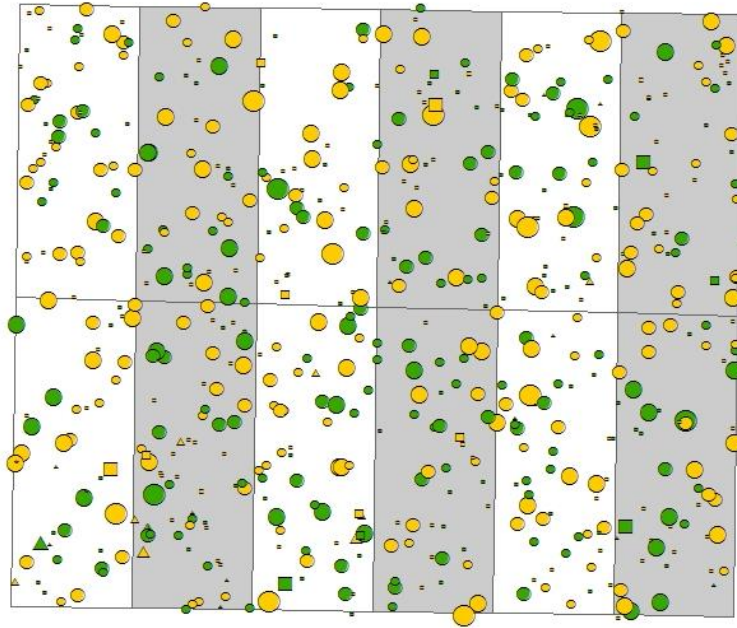


Horseback 1 Marteloscope

Site Description



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- Selection of sites :
 - Daniel Soucy – NBDNR
 - Michel Caron – Acadian Timber
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 - Yvon Dubé, Civil engineering technologist
- Compiler development :
 - Marie-Pier Arsenault
 - John Leclair
- Tree classification and measurement :
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 - Eric Caron – 4BM
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Introduction

General Description of a Marteloscope

A marteloscope is a 1; 1,2 or 1,4 hectares training area for tree marking. It is coupled with a computer “compiler” that allows the analysis of the nature and intensity of each marker’s tree selection, following various criteria.

All trees having a diameter at breast height (dbh) greater than 9 cm were identified, numbered and located on a map. These data help characterize initial stand conditions (stand volume, basal area, tree species distribution by form class, vigor, lumber potential, etc.) as well as the exact site design. The associated computer tool provides a summary of harvest choices made by participants (volume selected, categories of wood selected, etc.).

This marteloscopes that are part of this network are subdivided into six corridors 20 meters wide to facilitate the complete coverage of the area by the markers (Figure 1). Each tree number has been painted at breast height in order to be clearly visible by markers when moving in the direction indicated by the arrows in each corridor.

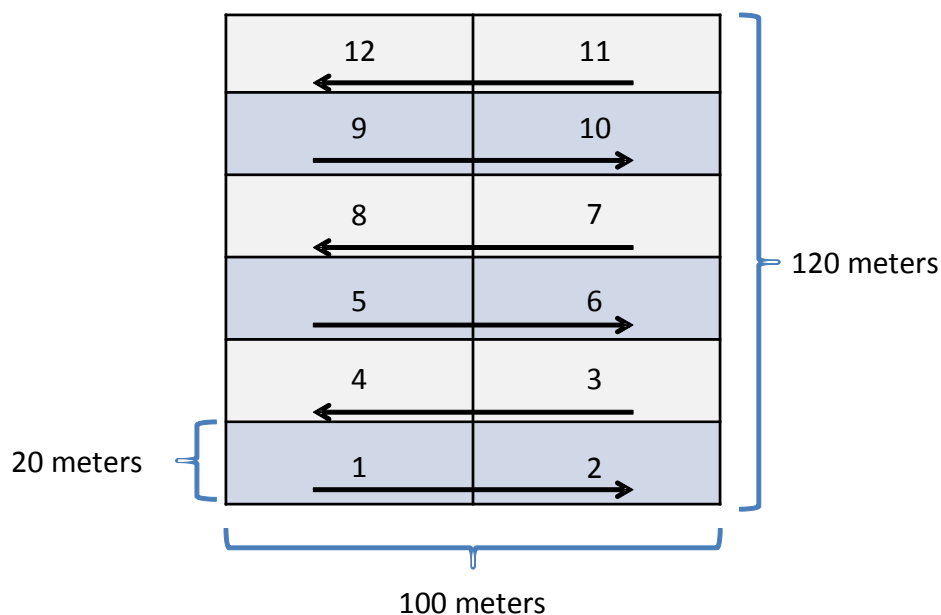


Figure 1. Example of marteloscope Horseback design. The arrows indicate the recommended walking direction in order to easily see tree numbers.

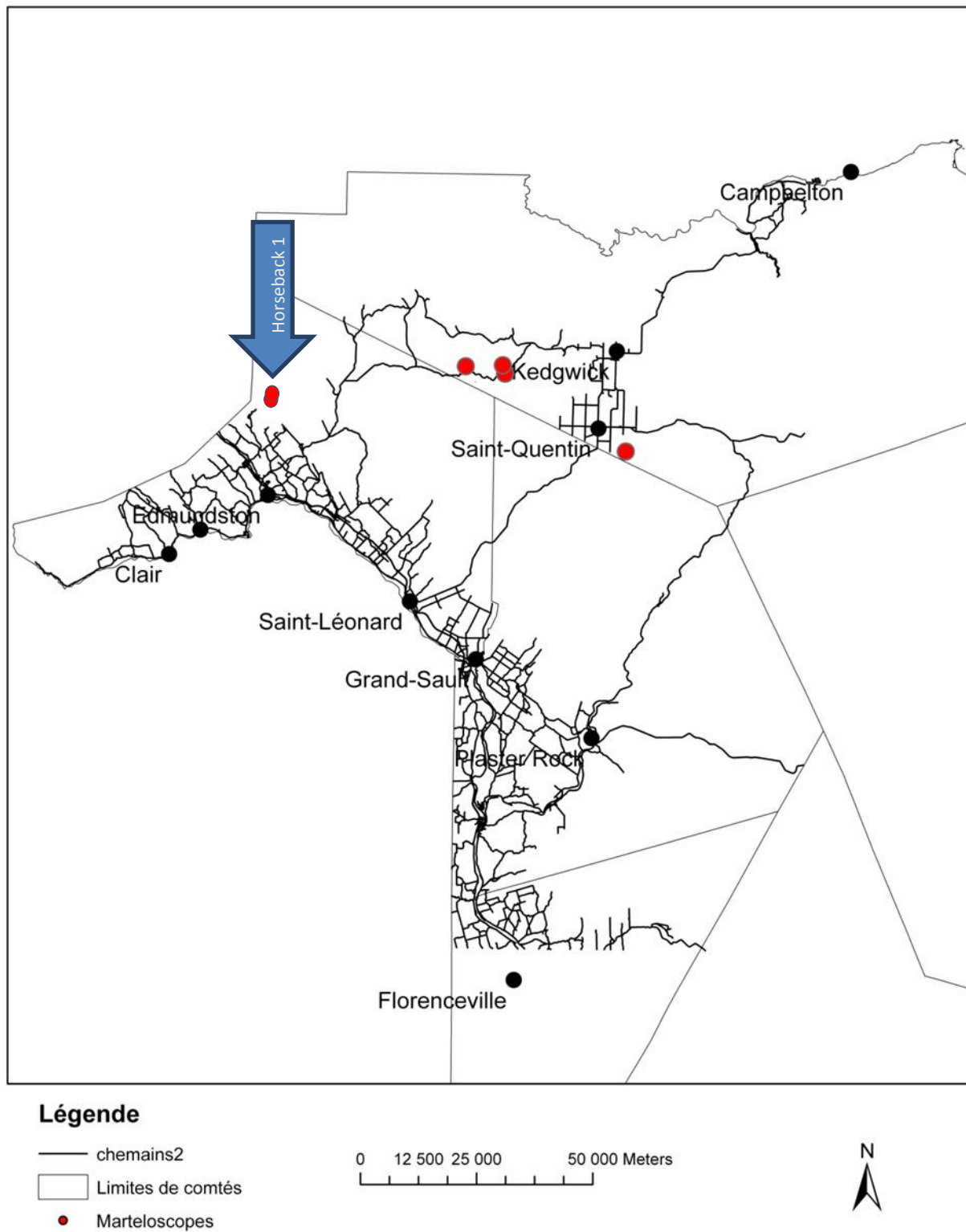
Intended Uses of Martelosopes

Martelosopes are set up in order to fulfill two particular needs:

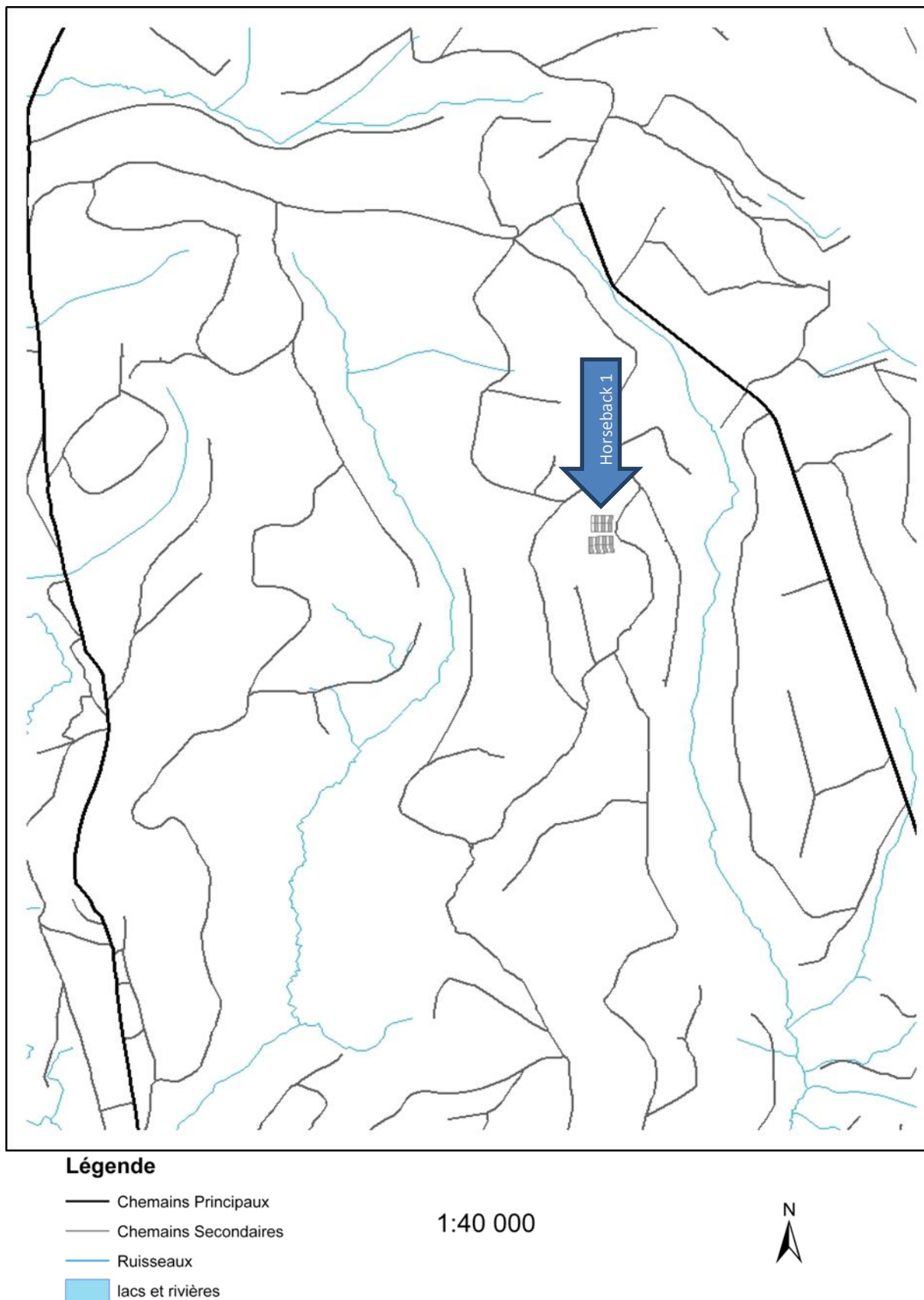
1. Training and standardisation:
 - a. Students from forestry programs.
 - b. Workers conducting tree surveys and classification.
 - c. Harvest equipment operators.
 - d. Harvest operations supervisors.
2. Fundamental and applied research:
 - a. Discussion basis for various stakeholders in forest management.
 - b. Development of decision support tools for uneven-aged stand management.
 - c. Evaluate modifications to silviculture prescriptions.
 - d. Development of remote sensing tools.

Site History

No site history available



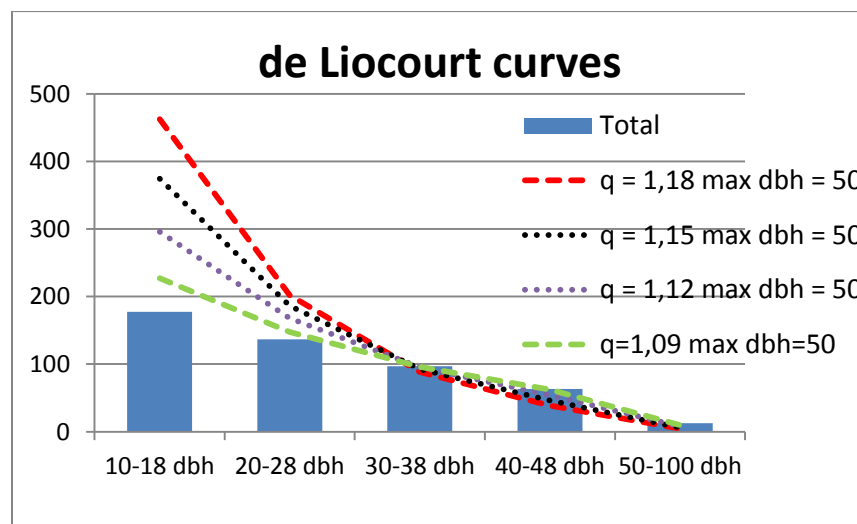
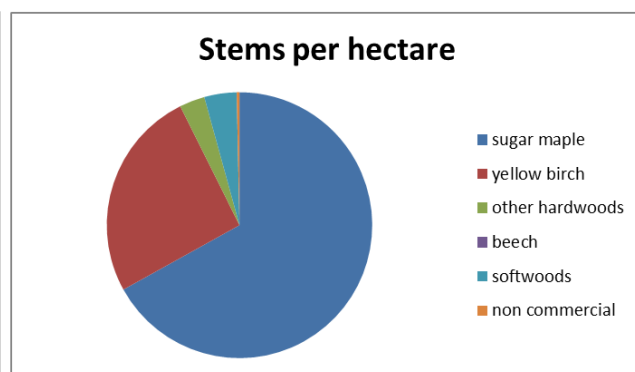
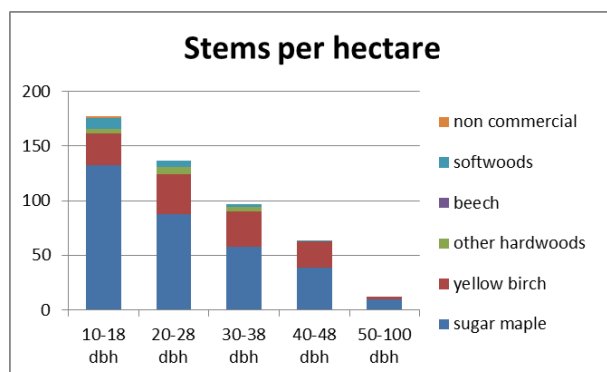
Horseback 1 Marteloscope Location



Horseback 1 Marteloscope Initial Stand Conditions

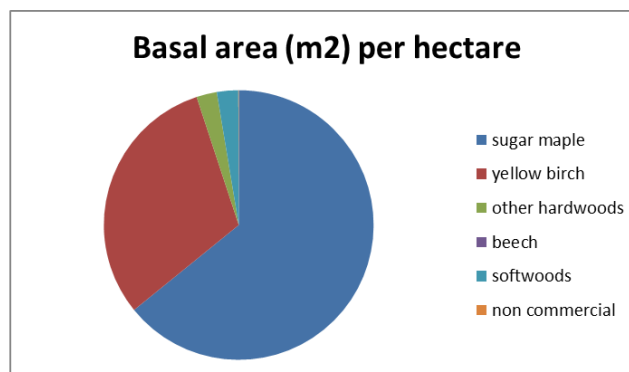
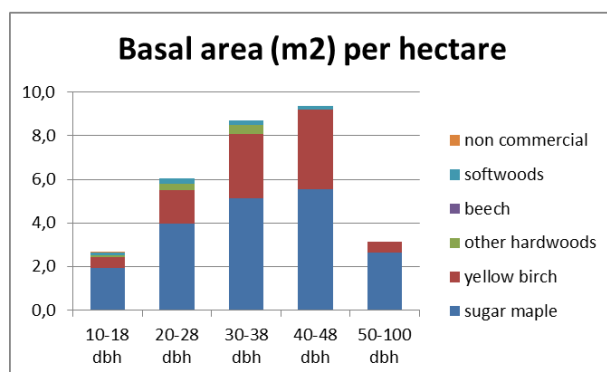
Trees per Hectare

Stems per hectare						Total	Proportion	dbh
	10-18 dbh	20-28 dbh	30-38 dbh	40-48 dbh	50-100 dbh			
sugar maple	133	88	58	38	10	326	67%	24,6
yellow birch	29	37	33	24	3	125	26%	28,5
other hardwoods	4	7	4	0	0	15	3%	23,6
beech	0	0	0	0	0	0	0%	0,0
softwoods	10	6	3	1	0	19	4%	20,4
non commercial	2	0	0	0	0	2	0%	11,0
Total	178	137	97	63	13	487		
Proportion	36%	28%	20%	13%	3%			



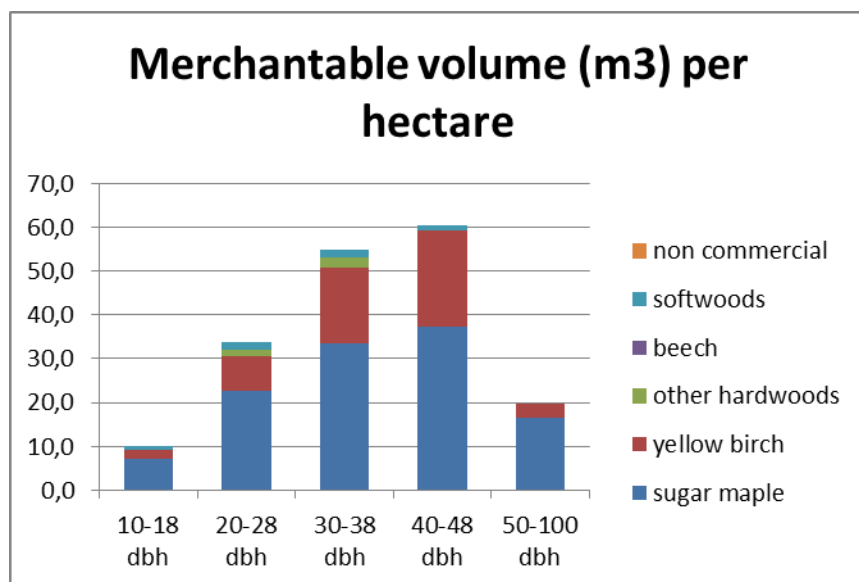
Basal Area per Hectare

Basal area (m2) per hectare							
	10-18 dbh	20-28 dbh	30-38 dbh	40-48 dbh	50-100 dbh	Total	Proportion
sugar maple	1,9	4,0	5,1	5,5	2,6	19,2	64%
yellow birch	0,5	1,6	3,0	3,7	0,5	9,2	31%
other hardwoods	0,1	0,3	0,4	0,0	0,0	0,7	2%
beech	0,0	0,0	0,0	0,0	0,0	0,0	0%
softwoods	0,1	0,3	0,2	0,1	0,0	0,8	3%
non commercial	0,0	0,0	0,0	0,0	0,0	0,0	0%
Total	2,7	6,1	8,7	9,3	3,1	29,9	
Proportion	9%	20%	29%	31%	10%		

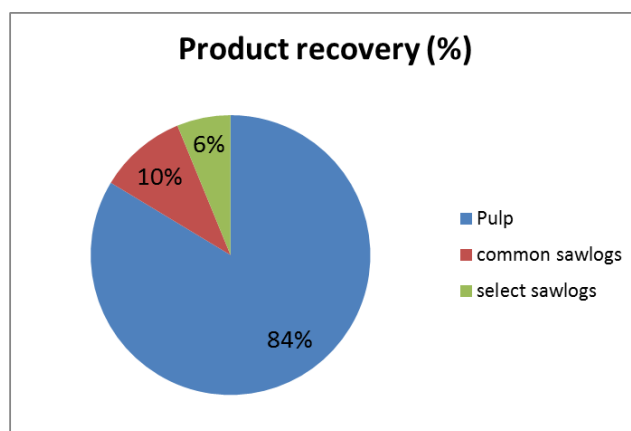
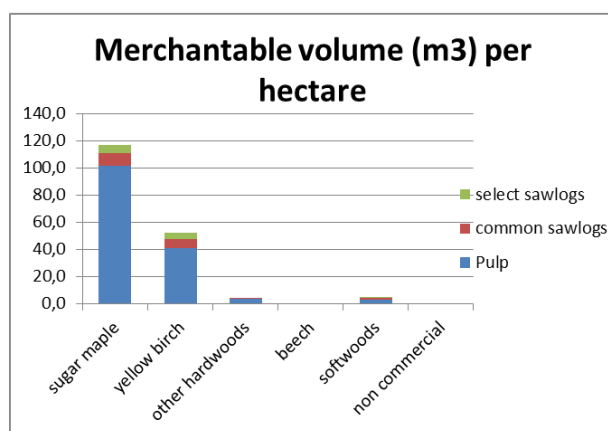


Merchantable Volume per Hectare

Merchantable volume (m3) per hectare							
	10-18 dbh	20-28 dbh	30-38 dbh	40-48 dbh	50-100 dbh	Total	Proportion
sugar maple	7,3	22,7	33,4	37,2	16,6	117,1	66%
yellow birch	1,8	7,9	17,4	22,1	3,0	52,3	29%
other hardwoods	0,2	1,5	2,4	0,0	0,0	4,2	2%
beech	0,0	0,0	0,0	0,0	0,0	0,0	0%
softwoods	0,6	1,6	1,6	1,1	0,0	4,9	3%
non commercial	0,0	0,0	0,0	0,0	0,0	0,0	0%
Total	9,9	33,7	54,8	60,4	19,6	178,5	
Proportion	6%	19%	31%	34%	11%		

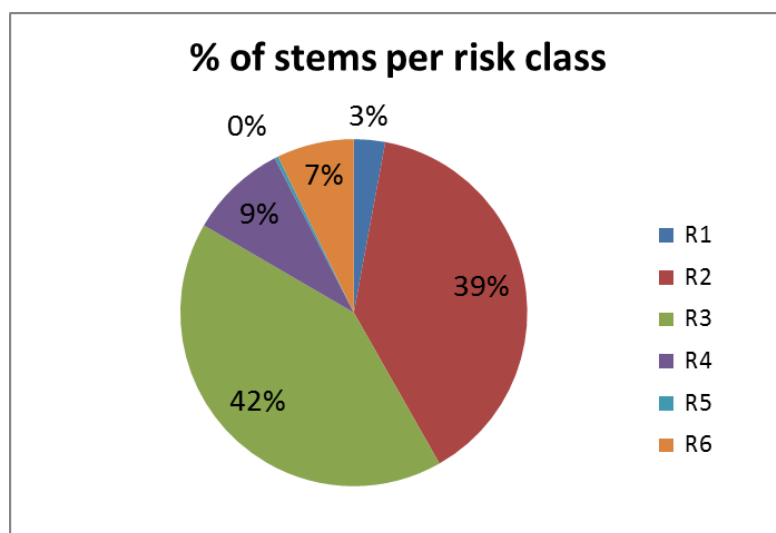


Product recovery (m3) per hectare					
	Pulp	common sawlogs	select sawlogs	Total	Proportion
sugar maple	101,6	9,7	5,9	117	66%
yellow birch	41,2	6,7	4,3	52	29%
other hardwoods	3,7	0,5	0,0	4	2%
beech	0,0	0,0	0,0	0	0%
softwoods	2,8	1,3	0,8	5	3%
non commercial	0,0	0,0	0,0	0	0%
Total	149,3	18,1	11,1	178,5	
Proportion	84%	10%	6%		



Number of Trees and Volume Distribution per Risk Class¹

Risk class - number of stems per hectare							Total	Proportion
	R1	R2	R3	R4	R5	R6		
sugar maple	12	121	144	33	1	16	326	67%
yellow birch	1	59	43	9	1	12	125	26%
other hardwoods	0	5	7	2	0	2	15	3%
beech	0	0	0	0	0	0	0	0%
softwoods	2	4	8	1	0	5	19	4%
non commercial	0	0	1	0	0	1	2	0%
Total	14	189	203	44	2	35	487	
Proportion	3%	39%	42%	9%	0%	7%		



Risk class - Volume (m3) per hectare							Total	Proportion
	R1	R2	R3	R4	R5	R6		
sugar maple	1,1	37,8	48,5	17,7	0,6	11,4	117,1	66%
yellow birch	0,1	26,0	18,0	3,8	0,3	4,2	52,3	29%
other hardwoods	0,0	2,0	1,5	0,3	0,0	0,3	4,2	2%
beech	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0%
softwoods	1,6	0,3	0,8	0,3	0,0	1,9	4,9	3%
non commercial	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0%
Total	2,8	66,0	68,8	22,0	1,0	17,8	178,5	
Proportion	2%	37%	39%	12%	1%	10%		

¹ Pelletier, G., D. Landry and M. Girouard (2013). A tree classification system for New Brunswick. Edmundston, New Brunswick, Northern Hardwoods Research Institute. « R5 » & « R6 » represent dead trees with or without recoverable products respectively.

Number of trees and Volume Distribution per Form Class²

Form class - Number of stems per hectare									Total	Proportion
	F1	F2	F3	F4	F5	F6	F7	F8		
sugar maple	70	172,5	3	2,5	12	18	31	18	326	67%
yellow birch	25	55	3	4	11	7	11	8	124	26%
other hardwoods	3	11	0	0	0	0	2	0	15	3%
beech	0	0	0	0	0	0	0	0	0	0%
softwoods	18	1	0	0	0	0	0	0	19	4%
non commercial	0	2	0	0	0	0	0	0	2	0%
Total	116	241	7	7	23	24	43	26	486	
Proportion	24%	50%	1%	1%	5%	5%	9%	5%		

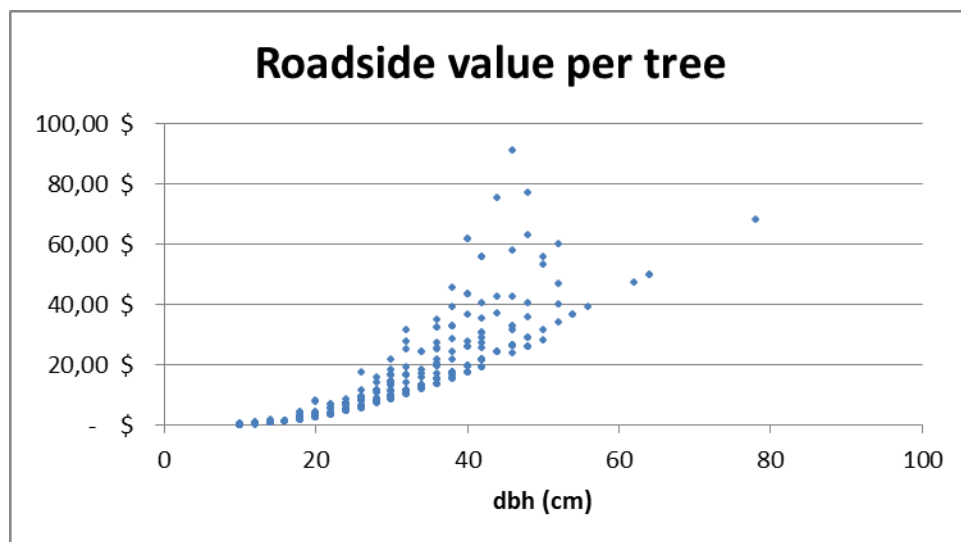
Risk and Form class combinations- Number of stems per hectare									Total	Proportion
	F1	F2	F3	F4	F5	F6	F7	F8		
R1	6	11	0	0	0	0	0	0	17	3%
R2	60	115	2	1	10	10	12	16	226	39%
R3	43	128	4	5	16	12	28	7	243	42%
R4	13	24	1	0	1	3	6	5	53	9%
R5	1	1	0	0	0	0	0	0	2	0%
R6	16	10	1	2	0	4	6	3	42	7%
Total	139	289	8	8	27	29	52	31	583	
Proportion	24%	50%	1%	1%	5%	5%	9%	5%		

Economic Data

Value per hectare			
	Harvest cost	Mill price	Roadside value
sugar maple	1 778 \$	4 985 \$	3 206 \$
yellow birch	796 \$	2 395 \$	1 598 \$
other hardwoods	69 \$	156 \$	88 \$
beech	- \$	- \$	- \$
softwoods	78 \$	282 \$	204 \$
non commercial	- \$	- \$	- \$
Total	2 722 \$	7 818 \$	5 096 \$

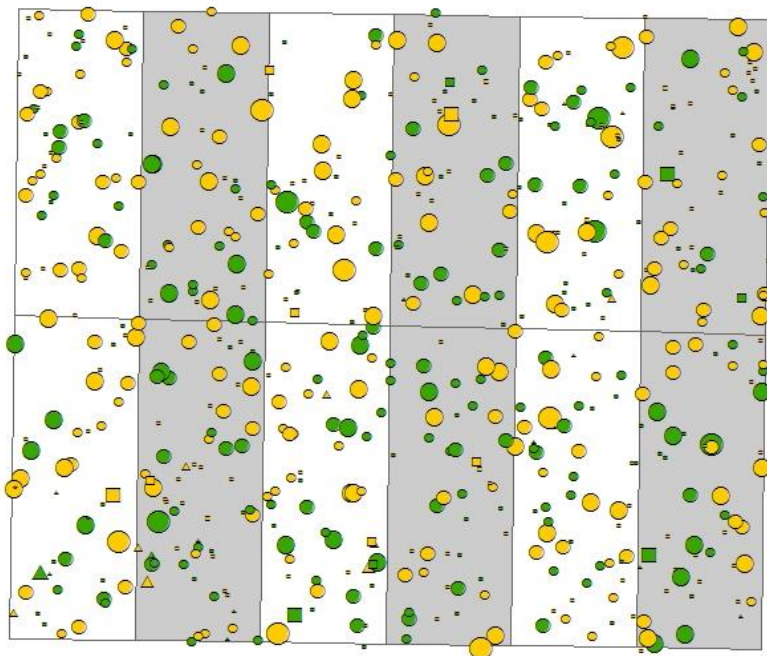
² Pelletier, G., D. Landry and M. Girouard (2013). A tree classification system for New Brunswick. Edmundston, New Brunswick, Northern Hardwoods Research Institute.

Net value per hectare							
	10-18 dbh	20-28 dbh	30-38 dbh	40-48 dbh	50-100 dbh	Total	Proportion
sugar maple	112 \$	536 \$	971 \$	1 125 \$	463 \$	3 206 \$	63%
yellow birch	29 \$	170 \$	514 \$	785 \$	101 \$	1 598 \$	31%
other hardwoods	4 \$	30 \$	54 \$	- \$	- \$	88 \$	2%
beech	- \$	- \$	- \$	- \$	- \$	- \$	0%
softwoods	15 \$	55 \$	58 \$	76 \$	- \$	204 \$	4%
non commercial	- \$	- \$	- \$	- \$	- \$	- \$	0%
Total	158 \$	791 \$	1 596 \$	1 987 \$	564 \$	5 096 \$	
Proportion	3%	16%	31%	39%	11%		

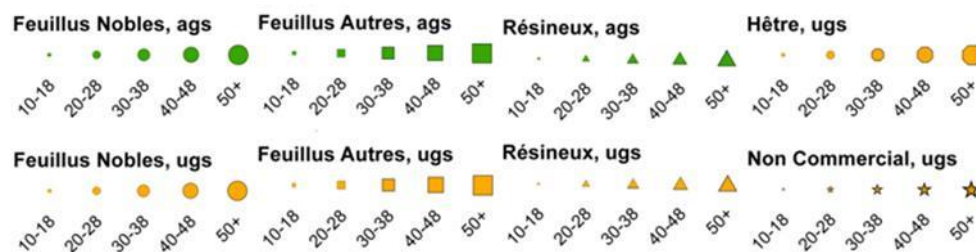


Net value per cubic meter							
	10-18 dbh	20-28 dbh	30-38 dbh	40-48 dbh	50-100 dbh	Mean	
sugar maple	15 \$	24 \$	29 \$	30 \$	28 \$	27 \$	
yellow birch	16 \$	21 \$	29 \$	35 \$	34 \$	31 \$	
other hardwoods	15 \$	20 \$	23 \$	- \$	- \$	21 \$	
beech	- \$	- \$	- \$	- \$	- \$		
softwoods	24 \$	35 \$	35 \$	71 \$	- \$	42 \$	
non commercial	- \$	- \$	- \$	- \$	- \$		
Mean	16 \$	23 \$	29 \$	33 \$	29 \$	29 \$	

Tree Locations in Horseback 1 Marteloscope

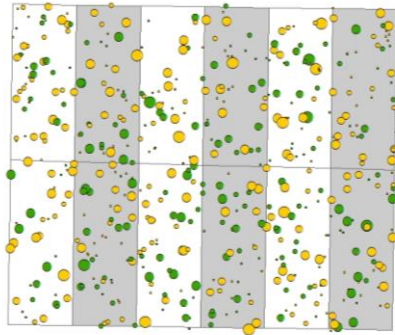


11	10	7	6	3	2
12	9	8	5	4	1

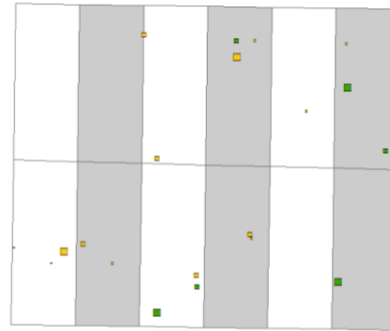


Detailed Cartography per Species Group

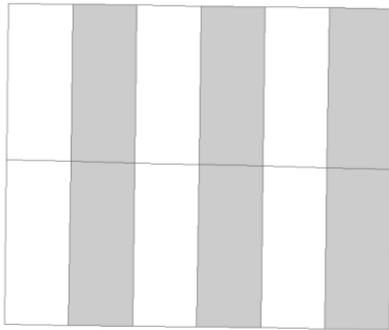
Tolerant Hardwoods



Other Hardwoods



Beech



Softwoods

