

The Catchacoma Old-growth Forest – An Endangered Ecosystem: A Meeting with Bancroft Minden Forest Company

Bancroft, Ontario

prepared by Ancient Forest Exploration & Research (AFER)

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Attachments: FLB #34; FLB #35; SARs at Catchacoma OGF; Publications Citing AFER Work

1. AFER's Mandate, Expertise & Track Record

- AFER is a non-profit scientific and education organization established in 1992.
- Mission - to identify, map, describe and protect ancient (pristine) forested landscapes, including old-growth forests (OGF)
- Our scientists have more than 80 years of cumulative experience.
- Carried out more than 50 Earthwatch Institute Research Expeditions
- Produced more than 100 technical publications including numerous published journal articles and two books
- Our work is cited in more than 300 scientific papers, which include (a) 59 different refereed journals, (b) 31 books, (c) reports by 53 resource management agencies and universities produced by scientists in 18 countries (list attached).

2. Content Outline

- Eastern hemlock forests of all ages are "Endangered Ecosystems"
- Identification and mapping of the Catchacoma OGF
- The Catchacoma OGF is the largest of its kind in Canada
- OGF features of the Catchacoma Forest based on field studies
- Species-at-risk documentation for the Catchacoma OGF and surrounding region

3. Upshot – The Catchacoma OGF has local, regional and national natural heritage significance and should be protected from logging, mining and hydroelectric development/activity

Eastern Hemlock Forests of all Ages are “Endangered Ecosystems”

(AFER FLB#34)

“Of all countries, Canada lost the greatest amount of primary, natural (old-growth) forest between 2000 and 2014 representing 20% of global primary deforestation during that time.”

(AFER FLB#34)

Table 1. Conservation Status of Temperate Forest Types in Central Ontario on the Canadian Shield (>60% dominance in the overstory; all ages; based on FRI data; from Watkins (2011))

Forest Type	2001		2006		2011		10-yr Change	Conservation Status
	Ha	%	Ha	%	Ha	%		
American Basswood	263	0.02	177	0.02	177	0.01	declined (33%)	Critically Endangered
American Beech	2,261	0.2	388	0.2	404	0.03	declined (82%)	
Yellow Birch	4,913	0.3	5,670	0.4	5,366	0.4	increased (9%)	
Eastern Hemlock	20,236	1.4	18,140	1.5	18,618	1.5	declined (8%)	Endangered
Red Maple	165,213	11.6	21,043	12.5	20,930	1.6	declined (87%)	
Ash (Black & White)	24,575	1.7	29,792	1.9	27,580	2.2	increased (12%)	
Oak (all; primarily Red)	52,671	3.7	37,271	4.0	38,902	3.0	declined (26%)	Threatened
Red Pine	59,193	4.2	67,195	4.5	73,025	5.7	increased (36%)	Special Concern
Balsam Fir	102,838	7.2	127,316	7.8	100,940	7.9		Common
White Spruce	99,007	7.0	115,953	7.5	108,785	8.5		
Eastern White Pine	110,607	7.8	121,607	8.4	130,916	10.2		
Northern White Cedar	237,805	16.8	253,444	18.0	237,691	18.6		
Sugar Maple	539,900	38.0	521,883	40.9	515,099	40.3		
Total	1,419,482		1,319,879		1,278,433			

Data Source: Watkins, L. 2011. *The Forest Resources of Ontario 2011*. Ontario Ministry of Natural Resources, Forest Evaluation and Standards Section, Forests Branch. Sault Ste. Marie, Ontario.

- **13 temperate forest types occur on the Canadian Shield in Ontario (Table 1)**
- **8 forest types “at-risk” within four conservation categories**
 - Critically Endangered (<1%): American basswood (0.01%), American beech (0.03%), yellow birch (0.4%)
 - Endangered (1 - 2.9%): eastern hemlock (1.5%), red maple (1.6%), ash (black and white) (2.2%)
 - Threatened (3 - 4.9%): oak (all native spp., mainly red) (3.0%)
 - Special Concern (5 - 7%): red pine (5.7%)

Identification and Mapping of the Catchacoma OGF

Figure 1. Catchacoma Forest Boundaries and Location

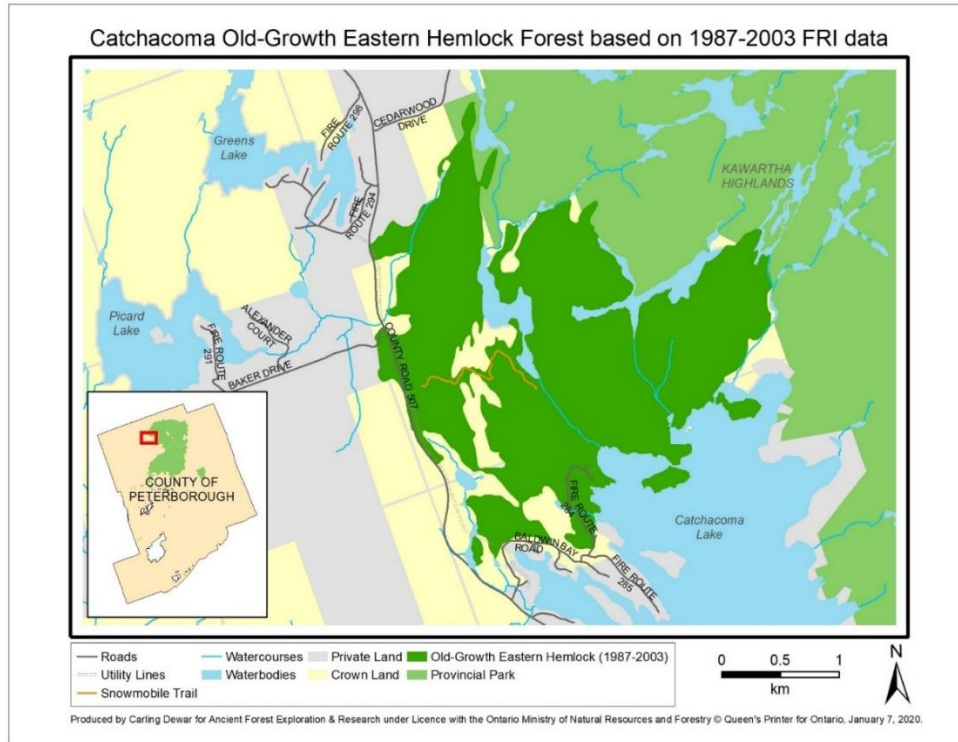


Table 2. FRI Composition at the Catchacoma Forest

FRI Stand Composition	Ha	Age in 2019	Height	Stocking	Site Quality
HE 9 MR 1	150	176	25	0.8	1
HE 9 MR 1	23	176	25	0.8	1
HE 9 MR 1	18	176	25	0.8	1
HE 9 MR 1	1	176	25	0.8	1
HE 9 MR 1	1	176	25	0.8	1
Total	193				
HE 7 MR 1 OR 1 PW 1	109	147	21	1.0	2
HE 7 MH 1 MR 1 OR 1	13	142	20	1.0	2
HE 7 MH 1 MR 1 OR 1	10	142	20	1.0	2
HE 6 OR 2 MR 1 PW 1	149	142	20	1.0	2
HE 6 OR 2 MR 1 PW 1	23	142	20	1.0	2
HE 6 MR 2 CE 1 PO 1	13	141	20	1.1	2
Total	317				
HE 5 MH 2 MR 2 IW 1	8	141	17	0.9	3
HE 4 OR 3 PW 2 MR 1	21	187	17	0.8	3
HE 4 OR 3 PW 2 MR 1	1	187	17	0.8	3
HE 4 MH 2 PO 2 MR 1 PW 1	15	152	21	0.8	2
Total	44				
Grand Total	554				

The Catchacoma OGF is the Largest of its Kind in Canada (AFER FLB#35)

Table 3. Documented Old-growth Eastern Hemlock Forests in Canada >50 ha (area in ha)

Site Name	Province	OG Hemlock Area (ha)	Protected
Catchacoma Lake Old-growth Hemlock Forest	Ontario	550	NO
Clear Lake Conservation Reserve	Ontario	453	YES
North Tea and Cayuga Lakes Old-growth Hemlock Forest	Ontario	406	partial
Raganooter Lake Conservation Reserve	Ontario	311	YES
DeGaulle Lake Old-growth Hemlock Forest	Ontario	305	NO
Gold Lake Old-growth Hemlock Forest	Ontario	285	NO
Algonquin Park (>100 ha; 28 stands)	Ontario	100 - 280	YES
Lost Dog Lake West Old-growth Forest Cluster	Ontario	192	partial
High Park	Ontario	160	YES
Booth Lake Eastern Hemlock Old-growth Forest	Quebec	152	unknown
Wesleyville Ravines	Ontario	138	YES
Lost Dog Lake Central Old-growth Hemlock Forest	Ontario	79	partial
Echo Lake Ancient Forest	Quebec	56	YES

- 87 known eastern hemlock OGF stands were identified (see FLB#35)
- Size data available for 53 stands
- Ranged from 5 to 550 ha with a mean of 138 ha
- **Catchacoma OGF is the largest of the 53 stands at 550 ha (1,375 ac)**, which is almost 100 ha (250 ac) larger than the next largest eastern hemlock OGF.
- The second and fourth largest eastern hemlock OGF stands - Clear Lake Conservation Reserve and Raganooter Lake Conservation Reserve, respectively - are both officially designated as “**provincially significant**” (453 and 311 ha, respectively).
- At almost 100 ha larger than the Clear Lake Reserve, **the Catchacoma OGF is likely also significant at the provincial level and should be assessed in detail as soon as possible in order to evaluate this.**
- 75% (66 stands) of the eastern hemlock OGFs are located in Ontario, 17% (15 stands) in Nova Scotia, 7% (6 stands) in Quebec
- 71 of the 87 eastern hemlock OGF stands are protected
- There are other eastern hemlock OGFs throughout eastern Canada that have not yet been identified
- Need additional information to further describe many of the stands (e.g., size, composition, significance, etc.)

AFER Field Studies: Old growth Features of the Catchacoma Forest

- Forest surveys were conducted during the summer of 2019 in two areas, one in the south and one in the north (current logging area). See www.peterborougholdgrowth.ca/our-protocols, Protocol 3, for our methods.
- Of 73 trees aged by AFER in Peterborough County in 2019, the oldest was a **373 year-old eastern hemlock** found in the northern portion of the Catchacoma OGF.
- The Catchacoma OGF has a mean tree age of 185 yrs. compared with an average tree age of 190 yrs. for the Mark S. Burnham Provincial Park (MBPP) OGF (AFER field data; Table 4). Trees were aged by extracting tree cores with an increment borer and counting growth rings and adding 24 yrs. for hemlock.
- On average, trees are larger in the Catchacoma OGF than at the MBPP OGF.
- The density of logs (no./ha) was highest in the Catchacoma OGF compared to other OGFs.
- Mean log volume was slightly higher in the Catchacoma OGF compared with the MBPP OGF
- The density of snags (no./ha) was over three times greater in the Catchacoma OGF than at the MBPP OGF.
- Stump density (no./ha) was intermediate in the Catchacoma OGF compared to other OGFs.
- However, **the density of stumps was lowest in the northern portion of the Catchacoma OGF.**
- Dr. Troy McMullin, lichen specialist and research scientist at the *Canadian Museum of Nature*, recently identified several lichen species we collected from this forest that “require a mature stable environment, which suggests that it is an old stand”.

Table 4. Results of OGF Surveys in Catchacoma (6 plots from north area, 4 from the south) Compared with other Old-growth Forests in Southern Ontario.

	Catchacoma Forest (10 plots)	Mark S. Burnham Provincial Park (10 Plots)	Stewart's Woods (Larson et al. 1999)	35 Heritage Woodlands (Larson et al. 1999)
Mean Tree DBH (>10 cm)	31.7	26.3	38.2	34.3
Mean Basal Area (m ² /ha)	48.4	35.9	65.2	36.0
Mean Tree Density (No./ha)	546	502	to be determined	to be determined
Mean Tree Age (yrs.)*	185 (range: 112 - 373)	190 (range: 102 - 334)	not reported	not reported
Mean Log Density (No./ha); Mean Log Size (diameter (cm) at intersect) & Mean Decay Class (>10 cm DBH)	104; 18.2; 3.0	70; 20.7; 2.9	89; 29.4; 2.7	38; 31.7; 2.6
Mean Log Volume (m ³ /ha)	52.2 (range: 12.5 - 237.7)	49.4 (range: 2.5 - 146)	to be determined	to be determined
Mean Stump Density (No./ha; >10 cm diameter)	26 (6.7 in northern area)	16	38	19
Mean Snag Density (No./ha; >10 cm DBH)	102	32	not reported	not reported

*24 years added to eastern hemlock trees for years to reach 4.5 ft.; 15 years added to all other species (Vasiliauskas 1995 and Fraver et al. 2011, respectively). References: Larson et al. 1999. ***The Woodland Heritage of Southern Ontario***. Report prepared for the Federation of Ontario Naturalists, Don Mills, ON. Vasiliauskas, S. A. 1995. ***Interpretation of Age-structure Gaps in Hemlock (Tsuga canadensis) populations of Algonquin Park***. Ph.D. Thesis, Department of Biology, Queen's University. Fraver et al. 2011. Improving tree age estimates derived from increment cores: a case study of Pinus resinosa. ***Forest Science*** 57:164-170.

SARs Documentation for the Catchacoma OGF Region

1. Stantec Consulting Ltd. 2008. Access Road Environmental Study, Kawartha Highlands Provincial Park. Prepared for the Ministry of Natural Resources. “Proposed Bottle Lake Access Rd. Assessment”

- Two **Eastern Hognose Snakes** (threatened at the Federal and Provincial level) were found along this route in an area bordering the Catchacoma OGF.
- **Cerulean Warblers** (endangered at the Federal and Provincial level) were noted as being ‘**common**’ along this route and in the OGF. Cerulean Warblers require large areas (>100ha) of mature and old-growth forest to breed in and are negatively affected by logging in the OGF (COSEWIC 2003).

2. Beacon Environmental Limited and Wildlife 2000 Consulting. 2018. DRAFT Recovery Strategy for the Algonquin Wolf (*Canis sp.*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario.

- The **Algonquin Wolf** (threatened at the Federal and Provincial levels) – numerous documented locations in northern portions of the KHPP including the Catchacoma OGF

3. Seven Other SARs in the Catchacoma OGF

Species	SARA (federal)	SARO (provincial)
Golden-winged Warbler	threatened	special concern
Rusty Blackbird	special concern	special concern
Wood Thrush	threatened	special concern
Blanding’s Turtle	threatened	threatened
Common Five-lined Skink	special concern	special concern
Monarch Butterfly	endangered	special concern
Yellow-banded Bumble Bee	special concern	n/a

4. SARs Summary: In total, 5 endangered, 11 threatened, and 10 special concern species listed at both the Federal and Provincial levels were found to occur within the Catchacoma OGF or within 10 km of it (see SARs Appendix).

5. Significant Wildlife Habitat Criteria Schedules For Ecoregion 5E (OMNRF 2015)

- Hemlock-white pine old-growth forest
- Several bogs
- White and red oak rock barrens in the southern portion of the OGF (visible on Google Earth)
- Potential white oak-red spruce forest
- Several Target Species listed by the OMNRF as being indicators of SWH were found to occur within the OGF site.

Attachments

Quinby, P. 2019. Rare, Threatened and Endangered Forest Ecosystems in Ontario's Temperate Forest Region. **Forest Landscape Baselines** No. 34, Ancient Forest Exploration & Research, Powassan & Peterborough, Ontario.

Quinby, P. 2019. An Inventory of Documented Old-growth Eastern Hemlock Forests in Canada. **Forest Landscape Baselines** No. 35, Ancient Forest Exploration & Research, Powassan & Peterborough, Ontario.

Species-at-risk in and near the Catchacoma OGF

Science Citations of Publications Produced by Ancient Forest Exploration & Research and Peter Quinby: A Global Influence. February 2020.

The Catchacoma Forest: Canada's Largest Documented Old-growth Landscape



Ancient Forest Exploration & Research, Feb. 13, 2010