

Ancient Forest Exploration & Research
Powassan, Ontario, Canada

An Inventory of Documented Old-growth Eastern Hemlock Forests in Canada

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"In the short-term, individual groups and societies might profit from forest destruction. However, with old-growth forest vanishing at an unprecedented pace, mankind as a whole loses the ecosystem services provided by these forests... [including their] spiritual and/or aesthetic nature, genetic resources, non-timber products, habitat for wildlife, the sequestration of carbon, the prevention of floods and erosion, to name only a few... Data on old-growth forests are generally scarce... NGOs involved in the protection of old growth or primary forests need fast and efficient survey methods and, given the land-use pressure on the remaining areas, they cannot afford to waste time."

(Old-Growth Forests, Wirth et al. 2009)

Introduction

The most valuable portions of the remaining undisturbed forested landscapes are old-growth forests (OGFs), which are important for their biodiversity (and habitat), carbon storage and sequestration, recreation, education, research and spirituality values, including others. In fact, OGFs store and sequester more carbon than any other terrestrial ecosystem type. The sooner these endangered ecosystems are located and protected, the more effective forest conservation strategies will be.

The purpose of this work was to identify the known eastern hemlock OGF stands in Canada, and to compare the Catchacoma OGF (Peterborough County, Ontario) to others of its type. The Catchacoma OGF is currently unprotected, is the largest of its kind in Canada, and is threatened by immanent logging at the time of this report preparation.

Methods

A literature review using refereed journals, technical reports and internet sources was carried out to identify known old-growth eastern hemlock forests in Canada. Information collected included (1) the forest name, (2) province/location, (3) size of old-growth eastern hemlock (ha), (4) protection status, (5) amount of eastern hemlock (dominant or partial abundance), (6) integrity, (7) notes (e.g., level of significance, if known) and (8) source of information.

Results and Discussion

Catchacoma Old-growth Forest

A total of 87 known eastern hemlock OGF stands were identified in this study ranging from 5 to 550 ha with a mean of 138 ha (Table 1). Size data, available for 53 of these stands, shows that the Catchacoma OGF is the largest of those 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.

Additional criteria that should be evaluated with field studies in the Catchacoma OGF include biodiversity, habitat heterogeneity, representation, integrity, and species-at-risk and their habitat. Based on our preliminary field assessments in the Catchacoma OGF and based on our experience with assessing other eastern hemlock OGFs, it is likely that the Catchacoma OGF will meet the criteria for provincial significance. However, the logging that has been approved for this endangered ecosystem will reduce the overall ecological and societal value of this unique endangered forest ecosystem.

Protection, Location and Future Work

A total of 71 of these OGF stands are protected, although more work is required to determine the protection status of the eastern hemlock OGFs in Algonquin Park, which still allows logging in roughly two-thirds of the Park. Roughly 75% (66 stands) of the eastern hemlock OGFs are located in Ontario, which is significantly more than those found in Nova Scotia (15 stands, 17%) and in Quebec (6 stands, 7%).

There are other eastern hemlock OGFs throughout eastern Canada that have not yet been documented and thus were not identified in this study, some of which are likely threatened by logging. This emphasizes the need to continue with GIS map analyses and field surveys to identify, map, describe and protect remaining endangered eastern hemlock OGFs in eastern Canada. It is also important to collect additional information to further describe many of the stands (e.g., size, composition, significance, etc.) listed in Table 1.

Table 1. Documented Old-growth Eastern Hemlock Forests in Canada (area in ha)

Site Name	Province	Area of Old-Growth Hemlock	Protected	Amount of Hemlock	Integrity	Notes	Source
Catchacoma Lake Old-growth Hemlock Forest	Ontario	550	NO	dominant species	minor historical logging	provincially significant (unofficial)	www.peterborougholdgrowth.ca
Clear Lake Conservation Reserve	Ontario	453	YES	dominant species	minor historical logging	provincially significant	ontario.ca/page/crown-land-use-policy-atlas
North Tea and Cayuga Lakes Old-growth Hemlock Forest	Ontario	406	partial	dominant species	minor historical logging	provincially significant (unofficial)	www.ancientforest.org
Raganooter Lake Conservation Reserve	Ontario	311	YES	dominant species	minor historical logging	provincially significant	ontario.ca/page/crown-land-use-policy-atlas
DeGaulle Lake Old-growth Hemlock Forest	Ontario	305	NO	dominant species	unknown	provincially significant (unofficial)	www.peterborougholdgrowth.ca
Gold Lake Old-growth Hemlock Forest	Ontario	285	NO	dominant species	unknown	provincially significant (unofficial)	www.peterborougholdgrowth.ca
Algonquin Park (>100 ha; 28 stands)	Ontario	100 - 280	YES	dominant species	minor historical logging	provincially significant	Land Information Ontario (2019); Quinby (2019)
Lost Dog Lake West Old-growth Forest Cluster	Ontario	192	partial	dominant species	minor historical logging	provincially significant (unofficial)	www.ancientforest.org
High Park	Ontario	160	YES	partial	unknown	regionally significant	ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Booth Lake Eastern Hemlock Old-growth Forest	Quebec	152	unknown	dominant species	unknown		Villeneuve and Brisson (2003)
Wesleyville Ravines	Ontario	138	YES	dominant species	unknown		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Lost Dog Lake Central Old-growth Hemlock Forest	Ontario	79	partial	dominant species	minor historical logging		www.ancientforest.org
Echo Lake Ancient Forest	Quebec	56	YES	dominant species	unknown		Labelle (2019)
Panuke Lake Nature Reserve	Nova Scotia	47	YES	partial	unknown		https://novascotia.ca/nse/
Gagnon Lake Eastern Hemlock Old-growth Forest	Quebec	45	unknown	dominant species	unknown		Villeneuve and Brisson (2003)
Devlin Lake Eastern Hemlock Old-growth Forest	Quebec	31	unknown	dominant species	unknown		Villeneuve and Brisson (2003)
Sisco Lake Old-growth Hemlock Forest	Ontario	29	partial	dominant species	minor historical logging		www.ancientforest.org
Sporting Lake Nature Reserve	Nova Scotia	25	YES	partial	unknown		https://novascotia.ca/nse/
Gillies Grove	Ontario	25	YES	dominant species	unknown		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Preston Lake Eastern Hemlock Old-growth Forest	Quebec	20	unknown	dominant species	unknown		Villeneuve and Brisson (2003)
Balls Falls Gorge (Twenty Valley)	Ontario	20	YES	dominant species	minor historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Mckeel Woods Eastern Hemlock Old-growth Forest	Quebec	17	unknown	dominant species	unknown		Villeneuve and Brisson (2003)
Decew Falls and Gorge	Ontario	11	YES	dominant species	minor historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Durland Lake Old-growth Forest	Nova Scotia	10	YES	dominant species	unknown		http://oldforests.ca/special.html
Jackson Creek Old-growth Forest	Ontario	5	YES	dominant species	minor historical logging		www.peterborougholdgrowth.ca
Hemlock Valley	Ontario	5	YES	dominant species	unknown		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf

Table 1. continued (part 2)

Site Name	Province	Area of Old-Growth Hemlock (ha)	Protected	Amount of Hemlock	Integrity	Notes	Source
Basswood Lake Hemlock Conservation Reserve	Ontario	unknown	YES	partial	unknown	provincially significant	ontario.ca/page/crown-land-use-policy-atlas
Bolton Resource Management Tract (Humber Valley)	Ontario	unknown	YES	partial	historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Commanda Creek Conservation Reserve	Ontario	unknown	YES	partial	minor historical logging		ontario.ca/page/crown-land-use-policy-atlas
Crane Lake Forest Conservation Reserve	Ontario	unknown	YES	partial	minor historical logging		ontario.ca/page/crown-land-use-policy-atlas
Dundas Valley	Ontario	unknown	YES	partial	minor historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Eastern Cardwell Forest Conservation Reserve	Ontario	unknown	YES	partial	historical logging		ontario.ca/page/crown-land-use-policy-atlas
Glenn N. Crombie Conservation Reserve	Ontario	unknown	YES	partial	historical logging	"has the largest concentration of hemlock... at the northern extent of its range in Ontario"	ontario.ca/page/crown-land-use-policy-atlas
Lower Moon River Conservation Reserve	Ontario	unknown	YES	partial	historical logging		ontario.ca/page/crown-land-use-policy-atlas
Marcy's Woods (Point Albino)	Ontario	unknown	YES	partial	unknown		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Mark S. Burnham Provincial Park	Ontario	unknown	YES	partial	minor historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Monteith Forest Conservation Reserve	Ontario	unknown	YES	partial	minor historical logging		ontario.ca/page/crown-land-use-policy-atlas
Moon River Conservation Reserve	Ontario	unknown	YES	partial	historical logging		ontario.ca/page/crown-land-use-policy-atlas
Mowat Township Hemlock Forest Conservation Reserve	Ontario	unknown	YES	partial	historical logging		ontario.ca/page/crown-land-use-policy-atlas
Niagara Gorge First Growth Steep Slope Forest	Ontario	unknown	YES	partial	pristine		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Peter's Woods Provincial Park	Ontario	unknown	YES	partial	minor historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Rouge National Urban Park	Ontario	unknown	YES	partial	minor historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Ryerson Township Forest Conservation Reserve	Ontario	unknown	YES	partial	historical logging		ontario.ca/page/crown-land-use-policy-atlas
Seneca College King Campus	Ontario	unknown	YES	partial	unknown		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Silver Creek Valley	Ontario	unknown	YES	partial	unknown		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Stewart's Woods	Ontario	unknown	YES	partial	minor historical logging		ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf
Swan Lake Conservation Reserve	Ontario	unknown	YES	partial	historical logging		ontario.ca/page/crown-land-use-policy-atlas
Terra Cotta Woods	Ontario	unknown	YES	partial	unknown	provincially significant	ancientforest.org/wp-content/uploads/Appendix-2-Table-of-Hemlock-Sites.pdf

Table 1. continued (part 3)

Site Name	Province	Area of Old-Growth Hemlock (ha)	Protected	Amount of Hemlock	Integrity	Notes	Source
French River Wilderness Area (Cape Breton Boreal Plateau)	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/
Grand Lake Hemlock Forest	Nova Scotia	unknown	NO	partial	unknown		https://www.merseytobeatic.ca/
Great Barren & Quinan Lakes Nature Reserve	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/
Kejimikujik National Park	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/
Little Bear Lake Old-growth Forest	Nova Scotia	unknown	NO	partial	unknown		https://www.merseytobeatic.ca/
North River Wilderness Area	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/
Porcupine Lakes Old-growth Forest	Nova Scotia	unknown	NO	partial	unknown		https://www.merseytobeatic.ca/
Portapique River Wilderness Area	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/
Shelburne River Wilderness Area	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/
Tobeatic Wilderness Area	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/
Toney Lake Old-growth Forest	Nova Scotia	unknown	NO	partial	unknown		https://www.merseytobeatic.ca/
Waverley-Salmon River Long Lake Wilderness Area	Nova Scotia	unknown	YES	partial	unknown		https://novascotia.ca/nse/

AFER's Mission and Guiding Principles

AFER is a non-profit scientific organization with a mission to carry out research and education that lead to the identification, description and protection of ancient (pristine) forested landscapes, including old-growth forests. The earth-stewardship principles that guide our work include the following.

- Many forest ecosystem types are now endangered. We consider these ecosystems and other ancient forests to be non-renewable resources, which is not consistent with the practice of mining or logging them.
- We consider biodiversity conservation needs at local, provincial, federal and international scales.
- We support the Government of Canada's official commitment to increase protected areas to 17% of the Canadian land base.
- We support the New York Declaration on Forests to end natural forest loss by 2030.

References

- Labelle, T. 2019. *Personal Communication*. Canadian Parks & Wilderness Society - Ottawa Valley Chapter, Gatineau, QC.
- Quinby, F. 2019. *Old-growth Hemlock Stands in Algonquin Park, ON*. Ancient Forest Exploration & Research, Powassan, Ontario.
- Villeneuve, N. and J. Brisson. 2003. Old-growth forests in the temperate deciduous zone of Quebec: Identification and evaluation for conservation and research purposes. *Forestry Chronicle* 79:559-569.
- Wirth, C. et al. (eds.). 2009. *Old-Growth Forests: Function, Fate and Value*. Springer-Verlag, Berlin, Germany.

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