Rapid Assessment of Old-growth Characteristics in the Catchacoma Forest, Northern Peterborough County, Ontario

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Catchacoma Old-growth Forest (K. Cowcill, July 2020)

Introduction

In March of 2019, Ancient Forest Exploration & Research began work on a one-year project to assess and describe old-growth forests (OGF) in Peterborough County funded by the Ontario Trillium Foundation. One of the most significant findings from this project was the identification of the Catchacoma Forest as Canada's largest known old-growth eastern hemlock forest (Figure 1; Quinby 2019) with an estimated size of 662 ha (1,655 ac). Despite this finding of national significance, and despite confirmation of the common presence of old-growth features (old trees, snags, logs, low stump density; Dewar 2020), the sustainable forestry licence holder (Bancroft Minden Forest Company) ignored these standard conservation values and requests by scientists and conservationists to put a moratorium on logging this area.

Instead of delaying logging in order to further investigate the natural heritage value of this forest, a significant portion (~25 ha; ~62 ac) of this unique and valuable forested landscape was logged during fall and winter of 2019-20. An adjacent area of similar size is scheduled for logging during the fall and winter of 2020-21.

The objective of this study was to collect field samples in lesser-known areas of the Catchacoma Forest primarily in order to assess for OGF features. The results of this work will contribute to a better understanding of the natural history, ecology and conservation of this exceptional forested landscape that also includes numerous wetlands that have not yet been evaluated for their conservation significance at the local, regional, and provincial levels.

Results

The 34 sample plots were randomly distributed throughout the 662 ha study area (Figure 2) to sample within 32 forest stands as shown on Ontario Forest Resource Inventory maps (2007). All plots were circular with a 20 m radius occupying 1,256 m^2 except for 5 plots, which had a 10 m radius. In very dense vegetation conditions, the plot radius was reduced to 10 m due to difficulty making rapid observations from the plot centre. See Appendix 1 for a description of field assessment methods.

The following summarizes the main findings from this rapid field assessment. Detailed results are shown in Table 1.

- No evidence of logging was observed in 53% of the plots.
- For the other 47% of the samples, evidence of logging was observed, however, our data from last summer (Dewar 2020) shows that stump density in the Catchacoma Forest is significantly lower than that of documented OGFs south of the Canadian Shield (see Larsen et al. 1999).
- Approximately half of the sample plots were located in "early OGF stage" forests based on Ontario provincial OGF criteria (tree age only; 140+ yrs.).
- The other half of the plots were in the "late OGF stage" based on field assessment of dead wood (snags and logs) as well as tree age.
- "Super-canopy" trees (five species), those that extend above the main canopy, were present in half of the plots.
- The forest is regenerating well, and hemlock regeneration dominated in three-quarters of the plots.
- Evidence of woodpecker activity was observed in almost half of the plots.

Figure 1. Location and Extent of the Catchacoma Old-growth Forest Landscape
(red line = outer boundary of OGF landscape; brown lines = watershed boundaries)

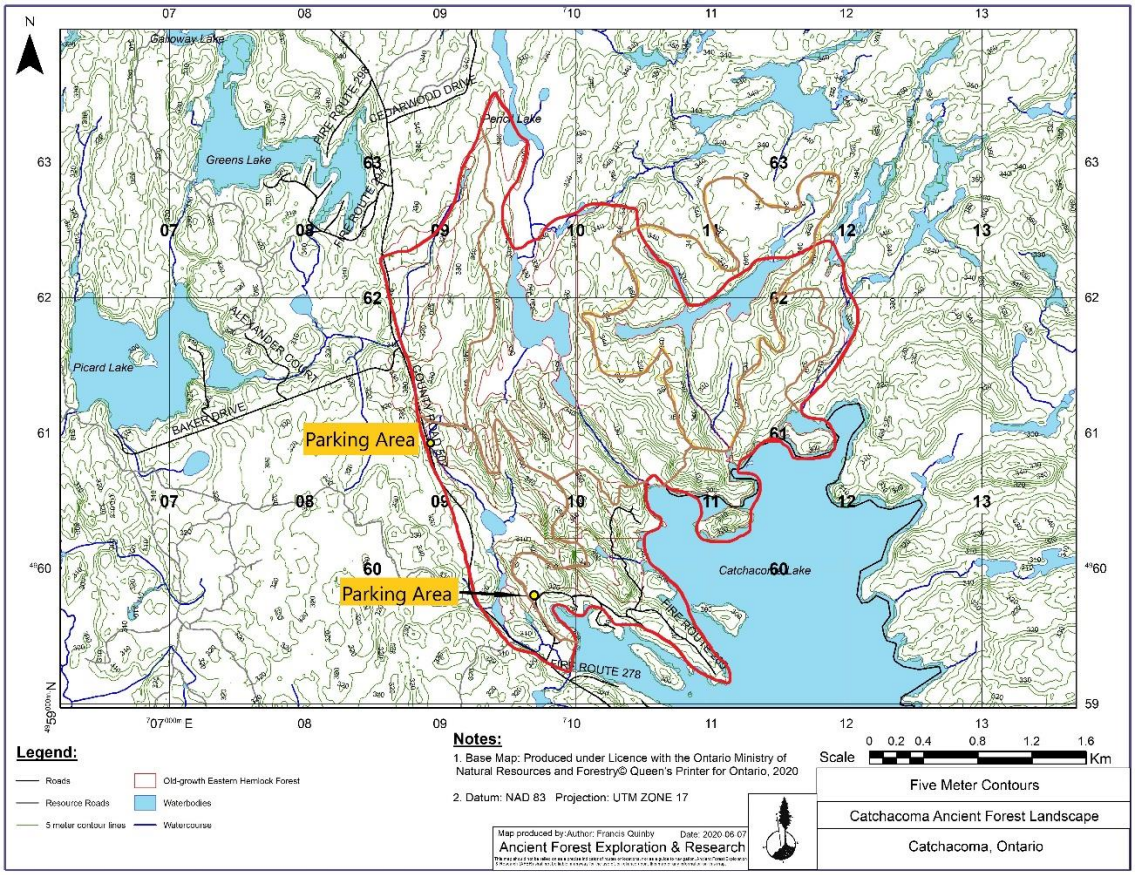

Figure 2. Location of the Field Sample Plots in the Catchacoma Forest Landscape (square points=unlogged; round points=logged)

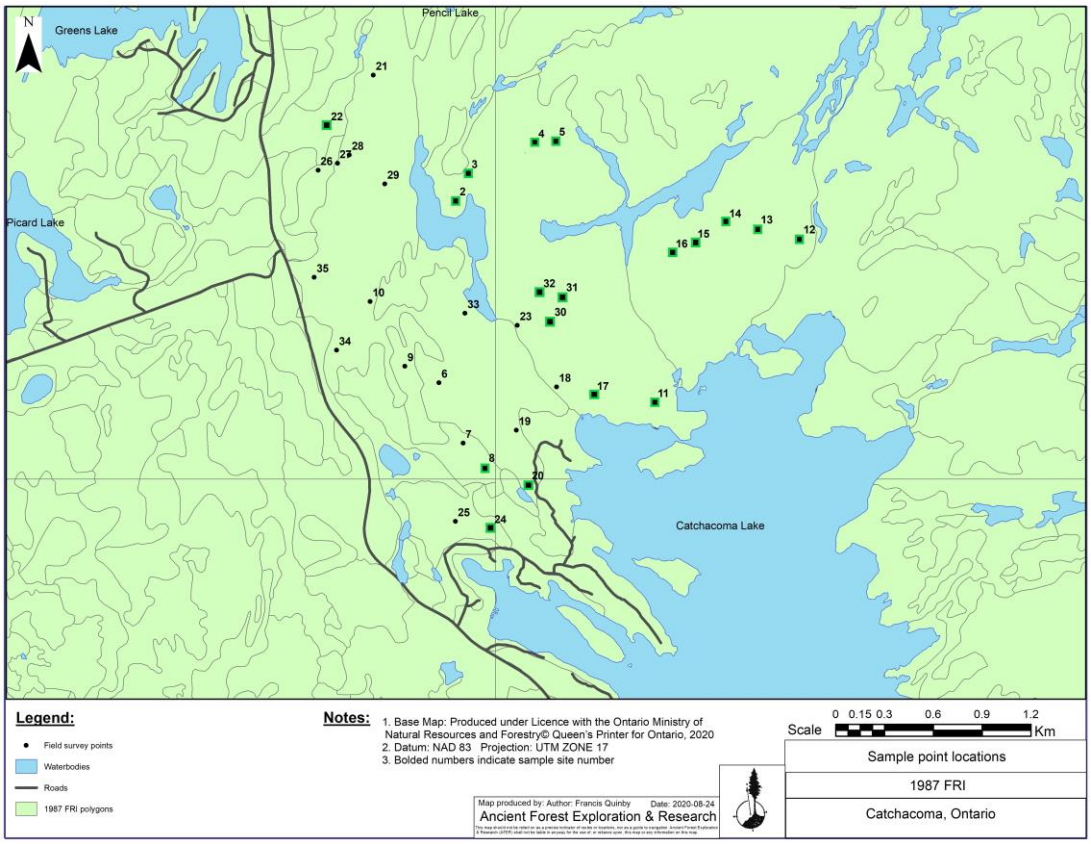

Table 1. Primary Findings from the Catchacoma Forest Based on Data from 34 Field Plots

CATEGORY	NOTES
Site and Habitat	32 forest stands defined by provincial FRI mapping making up 506 ha of the 662 ha of the Catchacoma OGF were sampled with 34 plots in the field
	20 plots were dominated by He; 5 plots were co-dominated by He - other co-dominant spp: Pw, Or, Mh, Mr; 9 plots dominated by six other tree spp. including Aw, Ab, Pr, Po, Mh, Or
	topographic positions sampled: 4 flat plots; 3 hilltops; 1 lower slope; 14 mid-slopes; 2 plateaus; 1 saddle; 6 upper slopes; 3 valleys
	all slope aspects sampled; % slope varied from 0 to 70%
	10 plots close (within 100 m) to a wetland; 1 plot near an oak savanna
	wildlife: woodpeckers, black bear, moose, goshawk, barred owl
Live Vegetation	32 of 34 plots (94%) had trees that met the minimum dbh (diameter) for OGF; the two plots that didn't had been logged
	tree cores were taken and aged in 24 of 34 plots (71%); 21 of these 24 plots (88%) had trees that met the minimum age for OGF*; of the 3 that didn't, two had been logged and one was at least partially within a hydro line corridor
	50% of plots (17/34) contained "super-canopy" (taller than the surrounding canopy) trees including He, Pw, Or, Mh and Ms
	31 of 34 plots (89%) had He regeneration; only a few of these plots had less than 5 %cover of He and were dominated by maple and oak instead
	The understory (contains tree regeneration) in 25 of 34 plots (76%) was dominated by He; in the other 9 plots, He regeneration ranged from 5 %cover to 40 %cover.
Dead Wood	medium to high log volume was found in 23 of 34 plots (68%)
	medium to high snag volume was found in 5 of 34 plots (15%); snags were present in 24 of 34 plots (71%)
	15 of 34 plots (44%) had evidence of snag use by woodpeckers
Disturbance	16 of 34 (47%) plots had logging within the plot or within 100 m of the plot
	8 plots (24%) had evidence of atv trail use within the plot or within 100 m of the plot
	3 plots had evidence of hunting
	2 plots had evidence of historical mining activity; several others had possible mining activity but further investigation was required to verify
	2 plots were at least partially within a hydro corridor
	1 plot had evidence of trapping
	1 plot was at least partially within a cottage lot

NOTES: Ab - black ash; Aw - white ash; He - eastern hemlock; Mh - sugar maple; Ms - red maple; Or - red oak; Po - poplar; Pr - red pine; Pw - eastern white pine

Acknowledgements

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References

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APPENDIX 1
RAPID ASSESSMENT SAMPLE CHECKLIST FOR UPLAND OLD-GROWTH FORESTS (OGF)

ANCIENT FOREST EXPLORATION & RESEARCH
(ANCIENTFOREST.ORG; INFO@ANCIENTFOREST.ORG; JUNE 19, 2020)

Methods - Assessment locations should be distributed throughout the site (forest stand or landscape) in order to get good representation of the variety of habitat types present at the site. A forest habitat type is defined as the combination of a slope position with a slope aspect – e.g., upper slopes facing south-west, except for hilltops and flats, which have no aspect. Also, if possible, assessment samples should be distributed among the different watersheds present at the site relative to the size of each watershed (more samples in bigger watersheds). A contour map should be used to identify the location of habitat types and watershed boundaries. All features within an old-growth forest are spatially variable, thus not all assessment sample areas within an old-growth forest will have all features typical of old-growth forests.

Location and Habitat Information to Collect at each Sample Location

1. Name of OGF site (e.g., Catchacoma OGF) – record gps location
2. Sample# and date of visit
3. Surveyor's names
4. Start time and end time
5. Weather conditions
6. Radius of assessment area – pick a distance of between 10 and 20 meters depending on the ability to make accurate observations
7. Slope position: *hilltop, upper slope, mid-slope, lower slope, valley, saddle, plateau, flats*
8. Slope aspect: *N, NE, E, SE, S, SW, W, NW*
9. Slope steepness: *flat, low, medium, high*
10. Other features including: *bedrock, boulders, exposed soil, wetlands, vernal pools, etc.*
11. Forest stage of development: *young, mature, old (very little/no snags and logs), old growth (has snags and logs)*

Old-growth Features to Assess at Each Sample Location

1. Tree species present and estimated relative abundance (%) of them
2. Abundance of trees at or above the minimum old-growth age for the species: none, uncommon, common, abundant
3. Stump ID#, gps location, species, diameter at cut, stump decay class - repeat for each stump in the assessment area unless the logged area is large in which case the boundaries of the logged area should be documented with a gps
4. Forest age/mean stand age/age of oldest tree (visual estimate, ring count, or both)
5. Tree cores:
    a. obtain from at least 5 samples from each habitat type; record gps location
    b. obtain 2 cores from each sample assessment area, one from the largest tree of the dominant spp. and one from another tree of the dominant spp. but about 20% smaller than the largest tree cored
6. Logs - >10 cm diameter at the small end (describe abundance: none, uncommon, common, abundant)
7. Snags - >10 cm dbh
    a. describe abundance: none, uncommon, common, abundant
    b. woodpecker feeding holes?
    c. cavities that may support wildlife for nesting, roosting, and/or shelter?
8. Understory (0 to 3 m high)
    a. describe volume/density of vegetation as % cover
    b. list most abundant vascular plant spp. up to 5 spp.
    c. record names of rare plant spp. observed
9. Forest regeneration (species and abundance – none, uncommon, common, abundant)
10. Super-canopy trees present? If so, describe abundance (uncommon, common, abundant)
11. Evidence of human disturbance including logging, roads, skidder trails, hiking trails, etc.
12. Evidence of large gaps, wind disturbance and/or fire – describe
13. Observations of wildlife and/or evidence of wildlife use
14. Width and depth of stream/river IF APPLICABLE
15. Additional data such as bird and bat species present using recording technology would be useful

Photos and Videos

1. Take one photo in each cardinal direction at each assessment sample site
2. Take photos and/or videos of significant ecological/biological features, include gps location