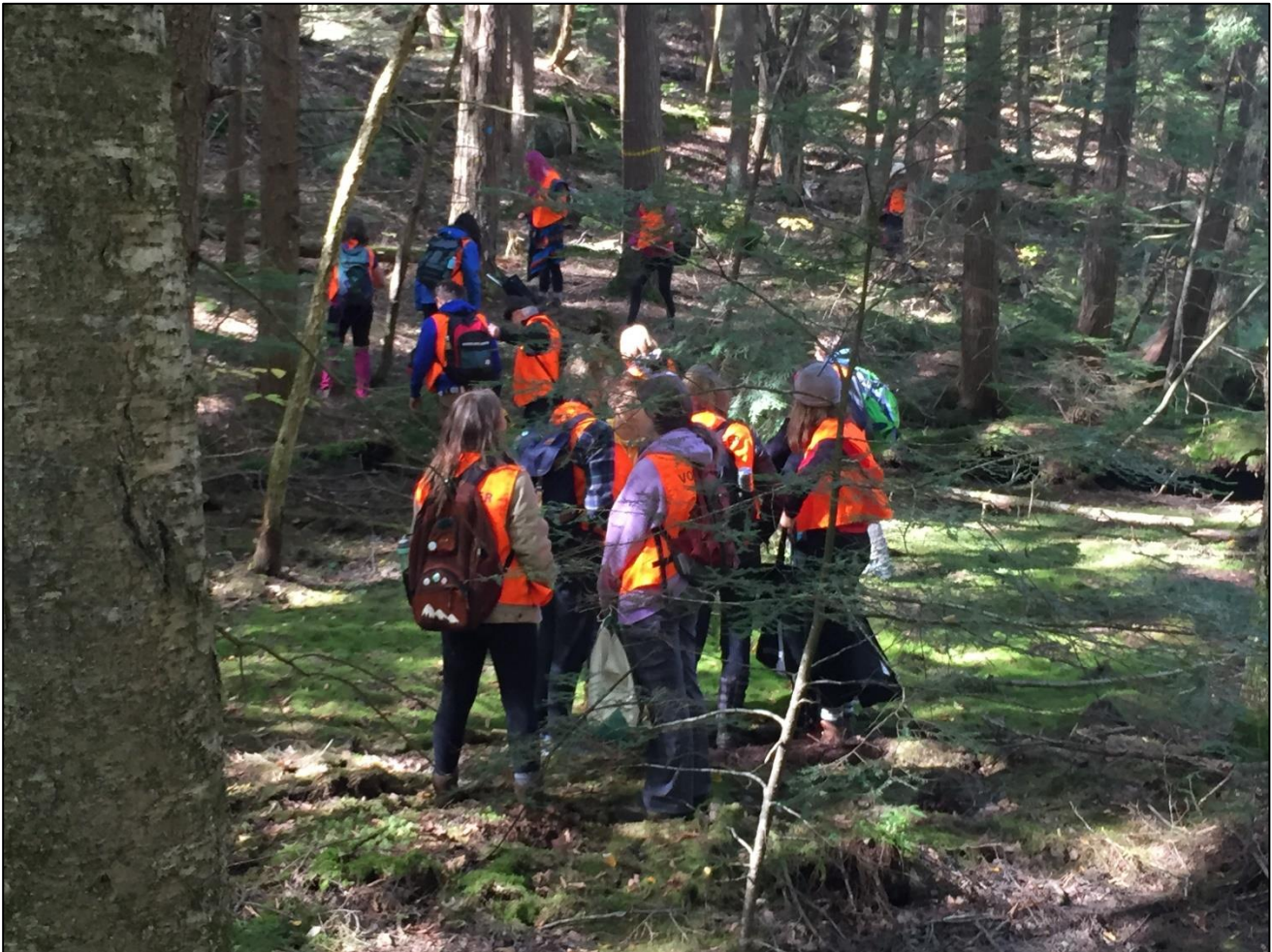


Project Accomplishments: An Eight-Month Review

Developing a Culture of Forest Conservation: Mapping Old Growth in Peterborough County



YLS Class, Catchacoma Old-growth Forest, northern Peterborough County

Ancient Forest Exploration & Research

November 26, 2019

1. Partnerships

Current Partners - Camp Kawartha Environment Centre, Canadian Museum of Nature, Canadian Parks & Wilderness Society-Ottawa Valley, City of Peterborough, GreenUp, Hike Ontario, Kawartha Land Trust, Kawartha Wildlife Centre, The Mount Community Centre, Ohio State University, Ontario Trillium Foundation, Otonabee Region Conservation Authority, Outward Bound Canada, Peterborough Field Naturalists, Peterborough Victoria Northumberland and Clarington Catholic District School Board, Trent Valley Archives, Youth Leadership in Sustainability

- Camp Kawartha Environment Centre - Led a nature interpretation hike for a school class at the Promise Rock Nature Area with an emphasis on old-growth forest values and tree identification

- Canadian Museum of Nature - Lichenologist Dr. Troy McMullin is identifying lichen collected by AFER staff in old-growth forests in Peterborough County and is providing field advice
- Canadian Parks & Wilderness Society - applying Protocol 1 to old-growth forest areas in Quebec
- City of Peterborough
 - AFER obtained a permit from the City to use Jackson Park for educational purposes.
 - AFER staff hosted bi-weekly nature interpretation hikes at this city park from May 8th- October 30th, 2019 and led several additional outreach events. We focussed on old-growth forest ecology and conservation.
- GreenUp
 - Set up an AFER information table at the Annual Plant Sale
 - Partnered with one of their projects, NeighbourPlan, for an interpretive hike focussing on old-growth forest ecology and conservation
 - Workshop for joint GreenUp-Trent University Master of Education class on old-growth forest ecology and conservation
 - Partnered with their SUN program as a leader for tree species identification at a Peterborough neighbourhood Bioblitz
- Hike Ontario - provides insurance for office activities, the BOD, and field work
- Kawartha Land Trust (KLT)
 - Conducted three ecological site assessments on KLT properties: Jeffrey-Cowan Forest Preserve (JCFP), John Earle Chase Memorial Park (JECMP), and Big Island
 - Led three public nature interpretation hiking events on KLT properties
 - Produced an article for the KLT website: *"Ancient Forest Exploration & Research visits the Jeffrey-Cowan Forest Preserve"*
 - Met with the Land Stewardship Committee to discuss site visits and provide forest management recommendations
- Kawartha Wildlife Centre (KWC)
 - Assisted with three habitat building workshops for children in grades 1 to 5 held at three elementary schools
 - KWC shared their space and microscopes to AFER staff for identifying lichen
- The Mount Community Centre - providing a discounted rate for rent and free internet service
- Ohio State University - Dr. Peter Curtis is acting as a scientific advisor for field survey design and forest carbon dynamics
- Ontario Trillium Foundation - provided a \$75,000 seed grant that made this project possible
- Otonabee Region Conservation Authority (ORCA) - AFER has a formal agreement with the ORCA to conduct research and educational activities at one of their properties, Stewart's Woods.
- Outward Bound Canada (OBC)
 - We shared our Protocol Level 1 and provided basic training
 - Program participants successfully applied the protocol on numerous canoe trip expeditions in Algonquin Park

- They have provided us with their old-growth forest survey data
- Peterborough Field Naturalists (PFN)
 - Led a nature interpretation hike for the public at Peter's Woods Old-growth Forest
 - PFN consistently publicized our project and events on their social media pages and calendar
 - Several PFN members attended our outreach and citizen science events
- Peterborough Victoria Northumberland and Clarington Catholic District School Board (PVNCCDSB) - Led a nature interpretation hike for a grade 6/7 class in Jackson Park with an emphasis on old-growth forest values and tree identification
- Trent Valley Archives (TVA)
 - Co-led two Wednesday Forest Walks (see below) at Jackson Park focussing on local history and old-growth forest ecology
 - Ongoing correspondence to assist TVA with the Forest Ontario Heritage Tree Designation process
- Youth Leadership in Sustainability (YLS) – Teacher: Cameron Douglas, 26 students, KPRDSB
 - Classroom presentation to discuss the importance of old-growth forests
 - Led a two-hour tree identification workshop and introduced protocol 2 to students at Jackson Park
 - Led two full-day field expeditions to the Catchacoma Old-growth Forest
 - Analyzed data, conducted online research on the Catchacoma forest, and met with the class to interactively discuss findings and next steps

2. Meetings

- Biosphere GPS - We met with **Jordan Ahee** to discuss the Canada National Forest Inventory Data and his application software, which included the location of old-growth forests.
- Managed Forest Plan Approvers
 - We communicated with **Peterborough County Managed Forest Plan Approvers**, which resulted in establishing a useful contact by the name of Ed Reid who is interested in old-growth forests and wildlife habitat.
 - We are no longer pursuing **old-growth forest surveys on private land** since this is the mandate of land trusts such as the Kawartha Land Trust.
 - Thus, our focus has shifted to **surveying old-growth forests on Crown land**, which is not being conducted by any other organization to our knowledge.

3. Outreach and Public Education to Develop a Culture of Forest Stewardship

- Press Coverage
 - **KawarthaNOW.com** article published July 10, 2019 - **577 shares** on their website and **183 likes** on their Instagram post
 - **Global News TV** Peterborough report and two news features (morning show segment and 6 pm news segment) published July 26, 2019; **viewership is 27,400**
 - **Global News TV** also **aired these segments on the radio**.
 - Featured in the September 2019 issue of **Kawartha Life** - **20,000 copies printed**

- Presentations
 - **Word on the Hill Lecture Series** at Peterborough Museum and Archives, "Peterborough County: Old-Growth Forest Mecca?", Some of the most impressive old-growth forests in Southern Ontario are found in Peterborough County.
 - Two presentations to the **YLS class** on old growth forest values, the project, and data analysis
- At least **27,400 people** informed of our old-growth forest project through TV, radio, print, and social media and likely others through word of mouth and our partners in event sharing
- **1,286 Facebook followers**
- **115 email subscribers** recruited through various outreach events
- **Educated at least 266 people** about the characteristics and values old-growth forests through interpretive and educational hikes
- **Trained 50 people** in tree identification and old-growth forest sampling
- Interpretive Nature/Old-growth Forest Hikes
 - Have led nine Wednesday Forest Walks in Jackson Park: **82 attendees** total (excluding returnees)
 - Over **700 RSVPs** on Facebook
 - Led two interpretive hikes with the **Museum of Contemporary Art** in Toronto:
 - "Tall Grasses and Tall Trees" final attendees unknown
 - "Snags: The Airbnbs of the Animal World" ~8 attendees total
 - **12 other interpretive old-growth hikes** were hosted by AFER.

4. Fiscal Value

- We tripled the dollar value of our OTF Seed Grant from \$75,000 to \$222,000 with in-kind contributions of citizen science labour.
- Value of in-kind labour contributions - \$147,080
 - P. Quinby - 8 months @ 20 hrs/wk x \$120/hr = \$76,800
 - Outward Bound Canada - 60 students x 7-day trips x 10 hrs = 4,200 hours x \$14/hr = \$58,800
 - Peterborough County Citizen Scientists
 - General public - 300 hours @ \$14/hr = \$4,200
 - Youth Leadership in Sustainability Class - 26 students x 20 hrs = 520 hrs x \$14/hr = \$7,280

5. Tools

- Our *Peterborougholdgrowth.ca* [website](#) went live in early July 2019.
- We determined the **conservation status of forest types and communities** found in Ontario's Temperate Forest Region (Appendix A).
- We identified **minimum old-growth tree diameters** for 23 tree species found in Peterborough County using data from the scientific literature and AFER field data (Appendix B).

- We **created maps of old-growth forests** by dominant tree species using Forest Resource Inventory (FRI) data and provincial old-growth forest criteria for northern Peterborough County (Appendix C).
- We **mapped eastern hemlock stands** of all ages and old-growth eastern hemlock stands, all of which are endangered ecosystems (see Appendix A) using GIS and FRI data (Appendix D).
- A map of **Jackson Park trails and topography** in the City of Peterborough was created (Appendix E).

6. Data Collection

- Developed field sampling protocols, data sheets, and software application projects
 - Created an **iNaturalist project**: <https://www.inaturalist.org/projects/peterborough-old-growth-forest-project-level-1>
 - Review of and input for our field sampling protocols was provided by **Dr. Peter Curtis**, Professor of Biology (forest carbon dynamics, Ohio State University)
- Led **four tree-identification workshops** to train volunteer citizen scientists at Jackson Park and Mark S. Burnham Provincial Park
- Led three **workshops to train citizen scientists** how to do forest surveys while collecting data at Mark S. Burnham Provincial Park
- OBC, YLS and local citizens (excluding Dr. Quinby) contributed a total **5,020 hours** of labour towards data collection.

7. Mapping and Forest Surveys

- Identified and **mapped 65,000 acres (26,000 ha) of old-growth forests** in northern Peterborough County based on provincial government criteria and data (Appendix C)
- Identified the **largest known remaining stand of old-growth eastern hemlock forest in Canada** just north of Catchacoma Lake (550 ha, 1,375 ac) in northern Peterborough County (Appendix F for map; Appendix G for a table of known old-growth eastern hemlock stands in Canada)
- Collected field data
 - Supervised the collection of data by citizen scientists in **34 field plots**
 - Conducted reconnaissance and/or basic old-growth forest surveys in **8 landscapes** using mapped areas of old-growth forests (Appendix H)
- Provided **old-growth forest advisory services** (pro bono) to the Kawartha Land Trust (KLT)
- Prepared **numerous technical reports** which are published on our website, see: www.peterborougholdgrowth.ca/publications
- **Three protocol levels** for old-growth forest surveys were developed ranging in difficulty, see: www.peterborougholdgrowth.ca/our-protocols

- **Cored and aged ~70 of the most exceptional trees** found during our field surveys; average age of all trees cored in 2019 field season was 152 years old (see Appendix I)
- Lichen collection and identification to identify **indicator lichen species** for old growth forests
 - AFER staff spent three days with Mireille Martel who taught the team how to collect and identify lichen species at Stewart's Woods and the Catchacoma Lake Old-growth Forest
 - Lichen collected from Stewart's Woods and Catchacoma Lake have been sent to Dr. Troy McMullin, Research Scientist, Canadian Museum of Nature to be identified

8. Professional Development

- **Continuing staff education** and relationship building to learn from others' outreach strategies
 - **Kawartha's Naturally Connected Workshop** held in Buckhorn; Kawartha Land Trust, Peterborough Field Naturalists, Federation of Ontario Cottagers' Association, Peterborough County, and City of Peterborough representatives in attendance
 - Attended one-day **CASIOPA 2019 Conference** on Planning Protected Areas & Natural Spaces

9. Reporting

- Completed **two technical reports and working on seven more**
 - *A Summary of the Jackson Creek Old-growth Forest Report* (completed)
 - *A Citizen-science Approach to Identify and Describe Old-Growth Forests in Peterborough County, Ontario* (completed)
 - *Minimum Diameters for Old-growth Trees in Northern Peterborough County* (draft)
 - *Rare, Threatened and Endangered Forest Types and Communities in Ontario's Temperate Forest Region* (draft)
 - *Species-at-risk Associated with Mature and Old-growth Forests in Northern Peterborough County* (draft)
 - *Definitions and Types of Old-growth Forests* (draft)
 - *Known Old-growth Forests in Peterborough County* (draft)
 - *An Ancient Forest Conservation Strategy for the Catchacoma Forest: Canada's Largest Known Eastern Hemlock Old-growth Forest* (draft)
 - *An Ancient Forest Conservation Strategy for Old-growth Eastern Hemlock Forests on Crown Land in Peterborough County* (draft)
- Completed **six old-growth forest assessments**
 - No. 01 *An Old-growth Forest Assessment for the Chase Property, Kawartha Land Trust, Peterborough County, Ontario*
 - No. 02 *An Old-growth Forest Assessment for the Trent, Nicolls and Burnham Old-growth Fragments, Peterborough County, Ontario*
 - No. 03 *An Old-growth Forest Assessment for Promise Rock, Peterborough County, Ontario*
 - No. 04 *An Old-growth Forest Assessment for Jeffrey-Cowan Forest Preserve, Kawartha Land Trust, Peterborough County, Ontario*
 - No. 05 *An Old-growth Forest Assessment for Stewart's Woods, Peterborough County, Ontario*
 - No. 06 *An Old-growth Forest Assessment for Big Island, Kawartha Land Trust, Peterborough County, Ontario*

10. Advance the Conservation and Restoration of Old-growth Forests

- We attended a **City of Peterborough council meeting** to propose designation of Jackson Park as a cultural heritage landscape. We spoke about the importance of Jackson Park's old-growth forest and confirmed ages of trees we cored in the Park.
- We are currently in the process of requesting an official **heritage designation** for an old-growth tree in Jackson Park's old-growth forest.
- Currently, we are working with the Youth Leadership in Sustainability (YLS) class and the Wilderness Committee to communicate with the Bancroft Minden Forest Company to **request a moratorium on logging in the Catchacoma Old-growth Hemlock Forest**, which is the largest known stand of old-growth eastern hemlock forest in Canada.
- We are preparing an ***Ancient Forest Conservation Strategy for the Catchacoma Lake Old-growth Hemlock Forest*** in partnership with the YLS class for distribution to concerned citizens and organizations.
- We are preparing an ***Ancient Forest Conservation Strategy for the eastern hemlock forests*** in Peterborough County, which are endangered ecosystems.

Appendix A. Conservation Status of Forest Types and Ecosystems Found in Ontario's Temperate Forest Region

**Conservation Status of Temperate Forest Types in Central Ontario (on the Canadian Shield)
(>60% dominance in the overstory; all ages; based on FRI data)**

| 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 | | | |

NOTES: from Watkins, Larry. 2011. *The Forest Resources of Ontario 2011*. Ontario Ministry of Natural Resources, Forest Evaluation and Standards Section, Forests Branch. Sault Ste. Marie, Ontario. 307 pp.

| Ontario's Endangered Forested Ecosystems (NHIC 2019) |
|---|
| |
| Critically Imperiled Forested Ecosystems (S1) |
| |
| Upland Types |
| Hickory Forests |
| Shagbark Hickory-Prickly Ash - Philadelphia Panic Grass Treed Alvar Grassland |
| Oak Forests |
| Black Oak Tallgrass Dry Savannah |
| Black Oak-Pine Tallgrass Dry Savannah |
| Black Oak-White Oak Tallgrass Dry Woodland |
| Black Oak-White Oak Tallgrass Moist-Fresh Woodland |
| Bur Oak Northern Tallgrass Moist-Fresh Savannah |
| Black Oak Tallgrass Moist-Fresh Savannah |
| Bur Oak Treed Alvar |
| Bur Oak-Shagbark Hickory Tallgrass Dry Woodland |
| Chinquapin Oak - Nodding Onion Treed Alvar Grassland |
| Chinquapin Oak Carbonate Treed Dry-Fresh Talus |
| Oak Treed Limestone Barren |
| Oak-Pitch Pine Mixed Dry Forest |
| Pin Oak - Bur Oak Tallgrass Moist-Fresh Savannah |
| Pin Oak Tallgrass Fresh-Moist Woodland |
| Pine Forests |
| Pitch Pine Treed Granite Barren |
| Red Cedar Forests |
| Red Cedar Basic Treed Rock Barren |
| Red Cedar Treed Granite Barren |
| Red Cedar Treed Limestone Barren |
| Imperiled (S2) |
| |
| Upland Types |
| Basswood - White Ash - Butternut Moist Treed Limestone Talus Type |
| Bur Oak - Saskatoon Berry Dry Deciduous Woodland Type |
| Bur Oak Basic Treed Rock Barren Type |
| Dry Chinquapin Oak – Pine Mixed Forest Type |
| Hemlock - Sugar Maple Moist Limestone Talus Type |
| Moist - Fresh Black Walnut Deciduous Forest Type |
| Moist - Fresh Bur Oak - Green Ash - Trembling Aspen Deciduous Forest Type |
| Red Cedar - Early Buttercup Treed Alvar Grassland Type |
| |
| Wetland Types |
| Gray Birch Treed Fen Type |
| Pin Oak Mineral Deciduous Swamp Type |
| Red Maple - White Pine Mineral Mixed Swamp Type |
| Shumard's Oak Mineral Deciduous Swamp Type |
| Swamp White Oak Mineral Deciduous Swamp Type |
| White Pine-Coniferous Mineral Swamp Type |

| Vulnerable (S3) |
|--|
| |
| <i>Upland Types</i> |
| Fresh - Moist Bitternut Hickory Deciduous Forest Type |
| Dry - Fresh Hickory Deciduous Forest Type |
| Fresh - Moist Shagbark Hickory Deciduous Forest Type |
| White Birch-Aspen Treed Limestone Cliff Type |
| White Birch-Dry Treed Limestone Talus Type |
| Sugar Maple - Black Maple Deciduous Forest Type - Moist-Fresh |
| Fresh - Moist Black Maple Lowland Deciduous Forest Type |
| Sugar Maple - Ironwood - White Ash Treed Limestone Cliff Type |
| Sugar Maple Moist Treed Limestone Talus Type |
| Dry - Fresh Mixed Oak Deciduous Forest Type |
| Dry Black Oak Deciduous Forest Type |
| Dry Oak - Hickory Deciduous Forest Type |
| Fresh - Moist Bur Oak Deciduous Forest Type |
| Hill's Oak - White Pine - Poplar Acidic Treed Rock Barren Type |
| Fresh - Moist Sassafras Deciduous Forest Type |
| White Cedar - White Spruce - Philadelphia Panic Grass Treed Alvar Grassland Type |
| White Cedar Dry Treed Limestone Talus Type |
| White Cedar Treed Limestone Cliff Type |
| <i>Wetland Types</i> |
| Bur Oak Mineral Deciduous Swamp Type |
| Red Maple - Hemlock Mixed Mineral Swamp Type |
| Red Maple - Hemlock Mixed Organic Swamp Type |
| Tamarack-Leatherleaf Treed Kettle Peatland Type |
| White Cedar-Hemlock Coniferous Mineral Swamp Type |
| White Cedar-Hemlock Coniferous Organic Swamp Type |
| White Pine-White Birch Mineral Mixed Swamp Type |
| |
| Apparently Secure (S4) |
| |
| Dry - Fresh Sugar Maple - Hickory Deciduous Forest Type |
| Dry - Fresh White Oak Deciduous Forest Type |
| Dry Red Cedar Coniferous Forest Type |
| Dry Red Pine - White Pine Coniferous Forest Type |
| Fresh - Moist Oak - Maple Deciduous Forest Type |
| Fresh - Moist Oak - Sugar Maple Deciduous Forest Type |
| Jack Pine Basic Treed Rock Barren Type |
| Maple-Yellow Birch - Hardwood and Mixedwood |
| Oak - Red Maple - Pine Basic Treed Rock Barren Type |
| Other Hardwoods and Mixedwoods Forest |
| Sugar Maple-Basswood/Leatherwood Forest |

NOTE: downloaded from the MNRF Natural Heritage Information Centre, May 9, 2019

Appendix B. Minimum Old-growth Tree Diameters for 23 tree species found in Peterborough County

| Species | Minimum Old- Growth Age (yrs) | Minimum Diameter (cm/in) | References |
|----------------------------|-------------------------------|--------------------------|--|
| American Basswood | 110 | 60 | Purcell 2018 |
| American Beech | 140 | 30 | Morley 1936 |
| Balsam Fir | 70 | 30 | NRCAN 2019 |
| Black Ash (from Green Ash) | 120 | 50 | Purcell 2018 |
| Black Spruce Swamps | 100 | 15 | NRCAN 2019 |
| Black Spruce Uplands | 100 | 30 | NRCAN 2019 |
| Bur Oak (from White Oak) | 120 | 40 | Purcell 2018 |
| Eastern Hemlock | 140 | 40 | Morley 1936, Blum 1961, Henry & Quinby 2006 |
| Eastern White Pine | 120 | 40 | Quinby 1991, Guyette and Dey 1995 |
| Jack Pine | 120 | 25 | NRCAN 2019 |
| Poplar | 90 | 40 | Brotherson et al. 1983 |
| Red Maple | 90 | 20 | Morley 1936 |
| Red Oak | 120 | 50 | Purcell 2018 |
| Red Pine | 120 | 40 | Burns & Honkala 1990, Quinby 1991 |
| Silver Maple | 120 | 60 | Purcell 2018 |
| Sugar Maple | 140 | 35 | Blum 1961, Leak 1985 |
| Tamarack | 90 | 25 | NRCAN 2019 |
| White Ash (from Green Ash) | 120 | 50 | Purcell 2018 |
| White Birch | 100 | 35 | NRCAN 2019 |
| White Cedar | 110 | 30 | Henry & Quinby 2006, Boulfroy et al. 2012 |
| White Oak | 120 | 40 | Morley 1936, Purcell 2018 |
| White Spruce | 100 | 30 | Burgar 1961 |
| Yellow Birch | 140 | 45 | Morley 1936, Leak 1985, Henry & Quinby 2006 |

Primary References (in bold)

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Brotherson et al. 1983. Population Dynamics and Age Relationships of 8 Tree Species in Navajo National Monument, Arizona. Journal of Range Management 36:250-256.

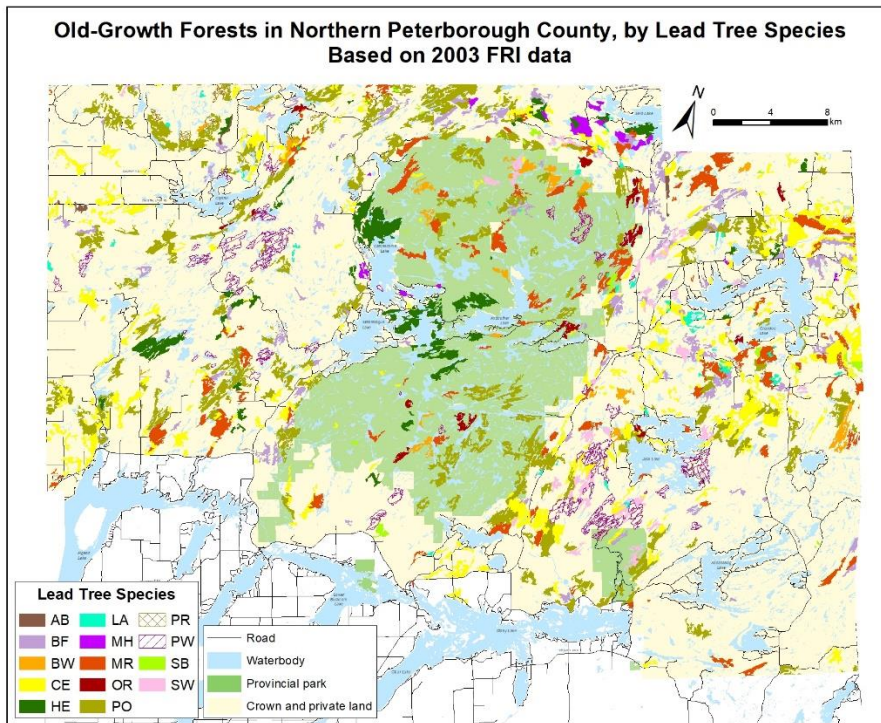
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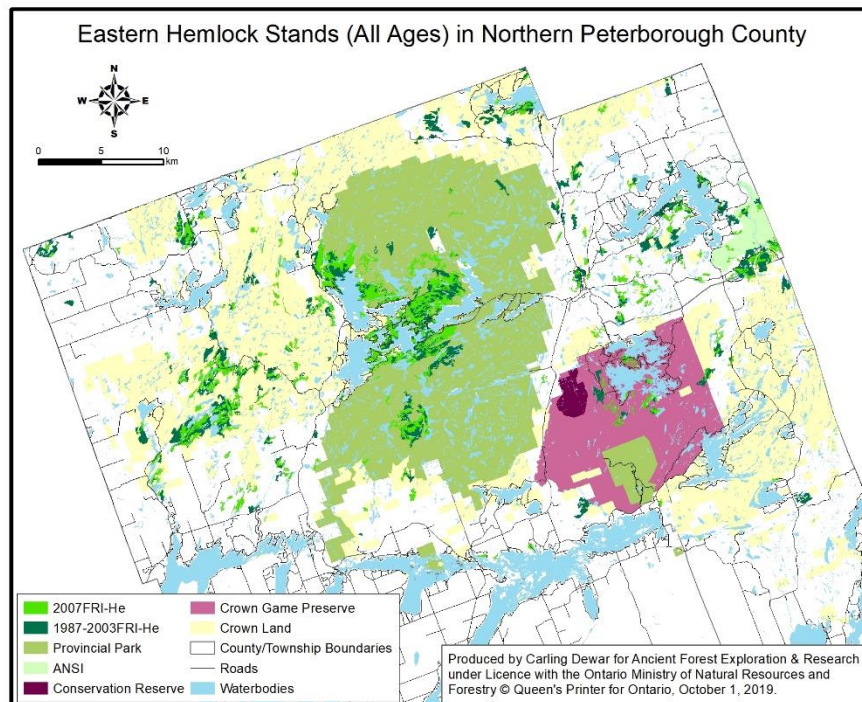
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Appendix C. Old-growth Forests in Northern Peterborough County



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Appendix D. Endangered Eastern Hemlock Forests in Northern Peterborough County



Appendix E. Jackson Park Trails and Topography

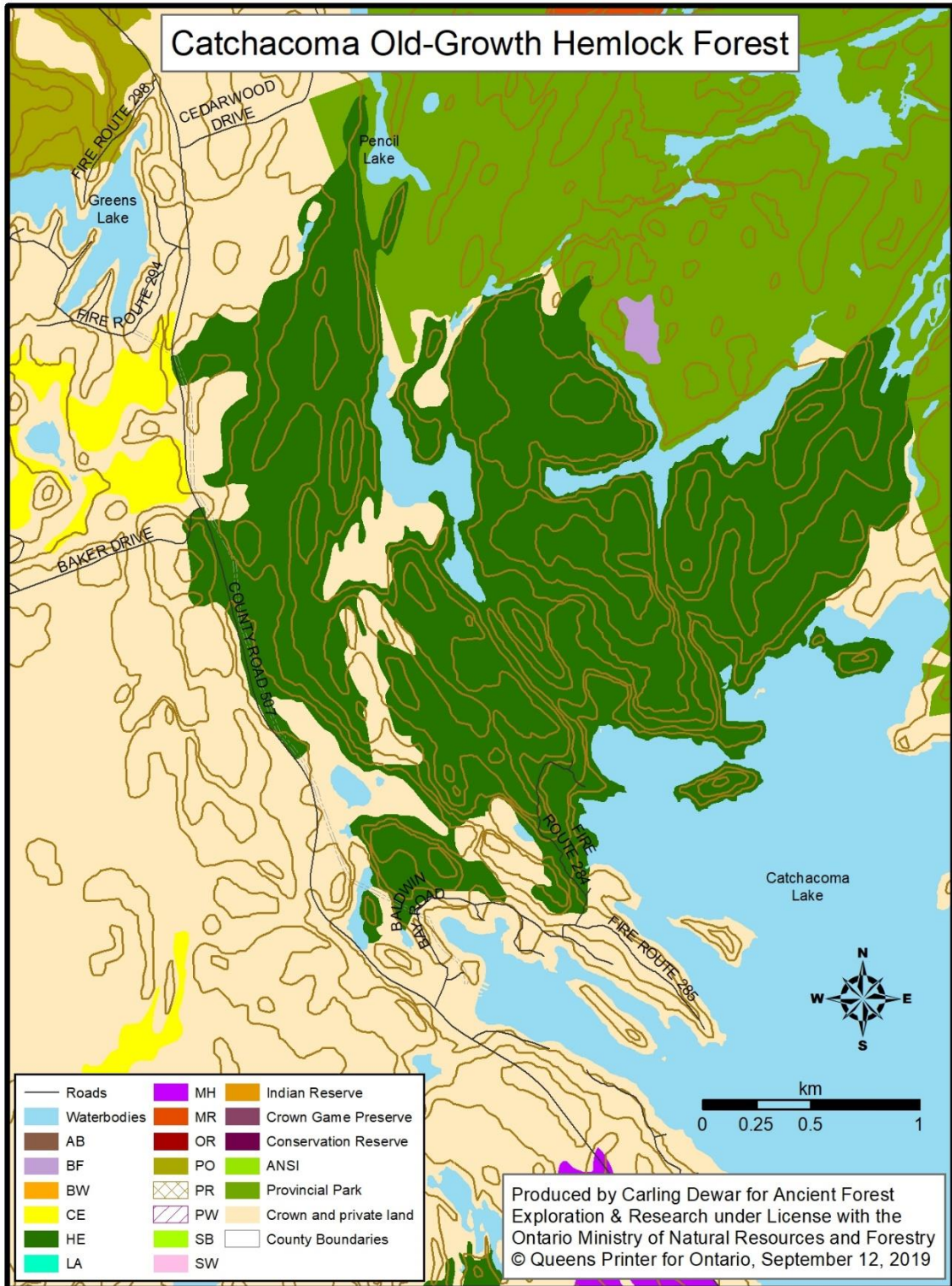
Jackson Park Peterborough, ON



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Appendix F. The Catchacoma Old-growth Forest, Northern Peterborough County



Appendix G. Documented Old-growth Eastern Hemlock Forests in Canada

| Site Name | Province | OG Hemlock Area (ha) | 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 |
| 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 |
| 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.merseytobeatric.ca/ |
| Great Barron & 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.merseytobeatric.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.merseytobeatric.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/ |
| Tobeatric 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.merseytobeatric.ca/ |
| Waverley-Salmon River Long Lake Wilderness Area | Nova Scotia | unknown | YES | partial | unknown | | https://novascotia.ca/nse/ |

References: (1) Labelle, T. 2019. *Personal Communication*. Canadian Parks & Wilderness Society - Ottawa Valley Chapter, Gatineau, QC. (2) LIO (Land Information Ontario). *Forest Resource Inventory Data*, accessed June 2019. (3) Quinby, F. 2019. *Old-growth Hemlock Stands in Algonquin Park, ON*. Ancient Forest Exploration & Research, Powassan, Ontario. (4) Villeneuve, N. and J. Brisson. 2003. Old-growth forests in the temperate deciduous zone of Quebec: Identification and evaluation for conservation and research purposes. *The Forestry Chronicle* 79:559-569.

Appendix H. Descriptions and Mapping for the Eight Forest Landscapes where Reconnaissance and/or basic Old-growth Forest Surveys were Conducted

Table 1. Protocol 3 Old-growth Surveys

(see maps below for locations)

| | |
|--|--|
| <i>South Catchacoma Lake</i> | Nine forest surveys conducted with AFER staff, data entered and verified, stored on Google Drive , analysis underway |
| <i>North Catchacoma Lake</i> | Five forest surveys conducted with AFER staff and YLS class, data entered and verified, stored on Google Drive , analysis underway |
| <i>Mark S. Burnham Provincial Park</i> | Ten forest surveys conducted with AFER staff and volunteers, data entered and verified, stored on Google Drive , analysis underway |

Table 2. Protocol 2 Old-growth Surveys

(see maps below for locations)

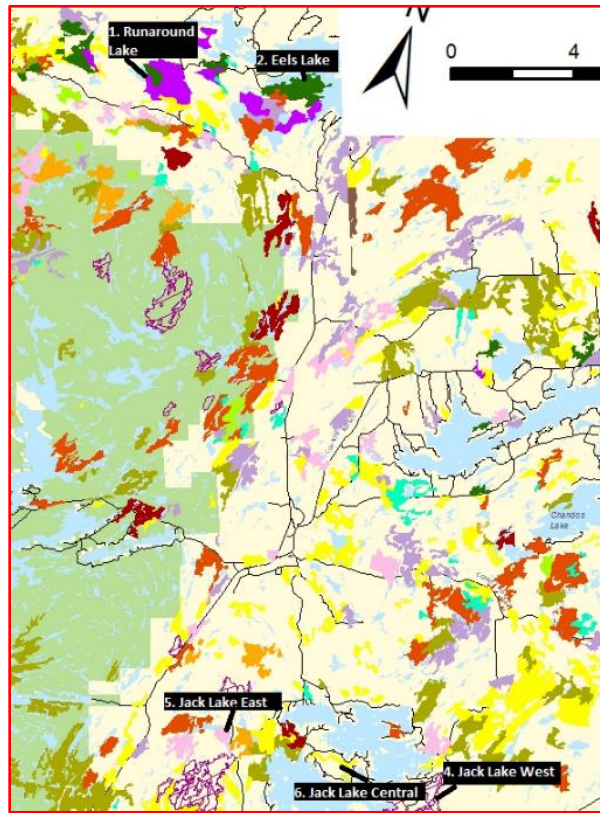
| | |
|------------------------------|---|
| <i>North Catchacoma Lake</i> | Ten forest surveys conducted with AFER staff and YLS class, data entered and verified, stored on Google Drive , analysis underway |
|------------------------------|---|

Table 3. Reconnaissance/Protocol 1 Old-growth Surveys

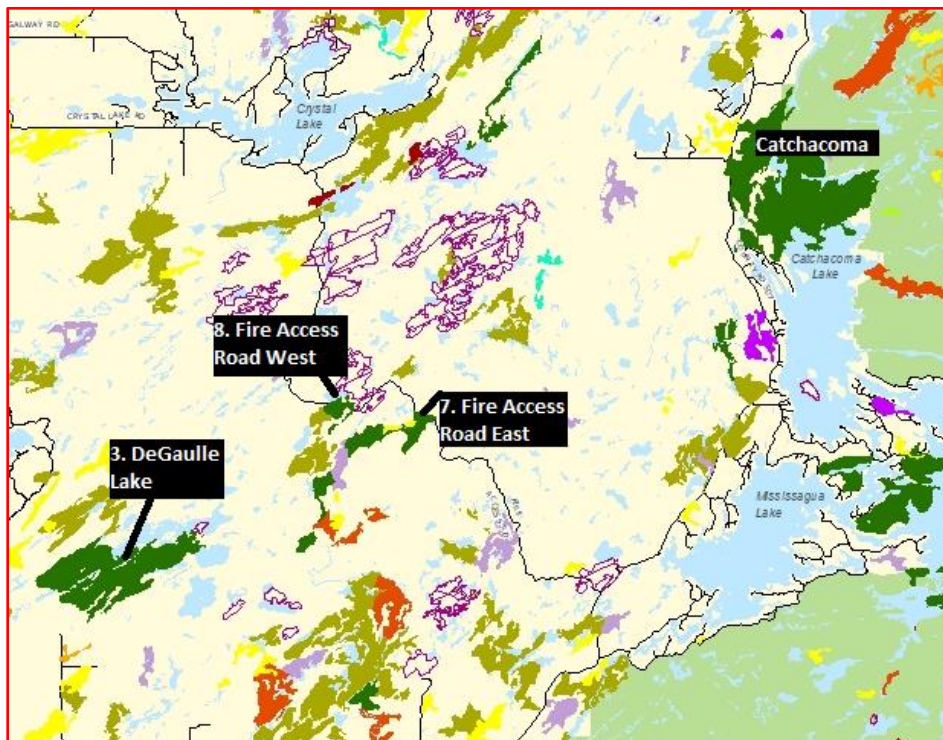
(see maps below for locations)

| | |
|--|--|
| 1. <i>Runaround Lake</i> (forest off West Eels Lake Road) | <ul style="list-style-type: none"> • Protocol 1 conducted – see iNaturalist for details • Logging has occurred recently (within past 5 years) • Four tree cores obtained; most notably white birch 16.6 cm DBH, 132 rings |
| 2. <i>Eels Lake</i> | <ul style="list-style-type: none"> • Protocol 1 conducted – see iNaturalist for details • Some evidence of logging • Cored a hemlock (65.5 cm DBH, 165 rings) and a yellow birch (56.5 cm DBH, 90 rings on 13.1 cm core; extrapolated to 198 rings, but very difficult to count accurately) |
| 3. <i>DeGaulle Lake</i> | Could not access by land (too swampy/bushy); quarry operations prevent access to road that would take us closer |
| 4. <i>Jack Lake West</i> | <ul style="list-style-type: none"> • Protocol 1 conducted—see iNaturalist for details • Cored three trees with 120-140 rings each |
| 5. <i>Jack Lake East</i> | Access to McCoy Bay Rd. granted, reconnaissance conducted, logging apparent in most areas except for the hunt camp near the north end of the road |
| 6. <i>Jack Lake Central</i> | Reconnaissance conducted, forest lacks regeneration, grass abundant |
| 7. <i>Fire Access Road East</i> | <ul style="list-style-type: none"> • Protocol 1 conducted—see iNaturalist for details • Logging has occurred recently (within past 5 years) • Cored one eastern hemlock with 132 rings |
| 8. <i>Fire Access Road West</i> | Could not access due to poor road conditions. |

Map 1. Sites 1, 2, 4, 5 and 6



Map 2. Sites 3, 7, 8 and Catchacoma Lake



Appendix I. Tree Ages from Counting Rings on Extracted Cores

| Species | Diameter (dbh) | Estimated Age | Location |
|--------------|----------------|---------------|-------------------------------|
| Basswood | 57.1 | 87 | Mark S. Burnham |
| Hemlock | 22.1 | 90 | Runaround Lake |
| Hemlock | 32.5 | 105 | Catchacoma |
| Hemlock | 38.2 | 155 | Catchacoma |
| Hemlock | 40.0 | 159 | Catchacoma |
| Hemlock | 40.0 | 167 | Catchacoma |
| Hemlock | 40.4 | 92 | Mark S. Burnham |
| Hemlock | 40.5 | 167 | Catchacoma |
| Hemlock | 41.3 | 160 | Mark S. Burnham |
| Hemlock | 41.6 | 126 | Catchacoma |
| Hemlock | 42.8 | 74 | Catchacoma |
| Hemlock | 43.7 | 164 | Catchacoma |
| Hemlock | 43.8 | 137 | Runaround Lake |
| Hemlock | 45.0 | 184 | Catchacoma |
| Hemlock | 45.4 | 149 | Catchacoma |
| Hemlock | 45.4 | 212 | Mark S. Burnham |
| Hemlock | 46.3 | 157 | Runaround Lake |
| Hemlock | 46.9 | 139 | Catchacoma |
| Hemlock | 48.1 | 149 | Catchacoma |
| Hemlock | 48.5 | 161 | Catchacoma |
| Hemlock | 49.0 | 125 | Jeffrey-Cowan Forest Preserve |
| Hemlock | 49.5 | 177 | Catchacoma |
| Hemlock | 51.0 | 227 | Mark S. Burnham |
| Hemlock | 51.5 | 112 | Catchacoma |
| Hemlock | 53.0 | 153 | Catchacoma |
| Hemlock | 53.1 | 218 | Catchacoma |
| Hemlock | 53.2 | 187 | Catchacoma |
| Hemlock | 54.0 | 130 | Catchacoma |
| Hemlock | 54.0 | 193 | Mark S. Burnham |
| Hemlock | 54.6 | 132 | Fire Access Road East |
| Hemlock | 54.9 | 180 | Mark S. Burnham |
| Hemlock | 55.5 | 228 | Mark S. Burnham |
| Hemlock | 56.6 | 159 | Catchacoma |
| Hemlock | 56.8 | 120 | Catchacoma |
| Hemlock | 57.4 | 134 | Catchacoma |
| Hemlock | 57.6 | 178 | Catchacoma |
| Hemlock | 58.0 | 206 | Catchacoma |
| Hemlock | 65.5 | 165 | Eels Lake |
| Hemlock | 68.0 | 137 | Jeffrey-Cowan Forest Preserve |
| Hemlock | 73.0 | 349 | Catchacoma |
| Hemlock | 76.5 | 274 | Mark S. Burnham |
| Hemlock | 78.7 | 183 | Mark S. Burnham |
| Red Oak | 40.0 | 124 | Catchacoma |
| Red Oak | 51.5 | 140 | Catchacoma |
| Red Oak | 90.6 | 122 | Jeffrey-Cowan Forest Preserve |
| Red Pine | 35.2 | 79 | Jeffrey-Cowan Forest Preserve |
| Red Pine | 136.0 | 58.3 | Jack Lake |
| Sugar Maple | 29.6 | 168 | Mark S. Burnham |
| Sugar Maple | 38.0 | 147 | Mark S. Burnham |
| Sugar Maple | 41.8 | 114 | Mark S. Burnham |
| Sugar Maple | 44.5 | 101 | Mark S. Burnham |
| Sugar Maple | 44.6 | 150 | Mark S. Burnham |
| Sugar Maple | 45.5 | 122 | Mark S. Burnham |
| Sugar Maple | 45.9 | 158 | Mark S. Burnham |
| Sugar Maple | 56.5 | 100 | Mark S. Burnham |
| Sugar Maple | 62.0 | 319 | Mark S. Burnham |
| Sugar Maple | 76.2 | 190 | Mark S. Burnham |
| White Birch | 16.6 | 132 | Runaround Lake |
| White Cedar | 37.9 | 105 | Mark S. Burnham |
| White Cedar | 59.5 | 261 | Mark S. Burnham |
| White Oak | 46.0 | 140 | Jeffrey-Cowan Forest Preserve |
| White Pine | 46.0 | 97 | Catchacoma |
| White Pine | 46.8 | 121 | Catchacoma |
| White Pine | 47.0 | 155 | Jeffrey-Cowan Forest Preserve |
| White Pine | 49.3 | 178 | Catchacoma |
| White Pine | 50.7 | 80 | Catchacoma |
| White Pine | 72.0 | 133 | Jeffrey-Cowan Forest Preserve |
| White Pine | 73.2 | 122 | Jeffrey-Cowan Forest Preserve |
| White Pine | 76.0 | 179 | Catchacoma |
| White Pine | 84.1 | 106 | Jeffrey-Cowan Forest Preserve |
| White Pine | 135.0 | 83.4 | Jack Lake |
| White Spruce | 57.5 | 111 | Jack Lake |
| Yellow Birch | 56.5 | 198 | Eels Lake |