The Catchacoma Ancient Forest Landscape: An Initial Inventory of Species and Habitats

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Catchacoma Forest

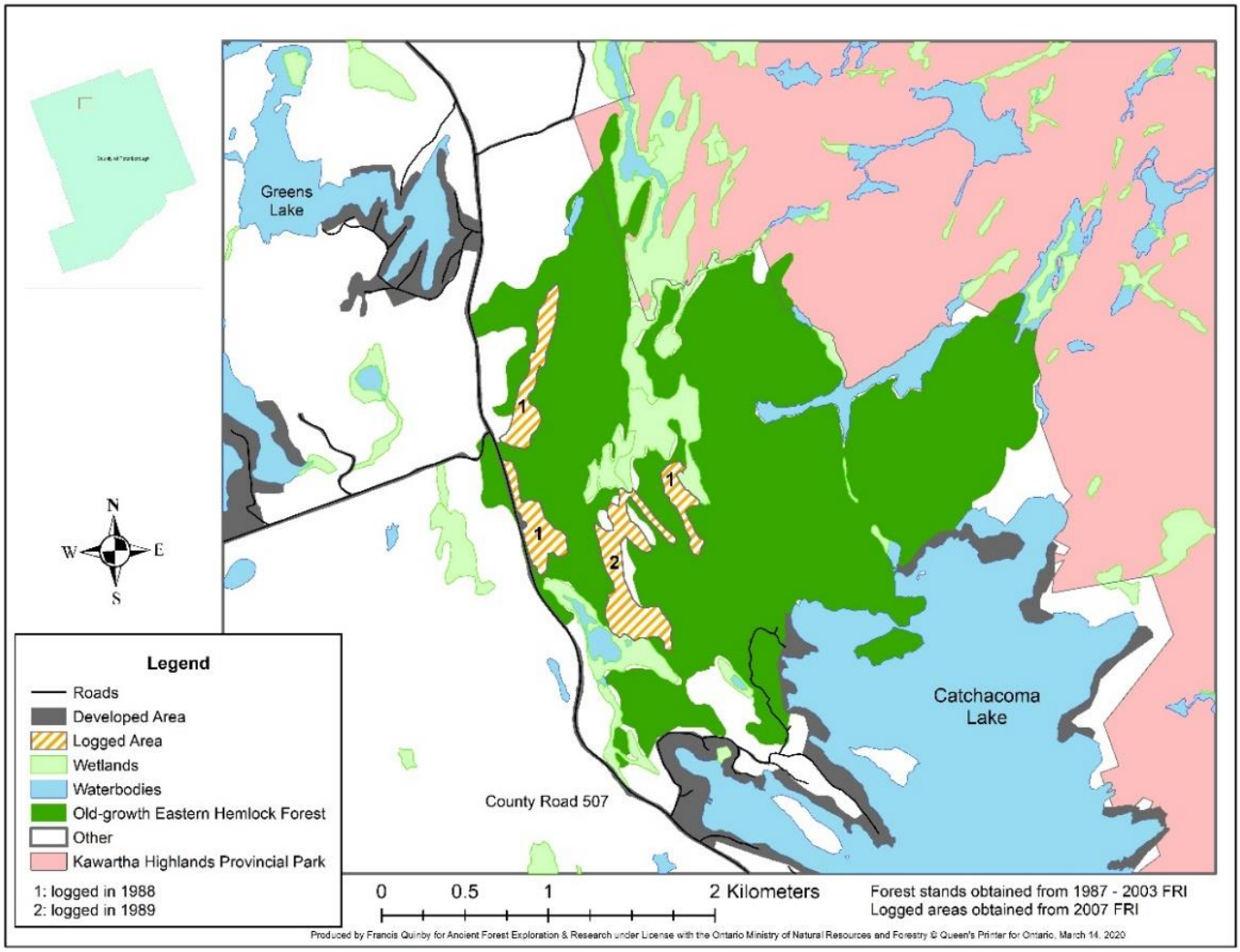
Summary

A total of 226 species have been found in the area of the Catchacoma Ancient Forest Landscape including five mammal species, 22 bird species, two amphibian species, three reptile species, one insect species, 21 tree species, 27 shrub species, 111 herbaceous plant species, and 34 lichen species. In addition, ten species-at-risk are known to occur there including Algonquin wolf, cerulean warbler, eastern wood pee-wee, rusty blackbird, wood thrush, Blanding's turtle, hog-nosed snake, five-lined skink, monarch butterfly, and the lichen *Coenogonium pineti* (S3-vulnerable).

Introduction

The Catchacoma Old-growth Forest (OGF) located at the north end of Catchacoma Lake in northern Peterborough County, Ontario (662 ha of forest only; Figure 1) includes all the required components to meet the criteria for an "ancient forest landscape". These criteria include old-growth forests, wetlands and aquatic ecosystems all within a contiguous area with minimal human disturbance (logging). In addition, this OGF landscape supports a complete natural food web, from lichens to wolves, that is being stressed and fragmented along its southern boundary. This boundary runs slightly north of the southern boundary of the Canadian Shield.

Figure 1. The Catchacoma Ancient Forest Landscape, Northern Peterborough County, Ontario



Areas this large (662+ ha) with all the components of a natural landscape including a complete food web are very rare in Ontario's Temperate Forest Region. Those that still remain should be identified and considered for protection as soon as possible. These candidate protected areas represent potential progress towards Canada's international commitment to protect 30% of the land (and water) area in the country by 2030. This means that Ontario needs to more than double the amount that is currently protected.

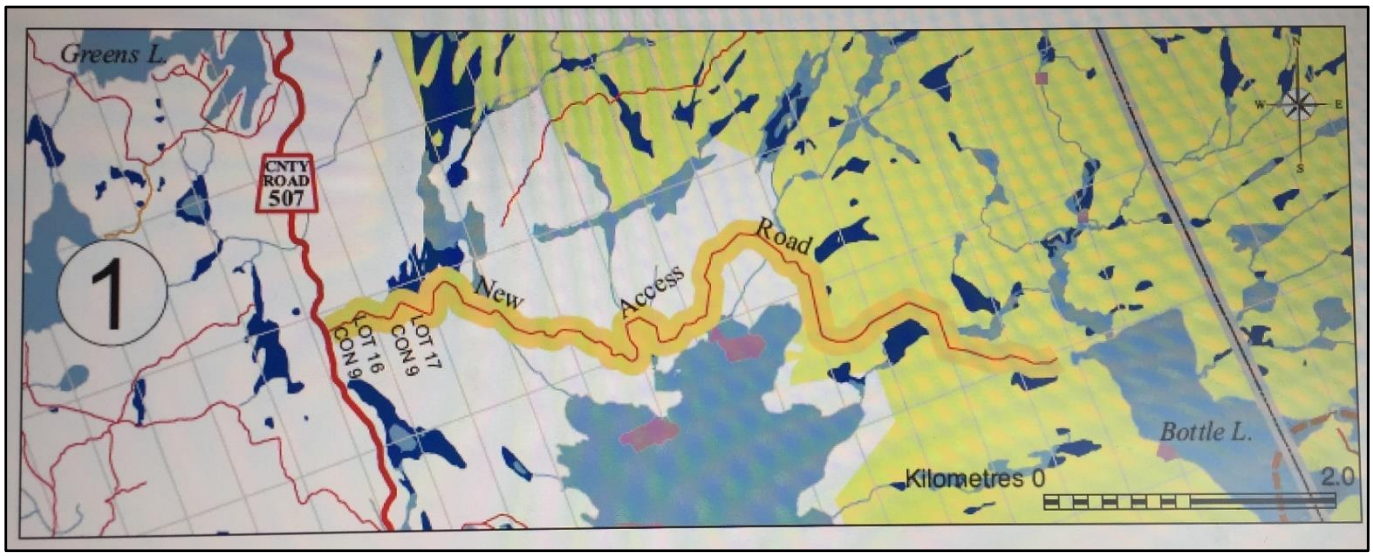
The purpose of this report was to begin the species and habitat inventory process for the Catchacoma OGF Landscape as the first step towards developing a conservation strategy. The vast majority of species and habitat information presented in this report came from an environmental assessment study (EA) of six potential access roads for Kawartha Highlands Provincial Park (KHPP; Stantec 2008). However, AFER did do some field work in this OGF during the field season of 2019 including collecting lichen specimens that were identified by Dr. Troy McMullin, Research Scientist, Canadian Museum of Nature.

One of the potential access routes considered in this EA was located in the southern portion of the Catchacoma OGF starting at Highway 507 running east to Bottle Lake, which is located within KHPP (Figure 2). Field data for terrestrial, wetland and aquatic species and habitats were collected by Stantec (2008) along this proposed road alignment. Of the six road development options for KHPP, this option was rated as the least appropriate based on its high biodiversity, high ecological integrity and conservation values.

As part of their field observations, Stantec (2008) commented extensively on the pristine nature of the Catchacoma OGF as follows:

- "This very high proportion [90%] of native [plant] species reflects the original character of the land cover and dominance of natural, high quality habitats, such as forests, swamps, and marshes in which the native species thrive",
- "much of the northern portion of the study area appeared to have undergone very little recent disturbance",
- "the only significant recent human impacts observed in this area were a few widely scattered hunt camps, two major snowmobile trails and two old roads",
- "immediately to the south of the [road alignment]… is relatively undisturbed", and
- "the extensive natural landscape to the north [of the road alignment] forms what could be considered a relatively intact 'wilderness area'."

Figure 2. Access Road to Bottle Lake: A Proposed Road Alignment within the Catchacoma Old-growth Forest
(yellow area is KHPP; Stantec 2008)



Species Inventory

Overview

A total of 226 species have been found in the area of the Catchacoma Ancient Forest Landscape including five mammal species, 22 bird species, two amphibian species, three reptile species, one insect species, 21 tree species, 27 shrub species, 111 herbaceous plant species, and 34 lichen species. Ten species-at-risk (SARs) are known to occur there including Algonquin wolf, cerulean warbler, eastern wood pee-wee, rusty blackbird, wood thrush, Blanding's turtle, hog-nosed snake, five-lined skink, monarch butterfly, and the lichen *Coenogonium pineti* (S3-vulnerable).

It is possible that some species and habitats on our lists are not located within the Catchacoma OGF Landscape since roughly a third of the proposed road alignment is located within KHPP, which is outside of this forest. However, we suspect that this number is low given that the extreme eastern end of the road alignment is less than two kilometers from the Catchacoma OGF landscape.

Mammals - 5 spp.

The entire road alignment shown in Figure 2 was located within a bear management area, the western portion of the alignment was located within 1 km of a deer wintering area, and the eastern portion of the proposed alignment was located within 1 km of early winter moose habitat (Stantec 2008). No deer yards were identified in the road alignment area.

Species List (TH - threatened)

Algonquin Wolf (*Canis lupus lycaon*) (TH) (BELW 2018)
Black Bear (*Ursus americanus*) (AFER 2019)
Eastern Chipmunk (*Tamias striatus*) (AFER 2019)
Moose (*Alces alces*) (Stantec 2008; AFER 2019)
Red Squirrel (*Tamiasciurus hudsonicus*) (AFER 2019)

Birds - 22 spp. (all records from Stantec (2008) unless otherwise noted)

"There is a high number of area-sensitive species… including both the cerulean warbler and broad-winged hawk. The cerulean warbler is particularly common on this site, with half a dozen heard calling at various locations along the western half of the route… The most abundant species are black-capped chickadee and ovenbird, with black-throated green warblers and white-throated sparrows also being common" (Stantec 2008).

Species List (SC - special concern; TH - threatened)

American Goldfinch (*Carduelis tristis*)
Black-and-white Warbler (*Mniotilta varia*)
Blackburnian Warbler (*Dendroica fusca*)
Black-capped Chickadee (*Poecile atricapilla*)
Black-throated Green Warbler (*Dendroica virens*)
Blue Jay (*Cyanocitta cristata*)
Broad-winged Hawk (*Buteo platypterus*)
Canada Warbler (*Wilsonia canadensis*)
Cerulean Warbler (*Dendroica cerulea*), (TH) (Stantec 2008)
Eastern Wood Pee-wee (*Contopus virens*), (SC) (eBird 2020, Cadman et al. 2007)
Hermit Thrush (*Catharus guttatus*)
Nashville Warbler (*Vermivora ruficapilla*)

Ovenbird (*Seiurus aurocapilla*)
Pileated Woodpecker (*Dryocopus pileatus*) (AFER 2019)
Pine Warbler (*Dendroica pinus*)
Red-breasted Nuthatch (*Sitta canadensis*)
Red-eyed Vereo (*Vireo olivaceus*) (AFER 2019)
Rusty Blackbird (*Euphagus carolinus*), (SC) (eBird 2020, Cadman et al. 2007)
White-throated Sparrow (*Zonotrichia albicollis*)
Winter Wren (*Troglodytes troglodytes*)
Wood Thrush (*Hylocichla mustelina*), (SC) (Cadman et al. 2007, COSSARO 2013, eBird 2020,)
Yellow-bellied Sapsucker (*Sphyrapicus varius*) (AFER 2019)

Amphibians - 2 spp.

American Toad (*Anaxyrus americanus*) (AFER 2019)
Northern Leopard Frog (*Lithobates pipiens*) (Stantec 2008)

Reptiles - 3 spp.

Stantec (2008) provides an excellent assessment of reptiles (all are SARs) that have been found in the Catchacoma OGF landscape as follows.

- "The access road alternative to Bottle Lake provides appropriate habitat for the Blanding's turtle, five-lined skink, and eastern hog-nosed snake."
- "There are several sites along the route that could provide habitat for Blanding's turtle. A wide, slow river, approximately 1 km east of County Road 507, has ideal shallow, weedy water with basking logs…"
- "Approximately halfway along the route, near Catchacoma Lake, the forest understory becomes more open forming a dry hemlock forest. Two eastern hog-nosed snakes were observed in this community".
- "Oak barren, with an open canopy and rocky outcrops… provides habitat for both the eastern hog-nosed snake and the five-lined skink."

Species List

Blanding's Turtle (*Emydoidea blandingii*) (TH) (Stantec 2008)
Eastern Hog-nose Snake (*Heterodon platirhinos*) (TH) (Stantec 2008)
Five-lined Skink (*Plestiodon fasciatus*) (SC) (Stantec 2008)

Insects - 1 spp.

Monarch Butterfly (*Danaus plexippus*) (SC) (TEA 2020, MECP 2020)

Vascular Plants - 159 spp. (all records from Stantec (2008) unless otherwise noted)

A description of the southern portion of the Catchacoma OGF landscape can be found in Stantec (2008); it is summarized here. The western and central portions are composed primarily of "coniferous hemlock stands". The eastern portions are more diverse, with extensive areas of sparsely treed rock barrens interspersed with deciduous and mixed forest patches. A total of 156 vascular plant species were recorded; of these, 140 species (90%) were native, and 16 species (10%) were exotic. The few non-native species were associated with trails.

Trees - 21 spp.

Coniferous - 8 spp.
Balsam Fir (*Abies balsamea*)
Black Spruce (*Picea mariana*) (AFER 2019)

Common Juniper (*Juniperus communis*)
Eastern Hemlock (*Tsuga canadensis*)
Eastern White Cedar (*Thuja occidentalis*)
Eastern White Pine (*Pinus strobus*)
Red Pine (*Pinus resinosa*) (AFER 2019)
White Spruce (*Picea glauca*)

Deciduous - 13 spp.
American Basswood (*Tilia Americana*)
American Beech (*Fagus grandifolia*)
Balsam Poplar (*Populus balsamifera*)
Hop Hornbeam/ironwood (*Ostrya virginiana*)
Large-tooth Aspen (*Populus grandidentata*)
Red Ash (*Fraxinus pennsylvanica*)
Red Maple (*Acer rubrum*)
Red Oak (*Quercus rubra*)
Sugar Maple (*Acer saccharum*)
Trembling Aspen (*Populus tremuloides*)
White Birch (*Betula papyrifera*)
White Oak (*Quercus alba*)
Yellow Birch (*Betula alleghaniensis*)

Shrubs - 27 spp.

Alleghany Blackberry (*Rubus allegheniensis*)
American Fly Honeysuckle (*Lonicera canadensis*)
Beaked Hazel (*Corylus cornuta* ssp. *Cornuta*)
Bunchberry (*Cornus canadensis*)
Bush Honeysuckle (*Diervilla lonicera*)
Common Pipsissewa (*Chimaphila umbellata* ssp. *Cisatlantica*)
Creeping Snowberry (*Gaultheria hispidula*)
Dwarf Raspberry (*Rubus pubescens*)
Glaucous Honeysuckle (*Lonicera dioica*)
Hobblebush (*Viburnum lantanoides*)
Leatherwood (*Dirca palustris*)
Low Sweet Blueberry (*Vaccinium angustifolium*)
Mountain Maple (*Acer spicatum*)
Narrow-leaved Meadow-sweet (*Spiraea alba*)
Northern Wild Raisin (*Viburnum cassinoides*)
Pin Cherry (*Prunus pensylvanica*)
Prickly Rose (*Rosa acicularis* ssp. *Sayi*)
Purple Flowering Raspberry (*Rubus odoratus*)
Red-berried Elderberry (*Sambucus racemosa* ssp. *Pubens*)
Striped Maple (*Acer pensylvanicum*)
Sweetfern (*Comptonia peregrina*)
Tomentose Meadow-sweet (*Spiraea tomentosa*)
Twinflower (*Linnaea borealis* ssp. *Longiflora*)
Velvet-leaf Blueberry (*Vaccinium myrtilloides)*
Wild Red Raspberry (*Rubus idaeus* ssp. *Melanolasius*)
Winterberry (*Ilex verticillate*)
Wintergreen (*Gaultheria procumbens*)

Herbaceous Plants - 111 spp.

Flowering - 94 spp.

Herbs - 63 spp.
Barren Strawberry (*Waldsteinia fragarioides*)
Beech-drops (*Epifagus virginiana*)
Bitter Nightshade (*Solanum dulcamara*)
Bluebead-lily (*Clintonia borealis*)
Broad-leaved Cattail (*Typha latifolia*)
Bulhead Pond-lily (*Nuphar variegate*)
Bull Thistle (*Cirsium vulgare*)
Cardinal-flower (*Lobelia cardinalis*)
Cinquefoil (*Potentilla norvegica* ssp. *Norvegica*)
Common Burdock (*Arctium minus* ssp. *Minus*)
Common Dandelion (*Taraxacum officinale*)
Common Mullein (*Verbascum Thapsus*)
Common Plantain (*Plantago major*)
Common Speedwell (*Veronica officinalis*)
Common St. John's-wort (*Hypericum perforatum*)
Common Yarrow (*Achillea millefolium* ssp. *Millefolium*)
Creeping Partridge-berry (*Mitchella repens*)
Cut-leaved Water-horehound (*Lycopus americanus*)
Daisy Fleabane (*Erigeron strigosus*)
Field Bindweed (*Convolvulus arvensis*)
Flat-top White Aster (*Aster umbellatus* var. *umbellatus*)
Flat-topped Bushy Goldenrod (*Euthamia graminifolia*)
Fragrant Water-lily (*Nymphaea odorata*)
Fringed Black Bindweed (*Polygonum cilinode*)
Glaucous King Devil (*Hieracium piloselloides*)
Gray Goldenrod (*Solidago nemoralis* ssp. *Nemoralis*)
Hairy Solomon's Seal (*Polygonatum pubescens*)
Heal-all (*Prunella vulgaris* ssp. *Lanceolate*)
Heart-leaved Pickerel-weed (*Pontederia cordata*)
Hooked Buttercup (*Ranunculus recurvatus* var. *recurvatus*)
Indian Cucumber-root (*Medeola virginiana*)
Indian Tobacco (*Lobelia inflata*)
Indian-pipe (*Monotropa uniflora*)
Kidney-leaf Buttercup (*Ranunculus abortivus*)
Large-leaved Aster (*Aster macrophyllus*)
Marsh Cinquefoil (*Potentilla palustris*)
Multi-coloured Blue-flag (*Iris versicolor*)
Northern Water-horehound (*Lycopus uniflorus*)
Ox-eye Daisy (*Chrysanthemum leucanthemum*)
Pearly Everlasting (*Anaphalis margaritacea*)
Perfoliate Thoroughwort (*Eupatorium perfoliatum*)
Purple Trillium (*Trillium erectum*)
Red Clover (*Trifolium pretense*)
Robin's Plantain (*Erigeron pulchellus*)
Rose Twisted-stalk (*Streptopus roseus*)
Rough Goldenrod (*Solidago rugosa* ssp. *Rugosa*)
Rugel's Plantain (*Plantago rugelii*)

Sheep Sorrel (*Rumex acetosella* ssp. *Acetosella*)
Spotted Touch-me-not (*Impatiens capensis*)
Spreading Dogbane (*Apocynum androsaemifolium* ssp. *Androsaemifolium*)
Star-flower (*Trientalis borealis* ssp. *Borealis*)
Swamp Loosestrife (*Lysimachia terrestris*)
Swamp St. John's-wort (*Triadenum virginicum*)
Tall Meadow-rue (*Thalictrum pubescens*)
Tall White Rattlesnake-root (*Prenanthes altissima*)
Upright Yellow Wood-sorrel (*Oxalis stricta*)
Water-shield (*Brasenia schreberi*)
Wild Basil (*Clinopodium vulgare*)
Wild Carrot (*Daucus carota*)
Wild Columbine (*Aquilegia canadensis*)
Wild Lily-of-the-valley (*Maianthemum canadense*)
Wild Sarsaparilla (*Aralia nudicaulis*)
Yellowish Enchanter's Nightshade (*Circaea lutetiana* ssp. *Canadensis*)

Grasses - 12 spp.
Blue-joint Grass (*Calamagrostis canadensis*)
Broad-leaved Panic Grass (*Panicum latifolium*)
Broad-leaved Reed Grass (*Cinna latifolia*)
Common Hairgrass (*Deschampsia flexuosa*)
False Melic Grass (*Schizachne purpurascens* ssp. *Purpurascens*)
Fowl Meadow Grass (*Glyceria striata*)
Fowl Meadow Grass (*Poa palustris*)
Orchard Grass (*Dactylis glomerate*)
Poverty Oat Grass (*Danthonia spicata*)
Rattlesnake Grass (*Glyceria canadensis*)
Reed Canary Grass (*Phalaris arundinacea*)
White-grained Mountain-rice (*Oryzopsis asperifolia*)

Rushes - 4 spp.
Brown-fruited Rush (*Juncus pelocarpus*)
Canada Rush (*Juncus canadensis*)
Path Rush (*Juncus tenuis*)
Soft Rush (*Juncus effusus* ssp. *Solutus*)
Sedges - 15 spp.
Bebb's Sedge (*Carex bebbii*)
Dark-green Bulrush (*Scirpus atrovirens*)
Dewey's Sedge (*Carex deweyana*)
Drooping Wood Sedge (*Carex arctata*)
Fringed Sedge (*Carex crinite*)
Graceful Sedge (*Carex gracillima*)
Lake-bank Sedge (*Carex lacustris*)
Long-stalked Sedge (*Carex pedunculata*)
Necklace Sedge (*Carex projecta*)
Pennsylvania Sedge (*Carex pensylvanica*)
Reed-like Three-way Sedge (*Dulichium arundinaceum)*
Sedge species (*Carex species*)
Soft-leaved Sedge (*Carex disperma*)
Three-seeded Sedge (*Carex trisperma* var. *trisperma*)
Wool-grass (*Scirpus cyperinus*)

Non-flowering Vascular Plants - 17 spp.

Ferns - 13 spp.
Cinnamon Fern (*Osmunda cinnamomea*)
Crested Wood Fern (*Dryopteris cristata*)
Eastern Bracken-fern (*Pteridium aquilinum* var. *latiusculum*)
Evergreen Wood Fern (*Dryopteris intermedia*)
Interrupted Fern (*Osmunda claytoniana*)
Marginal Wood Fern (*Dryopteris marginalis*)
Marsh Fern (*Thelypteris palustris* var. *pubescens*)
New York Fern (*Thelypteris noveboracensis*)
Northern Lady Fern (*Athyrium filix-femina* var. *angustum*)
Rock Polypody Fern (*Polypodium virginianum*)
Royal Fern (*Osmunda regalis* var. *spectabilis*)
Sensitive Fern (*Onoclea sensibilis*)
Spinulose Wood Fern (*Dryopteris carthusiana*)

Clubmosses - 4 spp.
Ground-pine (*Lycopodium obscurum*)
Northern Running-pine (*Diphasiastrum complanatum*)
Running Club-moss (*Lycopodium clavatum*)
Shining Fir-moss (*Huperzia lucidula*)

Lichens - 34 spp. (AFER & McMullin 2019)
[*Definitions:* SU - **unrankable** due to lack of information or due to substantially conflicting information about status or trends; S3 - **vulnerable** in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation]

Bryoria furcellata
Chrysothrix caesia
Cladona squamosa
Cladonia coccifera
Cladonia grayi
Cladonia ochrochlora
Cladonia pyxidata
Cladonia rangiferina
Cladonia stellaris (common chemotype)
Cladonia stellaris (rare psoromic acid chemotype) (SU)
Cladonia turgida
Cladonia uncialis ssp. uncialis
Coenogonium pineti (S3)
Evernia mesomorpha
Evernia mesomorpha
Flavoparmelia caperata
Fuscidea arboricola (SU)
Hypogymnia physodes
Imshaugia aleurites
Lecanora pulicaris
Lepraria caesiella
Melanelixia subaurifera
Parmelia squarrosa
Parmelia sulcata
Physcia sp.

Platismatia tuckermanii
Punctelia rudecta
Stereocaulon cf. saxatile
Trapeliopsis granulosa
Tuckermanopsis americana
Tuckermanopsis ciliaris
Umbilicaria muehlenbergii
Usnocetraria oakesiana
Xanthoparmelia cumberlandia

Habitat Types

Habitat types in the Catchacoma Ancient Forest Landscape include terrestrial, wetland and aquatic types; their codes are from Lee at al. (1998). Unless otherwise noted, this information was obtained from Stantec (2008).

Terrestrial
Seven forest types and one rock barren type were based on field studies (Stantec 2008) and ecological land classification types (Lee at al. 1998). In addition, we used digital forest resource inventory (FRI) mapping (LIO 2019) to identify seven forest dominance types.

Ecological Land Classification Ecosystem Types

Dry-Fresh Hemlock-White Pine Coniferous Forest (FOC)
- This was the dominant forest cover in the western portion of the Catchacoma OGF.
- Eastern hemlock was the leading tree canopy species, closely followed by white pine, with small amounts of hardwoods such as red oak, white oak and white birch.
- Dominant common herbaceous plant species included wild sarsaparilla, spinulose wood fern and creeping partridge-berry.
- Stands were characterized by considerable amounts of fallen woody debris, which is a strong indicator of OGF.

Red Maple-Sugar Maple-Red Oak-White Pine Mixed Forest (not in Lee et al. (1998)) - the dominant trees were red maple, sugar maple, red oak and white pine.

Red Maple-Trembling Aspen-Hemlock-Balsam Fir-White Pine Mixed Forest (not in Lee et al. (1998)) - this association was characterized primarily by red maple, trembling aspen, eastern hemlock, balsam fir and white pine.

Fresh Hemlock-White Pine-Maple-White Birch Mixed Forest (not in Lee et al. (1998))
- This type had higher density of eastern hemlock relative to the previous two types.
- Sub-dominants included white pine, red maple, sugar maple and white birch.

Fresh Hardwood-Hemlock Mixed Forest (FOM3-1)
- Eastern hemlock was the dominant canopy species; co-dominants included white birch, sugar maple and red maple.
- The forest community was floristically poor and structurally simple.
- Eastern hemlock dominated the woody understory strata.
- The only abundant herbaceous plant species was large-leaved aster.

Fresh Sugar Maple-Trembling Aspen Deciduous Forest (FOD)

- Small stands were located among extensive rock outcrops.
- Sugar maple was the dominant species along with smaller amounts of trembling aspen and white spruce.
- The herb layer was well developed with wild sarsaparilla as the major species followed by bracken fern, large-leaved aster, blue-bead lily and white-grained mountain rice.

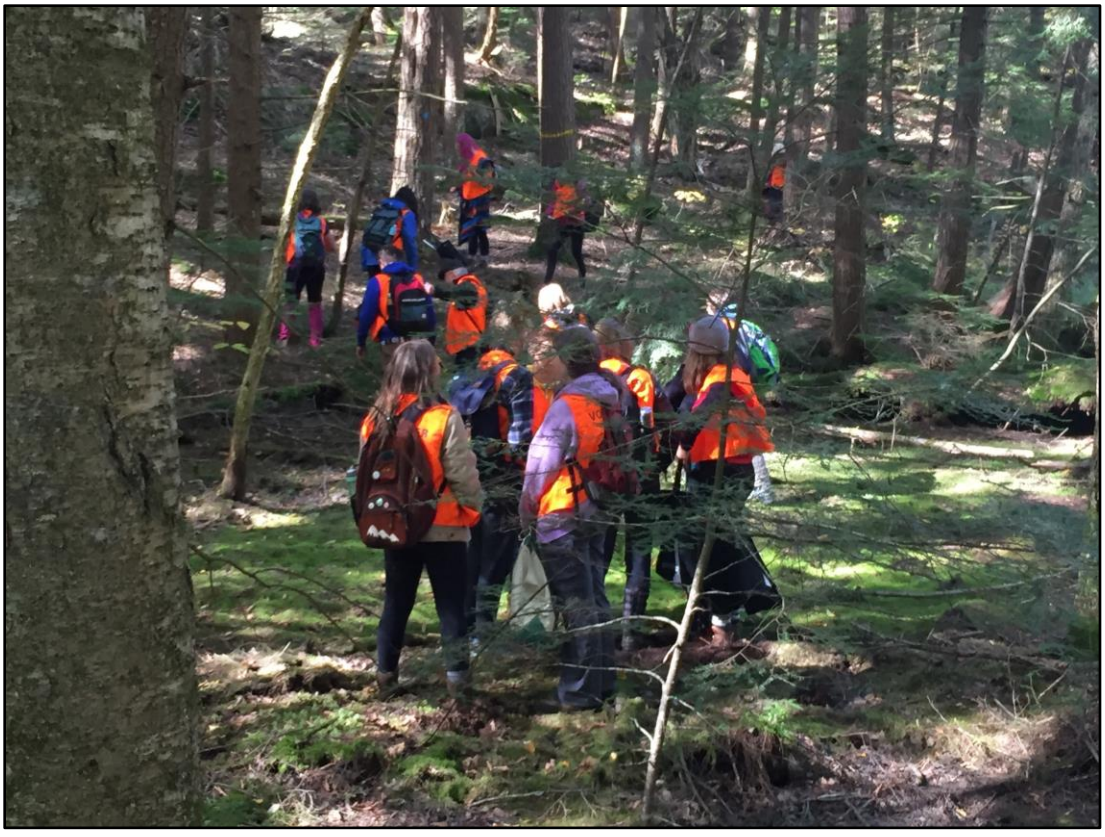
Oak Treed Rock Barren (RBT)

- These were open to semi-open plant communities on exposed, extensive rock outcrops.
- Trees (white oak, red oak, white pine) were open grown and short, growing in shallow soil in rock crevices.
- The open areas of full sunlight had occasional cover of common juniper and blueberry.
- Herbs (e.g., poverty grass and hairgrass) developed where mineral soil and moisture accumulated in small depressions.
- Carpets of lichens occurred in the xeric portion of rock-dominated cover.
- Canopy cover was extremely variable and areas with more tree shade featured better shrub and herb development with sweet fern, large-leaved aster, and saplings of ironwood and Alleghany blackberry.

<u>Forest Resource Inventory Forest Dominance Types</u>

Seven forest types were identified using FRI data (Table 1), which included the following.

- Eastern Hemlock-Red Maple Forest
- Eastern Hemlock-Red Maple-Mixed Forest
- Eastern Hemlock-Sugar Maple Forest
- Eastern Hemlock-Maple-Oak Forest
- Eastern Hemlock-Mixed Forest
- Eastern Hemlock-Red Oak Forest
- Eastern Hemlock-White Cedar Forest



Youth Leadership for Sustainability Students, Catchacoma Forest (2019)

Table 1. Forest Stand Composition and Forest Types
Based on Forest Resource Inventory Mapping in the Catchacoma Forest, Ontario
(BF-balsam fir; CE-white cedar; HE-hemlock; IW-ironwood; MH-sugar maple; MR-red maple; OR-red oak; PO-poplar; Pw-white pine; associated numbers are % divided by 10)

Forest Type	Stand Composition	Development Stage	Age (in 2020)	Size (ha)
Hemlock-Red Maple	HE 9 MR 1	Old growth	177	134
	HE 9 MR 1	Old growth	177	23
	HE 9 MR 1	Old growth	177	20
Hemlock-Red Maple-Mixed	HE 6 MR 2 CE 1 PO 1	Old growth	142	10
	HE 6 MR 2 CE 1 PO 1	Late Mature	131	1
	HE 6 MR 2 CE 1 MH 1	Late Mature	133	31
	HE 6 MR 2 CE 1 MH 1	Late Mature	133	8
	HE 7 MR 1 PW 1 OR 1	Old growth	148	109
	HE 7 MR 1 PW 1 OR 1	Old growth	148	5
Hemlock-Sugar Maple	HE 5 MH 2 MR 2 IW 1	Old growth	142	4
	HE 6 MH 2 PW 1 OR 1	Late Mature	133	10
	HE 4 MH 2 PO 2 PW 1 MR 1	Old growth	153	14
	HE 3 MH 3 OR 2 MR 1 PW 1	Mid Mature	98	42
Hemlock-Maple-Oak	HE 7 MH 2 OR 1	Late Mature	133	8
	HE 7 MH 1 MR 1 OR 1	Old growth	143	13
	HE 7 MH 1 MR 1 OR 1	Old growth	143	10
Hemlock-Mixed	HE 6 MH 1 PW 1 PR 1 OR 1	Late Mature	133	14
Hemlock-Red Oak	HE 6 OR 2 MR 1 PW 1	Old growth	143	149
	HE 6 OR 2 MR 1 PW 1	Old growth	143	23
	HE 6 OR 2 MR 1 PW 1	Old growth	143	5
	HE 4 OR 3 PW 2 MR 1	Old growth	188	17
Hemlock-White Cedar	HE 5 CE 2 BF 1 MH 1 MR 1	Mid Mature	108	11
			total	**662**

Wetlands

Two large wetlands with three wetland types were identified by Stantec (2008). They observed that some of the treed bog and fen communities north of the road alignment appeared to be of exemplary quality.

Two Large Wetlands

- These were located in the western portion of the OGF landscape.
- Extensive coniferous riparian vegetation surrounded the wetlands, which have floating vegetation covering 75% of the wetland.
- Water temperatures were similar to air temperatures at approximately 23 deg. C.
- There is potential for fish populations in these wetlands.

Alder-Wintergreen Organic Thicket Swamp (SWT3-15; not in Lee et al. (1998))

- This swamp was dominated by speckled alder and winterberry.
- The ground was primarily hummocky with deep channels of standing water between clusters of shrubs; duckweed was growing on the surface of the standing water.
- Several wetland species formed the herb layer, including blue joint grass, marsh fern, fringed sedge and cattail.

Broad-leaved Sedge Organic Shallow Marsh (MAS3-4)

- This marsh type was often found in narrow, land-locked channels where organic matter had accumulated.
- Various species of large sedges have formed patches including lake-bank sedge.

Fowl Manna Grass Organic Shallow Marsh (MAS3-12, not in Lee et al. (1998))

- Fowl meadow grass was the most abundant species in this marsh type.
- Patches representing this habitat type are often interspersed with other meadow and marsh habitat types.

Aquatic Ecosystems

Headwater Streams

- Two headwater streams were located in the eastern portion of the OGF landscape.
- Both streams drain south toward Catchacoma Lake.
- Both streams have good riffle-pool-run sequencing with in-stream substrates including boulders, gravel, sand and coarse woody debris, which is a strong indicator of OGF.
- Water depths ranged from 5 to 8 cm and channel widths ranged from 5 to 100 cm, which likely provided habitat for small-bodied fish.
- Water temperatures of these streams were similar to air temperatures, ranging from 22 to 23 deg. C.

Pickerel-weed Mixed Shallow Aquatic (SAM1-1)

- Pickerel-weed was the only floating/emerged leaved species in this aquatic type.
- Vegetation was well-developed in shallow open waters, mostly along lakeshores.

Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic (SAF1-1)

- The largest patches of this association were found in the eastern portions of the OGF landscape.
- This type was well represented in semi-stagnant waters in the widest portions of the streams.

AFER's 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 30% of the Canadian land base by 2030.
- We support the New York Declaration on Forests to end natural forest loss by 2030.

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