NATURAL HERITAGE VALUES OF THE UNPROTECTED CATCHACOMA FOREST, ONTARIO

Research Report No. 41

Ancient Forest Exploration & Research
(ancientforest.org; peterborougholdgrowth.ca)

Powassan, Ontario

Wetland in the Catchacoma Forest, by K. Cowcill

by P. A. Quinby and the Catchacoma Forest Stewardship Committee

"*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)

"*Virtually nothing is known of the botany of large portions of the province [of Ontario]*" (Crins and Korr 2006)

Updated September 16, 2021
(original date: August 2021)

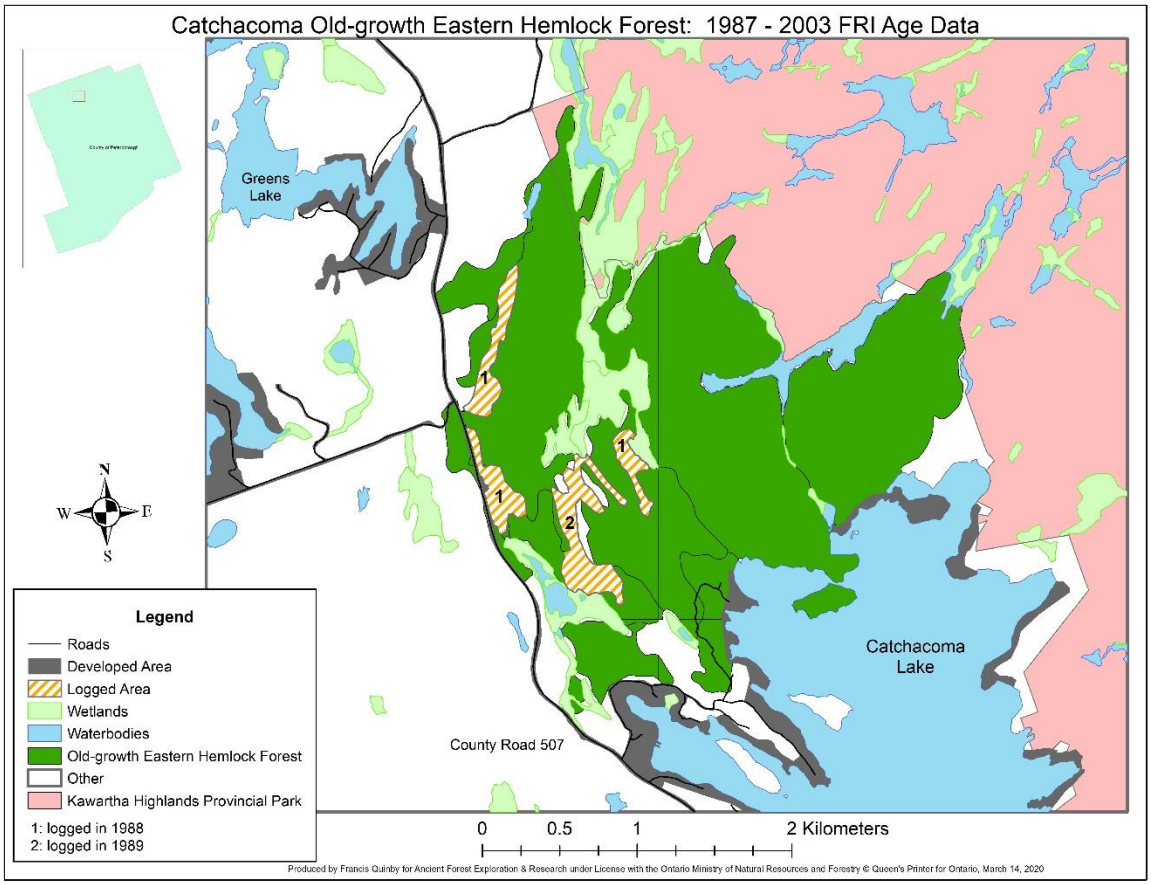
Introduction

The earth is currently facing two existential crises arising from the loss of species and habitat, and from climate warming. In response to these crises, the Federal Government of Canada has established the goal of protecting 30% of its lands and waters by the year 2030 in order to ensure the long-term persistence of natural heritage and carbon storage capability. Currently, Ontario has protected only 10.7% of its landscapes (CPAWS 2021) leaving a shortfall of 19.3% or 19,300,000 ha to be protected in the next nine years. In addition, the Government of Ontario has no specific strategy to meet this protection goal and is pursuing a timber production strategy that is designed to double tree fiber extraction by 2030, which will significantly accelerate both the biodiversity and climate crises.

The absence of a formal strategy for land protection, however, is no reason for not pursuing this federal protection goal. The level of official land protection of the Bancroft Minden Forest Management Unit (BMFMU) located in central Ontario at 9% (89,087 ha; from 2007 FRI data) is 1.7% lower than the provincial average. Thus, biodiversity protection in the BMFMU that is logged by the Bancroft Minden Forest Company must increase by 208,000 ha or by 21% of the Management Unit in the next nine years to achieve 30% protection by 2030.

Protecting the Catchacoma Forest, which is Canada's largest known eastern hemlock old-growth forest (OGF) (Quinby 2019a, Dewar 2020, Quinby et al. 2020, Quinby et al. 2021, Quinby and YLS 2021) and is located in this management unit (Figure 1), would help move protection closer to the goal of 30%. The purpose of this report is to evaluate the Catchacoma Forest relative to 16 key attributes of protected areas, 15 of which are specified in the *Ontario Natural Heritage Planning Manual* (2010; Table 3-2 in the Manual; see Appendix 1). We suggest that the most appropriate type of protected area for this forest is the *conservation reserve* designation.

Figure 1. Catchacoma Forest, Northern Peterborough County, Ontario



The objectives of establishing and managing conservation reserves are provided by the Ontario *Provincial Parks and Conservation Reserves Act* (2020) including the following:

- to permanently protect representative ecosystems, biodiversity, and provincially significant elements of Ontario's natural and cultural heritage,
- to manage these areas to ensure that ecological integrity is maintained,
- to provide opportunities for ecologically sustainable land uses, including traditional outdoor heritage activities and associated economic benefits, and
- to facilitate scientific research and to support monitoring of ecological change on the broader landscape.

This legislation also specifies the following planning and management principles:

- maintenance of ecological integrity shall be the first priority and restoration of ecological integrity shall be considered, and
- opportunities for consultation shall be provided.

Our studies show that there are many reasons to protect the Catchacoma Forest including perhaps most importantly, that this forest has (a) provincial-level significance based on it's eastern hemlock OGF component, (b) numerous species-at-risk, and (c) a high level of landscape diversity including forests, wetlands, streams and lakes. It is now generally accepted among forest ecologists and conservation biologists that OGFs south of Ontario's Boreal Forest are extremely rare endangered ecosystems that should be protected.

Creating New Protected Areas in Ontario

For the last two years we investigated the Ontario government's process for creating new protected areas through review of government literature and numerous meetings with the Ministry of Natural Resources and Forestry (MNRF), the Ministry of Environment, Conservation and Parks (MECP), the Bancroft Minden Forest Company (BMFC), and the Forest Stewardship Council (FSC). We found that this process primarily includes three steps.

Step one of this process begins with the Minister of MECP, who must be convinced by advocates of protected areas to initiate a case file on a particular site to determine if it should be designated as a *candidate protected area*. Step two requires approval from MNRF for the site to be removed from actual or potential logging and/or mining allocation. Should the potential candidate protected area make it through steps one and two, the third step involves assessing ecological representation of the candidate site as the first and primary scientific filter (Crins and Korr 2006). Following the representation evaluation and as part of the scientific component, special features such as rare, threatened, and endangered species and ecosystems are considered. More information on creating new parks in Ontario can be found in the Ontario's Auditor General's report entitled "Conserving the Natural Environment with Protected Areas" (AGO 2020).

Core Protected Area Attributes

For this study, we used a different approach that was based on the *Ontario Natural Heritage Planning Manual* (2010), which specifies 15 attributes of protected areas. We used these attributes as criteria to evaluate the Catchacoma Forest by ranking each attribute as low, medium, or high, and by explaining these rankings. In addition, we added the carbon sequestration and storage attribute as a critical value of high quality protected areas. Policy statements except for the carbon attribute come from Table 3-2 in the *Planning Manual* (2010).

Size – value ranking: high

Policy Statement: *The larger the area, the better, however size must be considered in the context of the landscape and therefore, it is not the only consideration*.

The Catchacoma Forest has been identified as the largest eastern hemlock OGF in Canada (Quinby 2019a). The Bancroft Minden Forest Company, the Ministry of Natural Resources and Forestry, and the SAC (2020) have challenged this assertion stating that the eastern hemlock OGF forest in the Clear Lake Conservation Reserve (also in the Company's management unit) is larger at 1,307 ha. However, they failed to consult or ignored the *Clear Lake Conservation Reserve Statement of Conservation Interest* (1999), which states that, "the area includes an array of mature ('old') forest vegetation associations [including]… 'old growth' (121+ yr.; [now are ~143 yrs. old]) hemlock stands (34.6%), [which are] provincially significant in site district 5E-9" (pg. 5). In addition, this report states that, the "site contains the remains of a logging camp… [and] other remnants of the logging era on nearby lakes" (pg. 6). "These relatively inaccessible forests… [have] only seen minor disturbance in the late 1800's when some white pine were removed along the northern waterways" (pg. 8).

Applying the proportion of hemlock OGF in the Clear Lake Reserve (34.6%) results in a total of 452 ha compared with 662 ha of hemlock OGF in the Catchacoma Forest. Thus, the Catchacoma Forest is 46% larger than the hemlock OGF in the Clear Lake Reserve. In addition, the entire eastern boundary of the Catchacoma Forest is contiguous with Kawartha Highlands Provincial Park (37,000 ha), which provides long-term protection against human disturbance along this boundary. The entire southern boundary of the Forest bordering Catchacoma Lake also ensures long-term integrity along this boundary, which is populated with small cottage lots.

If a 452 ha hemlock OGF stand with minor historical logging is considered provincially significant, surely a 662 ha hemlock OGF stand with minor historical logging is also provincially significant. In our opinion, this attribute alone should be enough to justify protecting the Catchacoma Forest as a conservation reserve.

Integrity (Naturalness) – value ranking: high

Policy Statement: *An area with contiguousness and more natural cover relative to other areas is an important candidate. The planning authority could establish a minimum size as a criterion for a core area. Core areas… are composed of at least 50% natural cover*.

The entirety (100%) of the Catchacoma Forest is composed of natural vegetation cover. However, roughly 42 ha of the Forest were logged in 1988 and 1989 (Figure 1), representing about 6% of the Forest. These are the only government logging data (from Forest Resources Inventory mapping) we were able to find, although this information was requested from the Company to no avail. We estimate that the area logged during the winters of 2019-20 and 2020-21 is approximately 50 ha.

Of 34 plots sampled in the Catchacoma Forest, Quinby et al. (2020) found no evidence of logging in 53% of these plots, which were located primarily in the eastern portion of the Forest (Figure 2). For the other 47% of the samples where evidence of logging was observed, our field data from other work (Dewar 2020, Quinby and YLS 2021) showed that stump density in the southern portions of the Forest was much lower than that of 38 documented OGFs throughout Southern Ontario (SO) (Larson et al. 1999). From this SO survey, maximum cut stump density was 64/ha, the minimum was 0/ha, and the mean was 19/ha. For our study area in the Catchacoma Forest, the cut stump density was 10/ha, which is far below the mean cut stump density (19/ha) for SO indicating a high level of ecological integrity.

Other human disturbances observed in the Forest included: atv use (8 plots), hunting (3 plots), mining (2 plots), hydro corridor (2 plots), trapping (1 plot), and cottage development (1 plot) (Quinby et al. 2020).

Shape – value ranking: high

Policy Statement: *A wide core area is better than a narrow one and a high interior-to-edge ratio is better than a low ratio*.

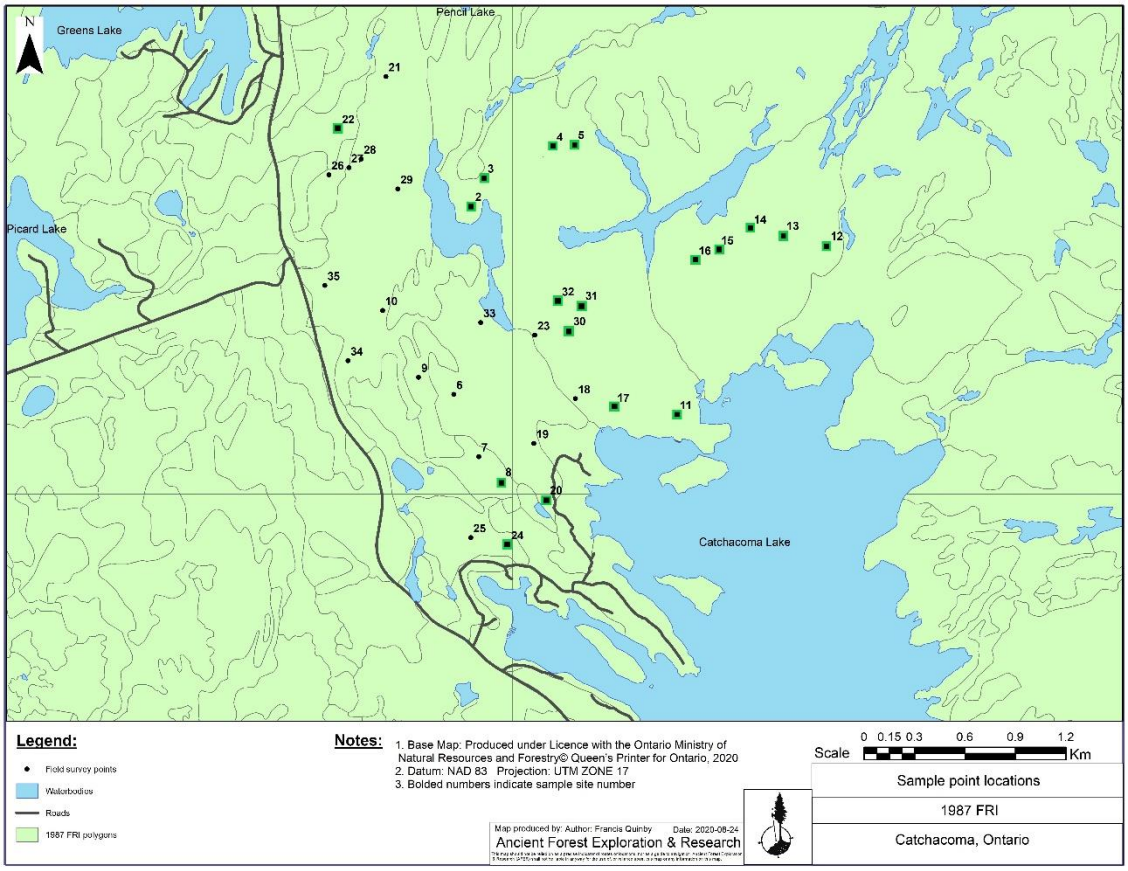
Although the shape of the Catchacoma Forest is an irregular polygon with many protruding lobes along its

boundaries (Figure 1), it is much closer to round and wide than to narrow and long. Round reserves have the highest interior-to-edge ratio whereas narrow and long reserves have the lowest interior-to-edge ratio.

Diversity of Habitat and Species – value ranking: high

Policy Statement: *A core area should have a diversity of habitats and species, although disturbed or cultural areas can have a high diversity of non-native or highly adaptable species, which may not be suitable for a core area, while some important natural habitats (e.g., bogs) can have a low diversity. Many species use more than one habitat type to meet their habitat requirements (i.e., breeding, foraging, nesting, rearing of young, overwintering) throughout the various stages of their lifecycle (e.g., wood frogs need vernal pools for breeding and woodlands for foraging and overwintering).*

Figure 2. 34 Sample Plots in the Catchacoma Forest
(green squares = no cut stumps; round black points = some cut stumps)



Terrestrial Habitats

Seven forest types and one rock barren type were observed through field studies conducted by Stantec (2008) and digital forest resource inventory (FRI) mapping (1987) was used to identify seven forest dominance types. See Quinby (2020) for more details.

- Dry-Fresh Hemlock-White Pine Coniferous Forest
- Eastern Hemlock-Maple-Oak Forest
- Eastern Hemlock-Mixed Forest
- Eastern Hemlock-Red Maple Forest
- Eastern Hemlock-Red Maple-Mixed Forest
- Eastern Hemlock-Sugar Maple Forest

- Eastern Hemlock-Red Oak Forest
- Eastern Hemlock-White Cedar Forest
- Fresh Hardwood-Hemlock Mixed Forest
- Fresh Hemlock-White Pine-Maple-White Birch Mixed Forest
- Fresh Sugar Maple-Trembling Aspen Deciduous Forest
- Oak Treed Rock Barren
- Red Maple-Sugar Maple-Red Oak-White Pine Mixed Forest
- Red Maple-Trembling Aspen-Hemlock-Balsam Fir-White Pine Mixed Forest

Wetland Habitats

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

- 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

- 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

- 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.

FRI wetland mapping (Figure 3) shows that a number of mineral meadow marshes and one mineral thicket swamp are located in the Catchacoma Forest.

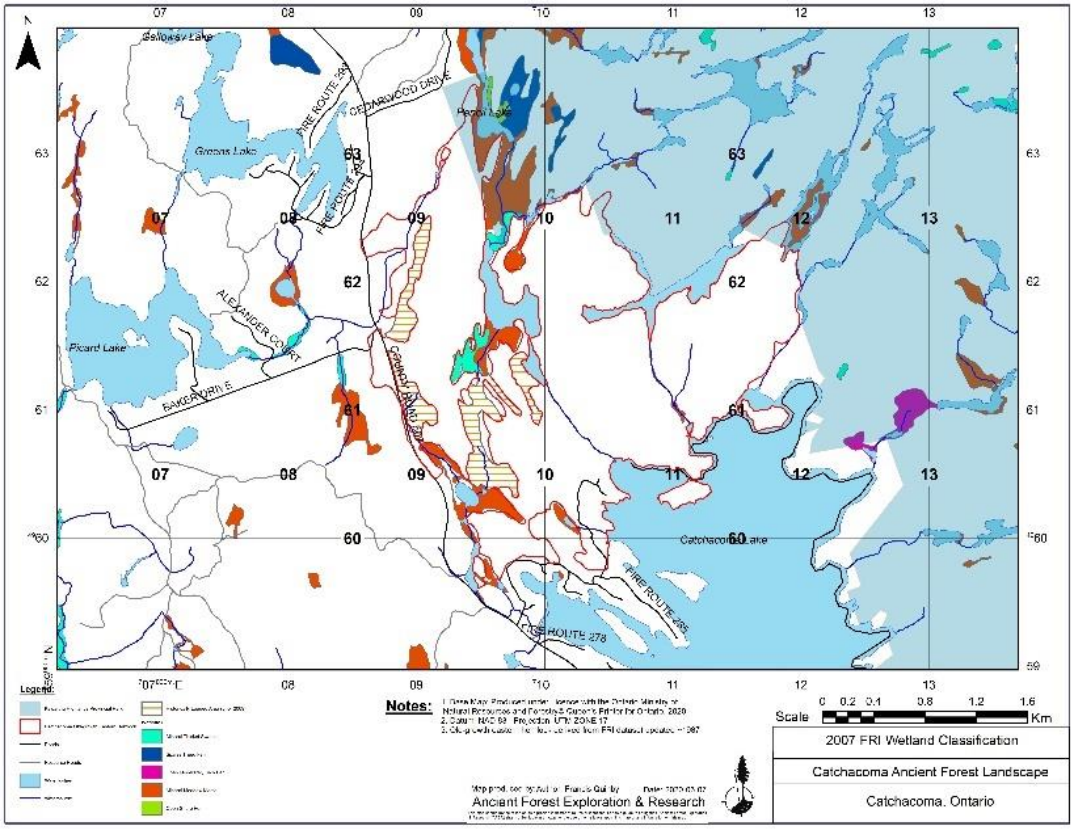
Aquatic Habitats

During their surveys Stantec (2008) found headwater streams with associated small lakes, and two aquatic vegetation community types.

Headwater Streams and Small Lakes

- Two headwater streams were located in the eastern portion of the OGF landscape.
- Both streams drain south toward Catchacoma Lake from small lakes either in or close to the Forest.
- 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.

Figure 3. Wetlands in the Catchacoma Forest Area
(boundary=red line; mineral thicket swamp=bright blue; mineral meadow marsh=red)



- 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

- 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

- 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.

<u>Species</u>

A total of 226 species have been found in the area of the Catchacoma Forest 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).

Interior Habitat – value ranking: high

Policy Statement: *A core area consisting of woodlands with interior habitat, defined as habitat more than 100 metres from the edge of the woodland, is important for some species. Interior habitat of a core area is affected by its size and shape.*

Although we have not performed a calculation, we estimate that at least 95% of the Catchacoma Forest is more than 100 meters from the edges of its outer boundaries. In addition, the eastern boundary of the Forest abuts the Kawartha Highlands Provincial Park where there is no discernible edge.

Rare Habitats and Species – value ranking: high

Policy Statement: *In fragmented landscapes, core areas are often the last remaining patches for rare habitat and species and should be included in natural heritage protection systems*.

AFER has documented that eastern hemlock-dominated (60%+) forests in Ontario make up only 1.5% of the Canadian Shield portion of the Temperate Forest Region of Ontario (Quinby 2019b), where the Catchacoma Forest is located. Due to eastern hemlock forest decline and its resulting rarity across the landscape, we have designated it as an endangered ecosystem. In addition, the threat of hemlock woolly adelgid is high as it has been detected in at least two locations in southern Ontario. This pest has decimated eastern hemlock forests throughout the eastern United States and has been moving northward as climate has warmed.

Ten species-at-risk are known to occur in the Catchacoma Forest 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) (Quinby 2020).

Sensitive Natural Communities – value ranking: high

Policy Statement: *Core areas often limit human disturbances and thus allow sensitive plant and animal species to exist.*

We can only speak to species-at-risk (sensitive to disturbance) that inhabit the Forest. No other work on sensitive natural communities has been done. However, we do know that there is a substantial amount of sensitive habitat in the Forest including wetlands, streams, riparian zones, shallow soils, and steep slopes. This forest has greater topographic relief than most of its adjacent landscapes, thus there are more slopes and valleys. See the *Rare Habitats and Species* section for more information.

Representation – value ranking: irrelevant

Policy Statement: *Natural communities that are poorly-represented in regional protected areas are high priority for inclusion in new core protected areas due to their value for maintaining biodiversity.*

Representation is irrelevant to the conservation of rare, threatened and endangered ecosystems. Applying the representation attribute to these ecosystems implies that some areas will be chosen for protection and some will be rejected. This process breaks down when all remaining examples of a particular type should be protected due to their rarity. For example, the Ontario *Endangered Species Act* calls for the protection of "all" ecosystems (habitat) that support species that are threatened or endangered. The same principle should apply to rare, threatened and endangered ecosystems.

Natural (unlogged) eastern hemlock forests make up only 1.5% of the forests in the Canadian Shield portion of Ontario's Temperate Forest Region and those that are in the old-growth condition are even more rare (Quinby 2019b). Thus, due to their extreme rarity, all remaining eastern hemlock OGFs should be protected no matter their contribution to forest type representation.

Ecological Connectivity Potential – value ranking: high

Policy Statement: *Core areas that are situated near each other or to other high value landscape elements represent opportunities for existing or restored ecological connectivity*.

This forest has strong ecological connectivity in all the cardinal directions. To the north (Figure 4) and west (Figure 5), this connectivity is through natural and semi-natural crown lands. Figure 4 shows the linkage between the Forest and Algonquin Park based on mapping the highest quality wildlife habitat (Quinby et al. 1999). Figure 5 shows the distribution of crown land and the enhanced management zone between the Catchacoma Forest and QE II Provincial Park. The Forest also has strong ecological connectivity to the east and south through Kawartha Highlands Provincial Park (Figure 5).

Important Hydrological Areas – value ranking: high

Policy Statement: *Core areas that contain important hydrological areas (e.g., wetlands, headwaters, recharge areas, discharge areas) are valuable*.

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 headwater streams with small lakes are also located in the Forest both of which drain south and discharge into

Figure 4. Wildlife Habitat Connectivity between the Catchacoma Forest and Algonquin Park (from Quinby et al. 1999)

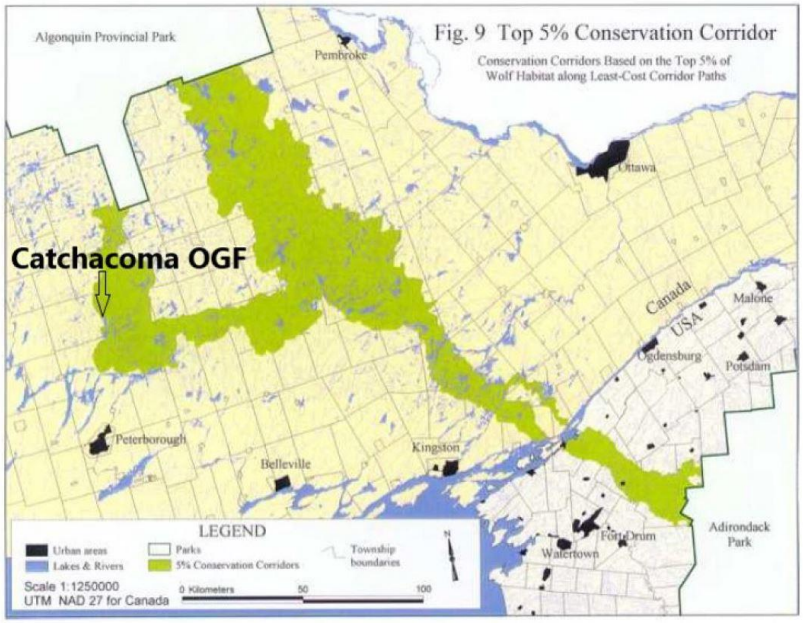
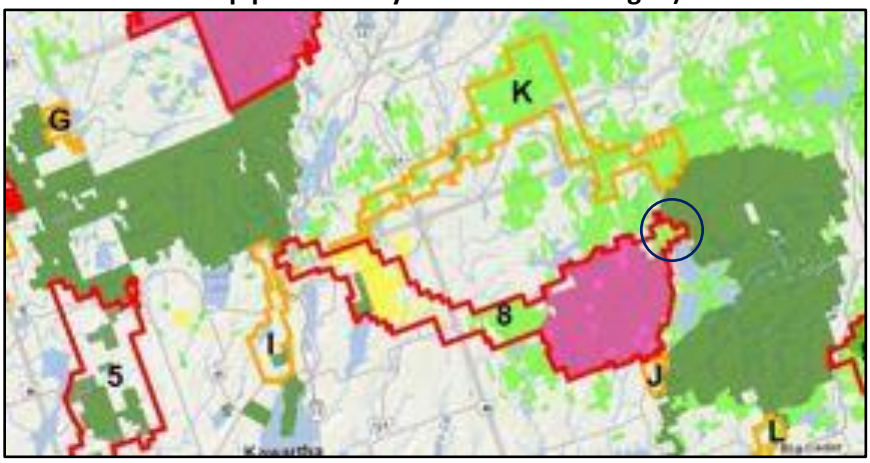
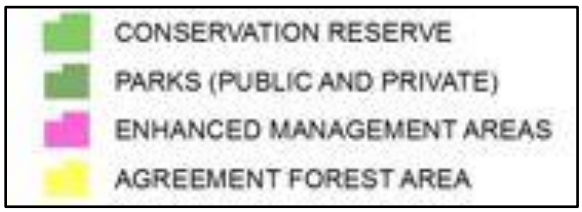


Figure 5. Crown Land Connectivity between the Catchacoma Forest and Queen Elizabeth II Provincial Park (K & 8=linkages; light green=crown land; blue circle=Catchacoma Area; map produced by the Wildlands League)





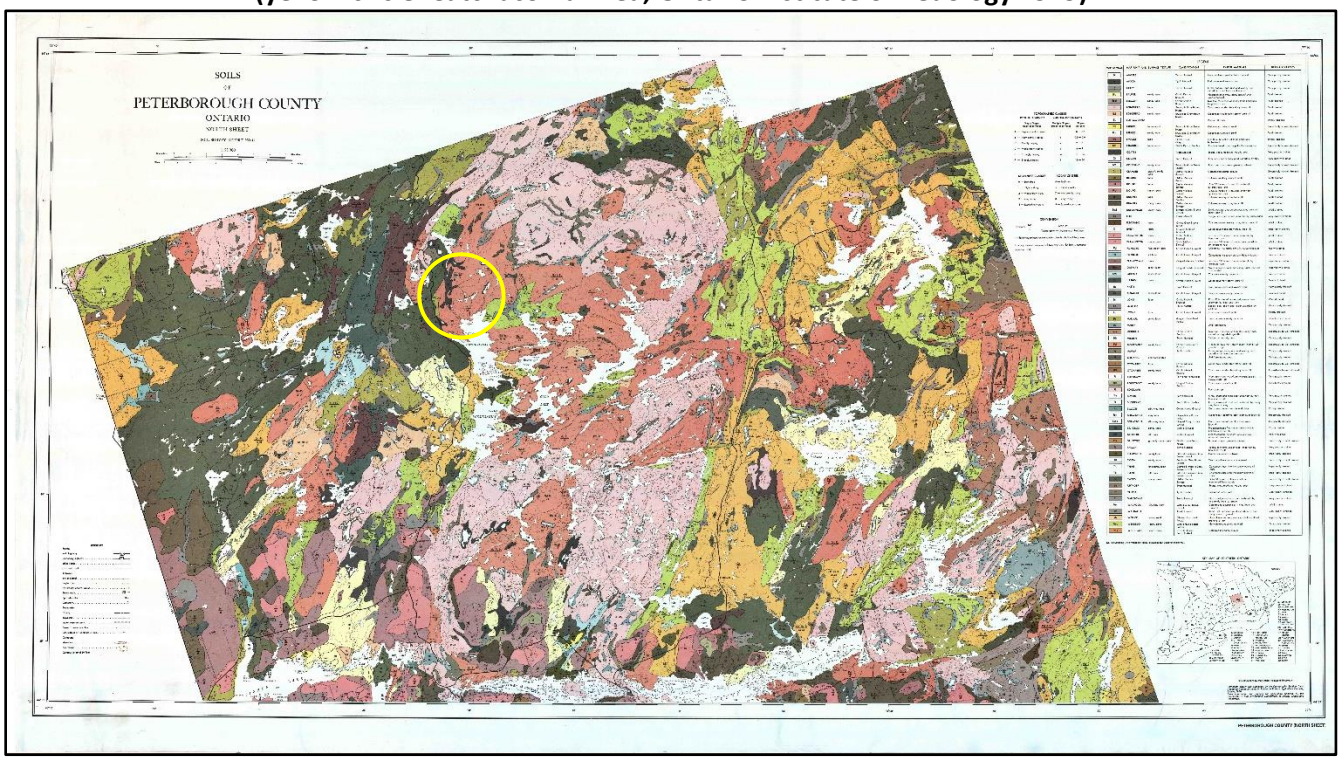
Catchacoma Lake. They both have good riffle-pool-run sequencing with in-stream substrates including boulders, gravel, sand and coarse woody debris, which is a strong indicator of OGF. See the *Diversity of Habitat and Species* section for more information.

Geological Diversity – value ranking: high

Policy Statement: *Core areas that contain geological diversity such as karst topography, caves, cliffs, alvars, and rock barrens are valuable*.

Caves, cliffs, and rock barrens are present in the Catachacoma Forest. However, more work is required to determine all locations and the extent of these geological features. By far, the most common soil type is the Monteagle sandy loam, Ortho Humo-Ferric Podzol, which is a non-calcareous very stony sandy loam till of granitic origin that is excessively- to well-drained (Figure 6).

Figure 6. Soil Types in the Catchacoma Forest Area
(yellow circle=Catchacoma Area; Ontario Institute of Pedology 1979)



Stewardship Potential – value ranking: high

Policy Statement: *Candidate protected areas have added value if they have the potential to be enlarged or improved (e.g., because adjacent land use patterns and activities are favourable); this attribute could also improve the potential of an area that is less complete or has less natural cover.*

There is huge potential for the Catchacoma Forest to be improved, meaning that its applications for recreation, education, and research are limited only by the creativity, motivation and dedication of its stewards potentially

including Ontario Parks and the Catchacoma Forest Stewardship Committee (CFSC). The fact that it is the largest known stand of its type remaining in Canada is a powerful feature that can be applied to market its non-consumptive uses to the general public, educational institutions, and to forest research entities particularly for long-term studies. Its easy access from Hwy 507 further strengthens the case for these applications.

Programming themes for the Forest are many and could include the following, to list just a few:

- ecology and conservation of old-growth forests;
- forest restoration and regeneration;
- monitoring and managing for invasive pests (e.g., hemlock woolly adelgid);
- values of a diverse landscape including forests, rock barrens, riparian zones, streams, wetlands, and lakes, and their interactions;
- nutrient and energy interactions along the land-water interface.
- importance and dynamics of above- and below-ground carbon sequestration and storage;
- association between species-at-risk (e.g., Algonquin wolf, Blanding's turtle) and their habitat requirements; and
- value of the Catchacoma Forest to the region and beyond.

Its location in close proximity to the cities of Peterborough and Toronto, and to Trent University and Fleming College also increases its recreation, education, and research values. There is potential here to develop a self-sustaining, not-for-profit facility that could support all of these activities. We know of no such facility in Canada that focuses solely on the ecology and conservation of an old-growth forested landscape. Its contiguous location relative to Kawartha Highlands Provincial Park also adds value to the facility by being able to offer a true "wilderness experience" in a healthy park landscape that still contains its natural top predators.

Protection in Place – value ranking: medium

Policy Statement: *An area for which the ownership or legal interest in the lands and waters provides a secure future (e.g., park, conservation area) would be a good candidate.*

The entire Catchacoma Forest is located on public (crown) land, which is better than being located on private land. However, portions of the Forest are currently designated for "contingency" logging and could be converted to "allocated" logging if the Company convinces the MNRF to allow it. In our opinion, all logging in this forest should cease immediately and the Forest should be designated as a candidate conservation reserve. An independent (of CFSC and MECP) assessment(s) of the Catchacoma Forest may be required to satisfy all stakeholders.

Significance Established – value ranking: high

Policy Statement: *The presence of one or more provincially significant features could indicate an area's potential as a core area.*

The presence of Canada's largest known old-growth eastern hemlock forest makes this site provincially significant.

Persistence Potential – value ranking: high

Policy Statement: *If land use changes that have already occurred or been approved would lead to the degradation of the natural feature or area, it may not be a good candidate area. Natural features or areas that have lowered ecological functioning resulting from past land use changes may still be important, depending on the landscape context.*

Although portions of the Catchacoma Forest have been logged in the past, this should not prevent the designation of this area as a conservation reserve. We estimate that the most severe logging impacts occurred in 1988 and 1989, and during the winters of 2019-2020 and 2020-2021 covering roughly 10% of the stand. Our data show that minor logging occurring prior to 1988 was at an intensity level around 50% of typical logging intensity within old-growth forests in Southern Ontario (Larson et. al 1999). See the *Integrity (Naturalness)* section for more information.

Carbon Storage and Sequestration (not listed in Planning Manual Table 3-2)

Value ranking: high

Potential Policy Statement: *Due to their exemplary ability to sequester and store carbon and due to their provision of habitat for a multitude of species, old-growth forests should be protected whenever possible. All old-growth forest types that are rare, threatened or endangered should be protected*.

It is now generally accepted that old-growth forests store and sequester more CO_2 than any other terrestrial ecosystem type on earth, and that they support a higher than average number of species across all Kingdoms including many that are "at risk" of extinction.

Conclusion

Of the 16 protected areas attributes that we evaluated, only one was not ranked as "high" and one was considered irrelevant. The "protection in place" attribute was ranked as medium due to the fact that the Forest is currently designated for "contingency" logging and could be converted to "allocated" logging if the Company convinces the MNRF to allow it. In our opinion, all logging in this forest should cease immediately and the Forest should be designated as a candidate conservation reserve. The representation attribute is considered to be irrelevant since all rare, threatened, and endangered ecosystems should be protected.

By protecting the Catchacoma Forest as a community-based reserve for non-consumptive use that is inclusive of all interested parties, this reserve would not provide timber for products such as pallets and garden mulch, however, it would provide the following benefits to society at local to international scales, since eastern-hemlock forest is common throughout the eastern United States as well as throughout the temperate portions of eastern Canada.

- spiritual respite and renewal
- physiological and mental health benefits to people who are emersed within the forest
- provides for the continuation of existing recreational activities with potential for more light trail-based recreational activities
- both formal and informal education
- scientific study of landscape baseline conditions including carbon dynamics and biodiversity conservation
- long-term studies as the best way to truly understand nature
- storage and sequestration of CO_2
- provide habitat for rare, threatened, and endangered species
- provide for the most natural conditions possible to support natural evolution (unimpeded by humans)
- to function as a sentinel of biological invasions (e.g., hemlock woolly adelgid) that are on the rise globally
- adds a separate and contiguous area to Kawartha Highlands Provincial Park making the region more resilient to both climate change and biodiversity loss

From an economic perspective, the Catchacoma Forest is at least 10 times more valuable if left unlogged (Collings and Quinby 2020) and logging contingency areas are available to replace the removal of 662 ha (a small portion of this Forest is allocated as contingency) from the productive forest. To not protect the Catchacoma Forest from logging is to miss a significant opportunity to address two issues that are extremely important to the public, including the positive public relations that could be achieved. In addition, the Bancroft Minden Forest Company/MNRF/MECP could decrease the amount of protection required for their logging region to 207,388 ha if logging was removed and the 662 ha were converted to protected status.

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Appendix 1 – Natural Heritage System Core Area Attributes (from Ontario Natural Heritage Planning Manual 2010)

Table 3-2: Natural Heritage System Core Area Attributes

CORE AREA ATTRIBUTE	DESCRIPTION
Size	• The larger the area, the better, but it must be recognized that size is relative to the attributes of the landscape and is not the only consideration.
Completeness (integrity) and degree of naturalness	• An area that stands out as having contiguousness and more natural cover relative to another area would be an important candidate. • The planning authority could establish a benchmark minimum as a criterion for a core area (e.g., core areas in the ORMCP area are composed of at least 50 per cent natural cover/protected area).
Shape	• A wide core area is better than a narrow one; a high interior-to-edge ratio is better than a low one.
Habitat and species diversity	• A core area should have a diversity of habitats and species, although disturbed or cultural areas can have a high diversity of non-native or highly adaptable species, which may not be suitable for a core area, while some important natural habitats (e.g., bogs) can have a low diversity. • Many species use more than one habitat type to meet their habitat requirements (i.e., breeding, foraging, nesting, rearing of young, overwintering) throughout the various stages of their lifecycle (e.g., wood frogs need vernal pools for breeding and woodlands for foraging and overwintering.)
Presence of interior habitat	• A core area consisting of woodlands with interior habitat, defined as habitat more than 100 metres from the edge of the woodland, is important for some species (Askins et al., 1987; LandOwner Resource Centre and Ontario Ministry of Natural Resources, 2000). • Interior habitat of a core area is affected by its size and shape.
Presence of rare habitats and species	• In fragmented landscapes, core areas are often the last remaining patches for rare habitat and species and should be included in natural heritage systems.
Presence of sensitive natural communities	• Core areas often limit human disturbances and thus allow sensitive plant and animal species to exist.
Presence of natural communities not well represented in the landscape	• Core areas that contain poorly represented natural communities are valuable for maintaining biodiversity.
Potential for connectivity	• Core areas that happen to be situated near each other or to other landscape elements would exhibit opportunities for existing or restored connectivity.

CORE AREA ATTRIBUTE	DESCRIPTION
Presence of important hydrological areas	• Core areas that contain important hydrological areas (e.g., wetlands, headwaters, recharge areas, discharge areas) are valuable.
Geological diversity	• Core areas that contain geological diversity (e.g., karst topography, caves, cliffs, alvars, rock barrens) are valuable.
Potential for augmentation through stewardship	• A candidate area possessing other attributes would be of more interest if it had the potential to be enlarged or improved (e.g., because adjacent land use patterns and activities are favourable); this factor also could invite consideration of an area that is less complete or has less natural cover.
Protection already in place	• An area for which the ownership or legal interest in the lands and waters provides a secure future (e.g., park, conservation area) would be a good candidate.
Significance already established	• The presence of one or more provincially significant features could indicate an area's potential as a core area.
Potential to persist	• If land use changes that have already occurred or been approved would lead to the degradation of the natural feature or area, it may not be a good candidate area. • Natural features or areas that have lowered ecological functioning resulting from past land use changes may still be important, depending on the landscape context.