

Ancient Forest Exploration & Research

Powassan, Ontario

(ancientforest.org; peterborougholdgrowth.ca; contact: info@ancientforest.org)

**Rapid Ecological Survey of the Wetlands with
Water Bodies within the Catchacoma
Old-growth Forest**

by Lia Le Brun Robles Gil and Jesse Mihevc



Pencil Creek Wetland, Catchacoma Forest, 2022 (Photo: L. Robles)

Introduction

Wetlands, in all their forms, provide critical ecological services to humans, and they play a crucial role in maintaining the health of many forested landscapes (Ontario Government 2022). The Catchacoma Forest (in Eco-district 5E-11 of Ontario), located at the north end of Catchacoma Lake (Figure 1), is home to a variety of wetlands and water bodies including bogs, fens, swamps, streams, ponds and lakes. These contain a wide array of species, currently undocumented for the Forest, that contribute to both local and regional biodiversity and ecological integrity. Assessing and identifying the plant, invertebrate and vertebrate species present within the wetlands and other water bodies of the Catchacoma Forest is the first step toward understanding the ecology of these wetlands and associated water bodies. Given the threat of contingency logging in the Forest, additional wetland studies should be completed as soon as possible.

Each wetland/water body in the Catchacoma Forest has its own unique characteristics including size, riparian vegetation and aquatic communities that should be assessed. This initial assessment will help direct future, more in-depth surveys, informing where resources and effort should be allocated and helping to determine whether an official *Ontario Wetland Evaluation* should be conducted. As of February 2023, none of the wetland areas have been officially evaluated or classified (OMNRF 2023).

Methods

We assessed each of the four wetland areas containing water bodies within the Catchacoma Forest, which included the *Pencil Creek Wetland System* (A), the *Little Catchacoma Lake Wetland System* (B), the *Southern Wetland System* (C) and the *Southern Fen Wetland* (D). These areas are shown on Figure 1. It should be noted that the *proximity* (wetland evaluation metric) of each wetland system is less than 1,000m away from at least one of the other wetland systems, which is worth from two to five points per wetland score in the *Northern Wetlands Assessment Manual* (Ontario Government 2022). This manual also states that:

“This attribute (proximity) provides a measure of habitat connectivity. The value of a wetland is enhanced when it is located near enough to other wetlands that wildlife can move between wetlands to make use of more favourable habitat, a larger food supply etc... Wetlands connected hydrologically by surface water (e.g., streams, rivers or lake shores), including intermittent connections, are most valuable. Wetland proximity can be especially important when a wetland is small and meets specialized needs of certain wildlife species.”

We surveyed a randomly chosen sample of 30m² within each wetland system. Additional field work and analysis of aerial photos is required to identify the boundaries and size of each wetland system in the Catchacoma Forest, and to expand species and community inventories. Surveys were conducted during July and August 2022, specifically targeting the *biological component* (section 1.0) and the *special features component* (section 4.0) of the *Northern Wetlands Assessment Manual* (Ontario Government 2022).

For each wetland, the type of water body (e.g., lake, marsh, fen, etc.), pH, turbidity, and percent vegetation cover were assessed. Wetlands were categorized according to section 1.1.2 of the *Northern Wetlands Assessment Manual* (Ontario Government 2022). Using a combination of visual surveys, minnow traps and dip nets, vertebrate and invertebrate species were captured, identified, and released at each location. Plant types are sorted by occurrence into high, medium, and low abundance. For this report, we define ‘high’ abundance as covering greater

than 5m², 'medium' as covering between 2m² and 5m² and 'low' as covering less than 2m². A combination of field guides and software was used for species identification (e.g., Page and Burr 2011).

Figure 1. Map of Catchacoma Forest showing the four wetlands with water bodies and survey locations (The Pencil Creek Wetland System is indicated by **A**, the Little Catchacoma Lake Wetland System is indicated by **B**, the Southern Wetland System is indicated by **C**, and the Southern Fen Wetland is indicated by **D**.)



Results

A - Pencil Creek Wetland System

Location: Southside standing water near beaver dam

Type: Marsh connected to a large wetland system which included a creek and a fen.

pH: 6.5

Turbidity: ~20cm until non-visibility

Percent Vegetation Cover: ~ 75 % vegetation cover, nine community types (Table 1)

Significant Animals: Virginia tiger moth; two-spotted bumblebee; tri-coloured bumblebee; Alleghany crayfish; beaver; green frogs; leopard frogs; snapping turtle; Blanding's turtle

Fish Presence: Yes (eastern blacknosed dace, Unkn. Spp.)

Notes: lots of logs in the water; beaver dam nearby; no solid substrate; evidence of both snapping turtle and Blanding's turtle nesting sites along the shoreline

Table 1. Plant communities of the Pencil Creek Wetland System, distributed by estimated density (The form of each plant is indicated in parentheses as follows as per the Ontario Government (2022): coniferous trees (c), deciduous trees (h), tall shrubs (ts), low shrubs (ls), groundcover (gc), moss (m), narrow-leaved emergents (ne), broad-leaved emergents (be), robust emergents (re), floating plants (f), free-floating plants (ff), and submerged plants (su). Species in red are known wetland indicators (Ontario Government 2022, section 1.2.2 and Appendix 10).)

High-Density	Medium-Density	Low-Density
W. pine (c); threeway sedge (ne); pickerelweed (be); Ukn. lily pads (f)	E. hemlock (c); steplebush (ls); leatherleaf (ls); sensitive fern (gc); sweet fern (gc); marsh bellflower (gc); fraser marsh St. John's wort (gc); white-beaked sedge (ne); intermediate bladderwort (su); mermaid weed (su); water purslane (su); common bladderwort (su)	E. white cedar (c); R. maple (h); marsh fern (gc); white bog violet (gc); cardinal flower (gc); flat-topped goldenrod (gc); swamp St. John's wort (gc); swamp candles (gc); water smartweed (gc); bulblet-bearing water hemlock (gc); narrowleaf cow wheat (gc); bedstraw sp. (gc); bog yellowcress (gc); rattlesnake managrass (ne); bur-reed sp (ne).; wool grass (re); bullhead pond lily (f)

B - Little Catchacoma Lake Wetland System

Location: North-western shoreline

Type: Lake with a high amount of shoreline; the northern arm included a marsh or fen.

pH: 5.25

Percent Vegetation Cover: ~ 10 % vegetation cover. Most of the Lake has very little vegetation cover (< 5%), yet the northwestern arm is entirely covered by vegetation and is, in some areas, even solid ground, likely due to the presence of a beaver dam nearby. Five community types were present (Table 2).

Significant Animals: silver-haired bat; big brown bat; beaver; silver-bordered fritillary

Fish Presence: Yes (unknown Spp.)

Table 2. Plant communities of the Little Catchacoma Lake Wetland System, distributed by estimated density (The form of each plant is indicated in parentheses as follows as per the Ontario Government (2022): coniferous trees (c), deciduous trees (h), tall shrubs (ts), low shrubs (ls), groundcover (gc), moss (m), narrow-leaved emergents (ne), broad-leaved emergents (be), robust emergents (re), floating plants (f), free-floating plants (ff), and submerged plants (su). Species in red are known wetland indicators (Ontario Government 2022, section 1.2.2. and Appendix 10).)

High-Density	Medium-Density	Low-Density
Virginia meadowbeauty (gc); round-leaved sundew (gc)	tamarack (c); black spruce (c); leatherleaf (ls); bog Labrador tea (ls); spoon-leaved sundew (gc); white bog violet (gc); rosette grass sp. (ne); woolgrass (re); threeway sedge (ne); common pipewort (ne)	purple pitcher plant (gc)

C - Southern Wetland System

Location: Cedar-dominated stream-like area west of open body of water

Type: Mostly marsh

pH: 7.0

Percent Vegetation Cover: ~ 75% vegetation cover, nine community types (Table 3)

Significant Animals: damselfly larvae; dragonfly larvae; green frog; *Belostoma* spp. (small); American medicinal leech; pickerel frog; mink frog

Fish Presence: Yes (brook stickleback, northern redbelly dace, genus *Lepomis* spp., eastern black-nosed dace)

Notes: cool water and vegetation presence provided great small fish habitat; lots of emergent and submerged vegetation; lots of birch logs in water; good potential turtle habitat but no evidence of turtles observed

Table 3. Plant communities of the Southern Wetland System, distributed by estimated density (The form of each plant is indicated in parentheses as follows as per the Ontario Government (2022): coniferous trees (c), deciduous trees (h), tall shrubs (ts), low shrubs (ls), groundcover (gc), moss (m), narrow-leaved emergents (ne), broad-leaved emergents (be), robust emergents (re), floating plants (f), free-floating plants (ff), and submerged plants (su). Species in red are known wetland indicators (Ontario Government 2022, section 1.2.2 and Appendix 10).)

High-Density	Medium-Density	Low-Density
E. hemlock (c + dc); E. white cedar (c); cyperus sedge (ne); cattails spp. (re)	balsam fir (c); tamarack (c); steeplebush (ls); broadleaf arrowhead (be); pickerelweed (be); yellow water lily (f); white water lily (f); bladderwort (su)	spruce sp. (c); marsh cinquefoil (gc); bur-reed (ne)

D - Southern Fen Wetland

Location: Around the edge of the central body of water

Type: Poor fen (despite its low pH, the surveyed area has well over 15 plant species and seems to be fed by a small water source)

pH: 4.0

Percent Vegetation Cover: ~ 75% vegetation cover, eight community types (Table 4)

Significant Animals: leopard frog; green frog; pickerel frog; painted turtle (shell)

Fish Presence: None

Table 4. Plant communities of the Southern Fen, distributed by estimated density (The form of each plant is indicated in parentheses as follows as per the Ontario Government (2022): coniferous trees (c), deciduous trees (h), tall shrubs (ts), low shrubs (ls), groundcover (gc), moss (m), narrow-leaved emergents (ne), broad-leaved emergents (be), robust emergents (re), floating plants (f), free-floating plants (ff), and submerged plants (su). Species in red are known wetland indicators (Ontario Government 2022, section 1.2.2. and Appendix 10).)

High-Density	Medium-Density	Low-Density
black spruce (c + dc); purple pitcher plant (gc); round-leaved sundew (gc); Magellan's peatmoss (m); tawny cottongrass (ne)	leatherleaf (ls); bog Labrador tea (ls); swamp loosestrife (gc); white-beaked sedge (ne); few seeded sedge (ne); bog buckbean (be)	rose pogonia (gc); white bog orchid (gc); white-fringed orchid (gc); wild calla (gc); tuberous grasspink (gc); Unkn. lily pad (f)

Table 5. Summary table of the four wetland/water bodies of the Catchacoma Forest

Metrics	Pencil Creek Wetland System	Little Catchacoma Lake Wetland System	Southern Wetland System	Southern Fen Wetland
Location Surveyed	near beaver dam	north-west	west	entire fen
Type	marsh	lakeshore	marsh	fen
pH	6.5	5.3	7.0	4.0
Vegetation Cover (%)	75	10	75	75
Community Types	9	5	9	8
Turbidity	~20 cm until non-visibility	Ukn.	Ukn.	Ukn.
Fish Presence	yes	yes	yes	no
Significant Vertebrates	beaver; green frogs; leopard frogs; snapping turtle; Blanding's turtle; eastern black-nosed dace	silver-haired bat; big brown bat; beaver	green frog; pickerel frog; mink frog; brook stickleback; northern redbelly dace; genus <i>Lepomis</i> spp.; eastern black-nosed dace	leopard frog; green frog; pickerel frog; painted turtle (shell)

Discussion

The *Pencil Creek Wetland System* contained evidence for at least two turtle species, including Blanding's turtles (threatened) and snapping turtles (special concern). Turtle nesting sites of both species were documented along the shorelines of the Wetland, indicating the superior nature of the habitat for these two turtle species. A Blanding's turtle skeleton and shell was also found along the shoreline at this location. Pencil Creek, which borders Kawartha Highlands Provincial Park (KHPP) and feeds into Catchacoma Lake, drains through this wetland and serves as the primary water source. This system is very extensive, particularly in the northern and eastern directions, and likely contains more than one wetland type. It should be noted that this system also connects to wetlands within KHPP, which, along with the high diversity of plant species and its large size, likely makes this wetland system of special regional interest.

The *Little Catchacoma Lake Wetland System* also borders KHPP on the north and east arms. Most of the Lake is open water with low emergent plants. The north arm of the Lake was not surveyed in this report, however, a beaver dam was observed there. This arm is dominated by vegetation, including dwarf St. John's wort, purple pitcher plants, black spruce, and yellow-eyed grass. The Lake and shoreline are home to several significant vertebrate species, including the silver-haired bat, the big brown bat and the five-lined skink (special concern). Vast areas of Virginia meadow beauty along the shoreline are a unique feature of this wetland. More research should be conducted there to assess for seasonal flooding and to determine the specific features of the Wetland.

The *Southern Wetland System* comprises a series of smaller, connected wetlands. While most of them were cattail-dominated and not particularly deep, the northernmost wetland of this system contained unique habitats and numerous fish species, including the brook stickleback, northern redbelly dace, and several other unidentified small fish species. A white cedar stand and evidence of waterfowl were observed. Based on its proximity to roads and ATV trails, of the four wetlands assessed, this wetland system is most at risk from invasive plants such as purple loosestrife and *Phragmites australis*, which were found nearby.

Finally, the *Southern Fen Wetland* contained a variety of orchids including rose pogonia, white-fringed orchid, and white bog orchid. These orchids may be the most interesting species in this wetland, many of which are only found in this portion of the Forest. Although there were some amphibian species observed and evidence of deer and beaver activity, this was the only wetland system in the Catchacoma Forest lacking a fish community, likely due to the low pH. Dip netting obtained aquatic invertebrates such as water boatmen and whirligig beetles. Empty painted turtle shells were found along the shoreline, however no live turtles have been spotted there to date. At the Wetland outflow that likely leads to Catchacoma Lake there is a beaver dam. This fen, which may have special regional value since fens have the highest rarity score in Eco-district 5E-11 (Ontario Government 2022, section 4.1.1), should be investigated further to address this potential rarity.

Conclusion

This report represents a first-stage assessment of the four unique wetland systems (Table 5) within the Catchacoma Forest and highlights the need for an official wetland assessment. The presence of at least three species at risk including snapping turtle, Blanding's turtle and five-lined skink; indications of potentially more turtle species; and at least two bat species all located within an endangered old-growth forest suggest that these wetlands should be considered for protection (Ontario Government 2023). This recommendation is even more urgent considering the recent weakening of the *Ontario Wetlands Evaluation System* made by the provincial government and the fact that

over 7,000 ha of wetlands in Ontario were lost over four years between 2011 and 2015 (Ontario Biodiversity Council 2021).

Additional field work and analysis of aerial photos is required to identify the boundaries and size of each wetland system in the Catchacoma Forest, and to further survey for undocumented species and communities. This work should be completed as soon as possible given threats from potential contingency logging in the Forest. Finally, the *social* (section 2.0) and *hydrological* components of these wetlands (section 3.0), as described in the *Northern Wetlands Assessment Manual* (Ontario Government 2022), have yet to be assessed and should be as soon as possible.

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AFER's Mission and Guiding Principles

AFER is a non-profit scientific organization with a mission to carry out research and education that leads 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 commitment to increase protected areas to 30% of the Canadian land base by the year 2030.
- We support the *New York Declaration on Forests* to end natural forest loss by 2030.

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