

An Updated Proposal to Protect  
the Goldsmith Lake area,  
contributing to the 20% target

prepared by

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22 May, 2024

The Citizen Scientists of Southwest Nova Scotia originally submitted a proposal to the Minister of Environment and Climate Change in November 2022 to protect the Goldsmith Lake area in Annapolis County as part of the 20% by 2030 target. In the past 18 months we have learned so much about the extraordinary conservation value of the area that we are updating our proposal. We are also requesting that the area be placed under consideration for protection as part of the 1.5% of Nova Scotia that will be protected by March 2026 to meet the 15% interim target.

The area we propose protecting encompasses a remarkable array of conservation values in a modest area of 3900 ha. The surrounding forests on both crown and private land have been severely degraded by clearcutting. There are no protected areas nearby to preserve the health of this part of the Annapolis River Watershed. The proposed Wilderness Area includes:

- **Goldsmith Lake, a pristine lake with a healthy population of native trout and no cottage development or damming.**
- **The headwaters of the Round Hill River, Tupper Brook and Bloody Creek.**  
The Clean Annapolis River Project has documented Atlantic salmon smolts in the Round Hill River. Their ongoing restoration work in the Round Hill River Subwatershed includes work within the proposed wilderness area.
- **Extensive wetlands crucial to both biodiversity and carbon storage.**
- **Documented evidence of species at risk (SAR) indicating significant habitat.** In addition to six Black Ash and two Blue Felt lichens, 54 confirmed occurrences of Frosted Glass Whiskers lichen have been reported to date. It is unprecedented in Nova Scotia (and, to the best of our knowledge, in Canada) to find such a density of occurrences of this late successional calicioid lichen.
- **Old forest and old growth forest stands in a wide band along most of the western side of Goldsmith Lake as well as on a peninsula and several islands, the eastern shore of the lake and a hardwood hill to the south.**  
Other significant areas of near old growth forest are found on the west side of Dalhousie Lake and on the peninsula between Corbett and Dalhousie Lake as well as to the north of Corbett Lake. Yellow birch and eastern hemlock in several stands have been aged to over 200 years, some over 300.
- **Evidence of ecological continuity in numerous pockets of old forest found in otherwise harvested areas.** Rare late successional calicioid lichen species (including the SAR Frosted Glass Whiskers) have been identified in pockets of old forest across the landscape, bearing testament to Bowater's practice of leaving old trees, particularly hardwoods, standing even in areas that were largely cut. These reservoirs of biodiversity improve the chances of restoration in areas degraded by past forest management.

- **Eighty percent of the proposed wilderness area falls within the core habitat identified in the Recovery Plan for Mainland Moose.** Protecting this area would help create essential ecological connectivity for this and other endangered species.
- **The old forests within the proposed wilderness area support birds whose numbers have declined across the landscape.** Grey jays are a regular presence in the intact forests west of Goldsmith Lake whereas they have become scarce in the degraded landscapes that dominate this part of the South Mountain. A recent study from Quebec indicates that Chimney Swifts require trees over 80cm dbh to nest in. The number of very large (and usually hollow) Yellow Birch to be found in the old forests around Goldsmith Lake and near Corbett Lake improves the reproductive chances for this endangered species.
- **An unusual degree of continuous forest cover.** By contrast to the surrounding landscape, there has been relatively little clearcutting within the proposed wilderness area in the past thirty years. Previous harvest areas have regrown to the point where this entire area is effectively sequestering and storing carbon as well as moderating climate impacts such as flooding, windstorms, and extreme heat. The areas of 50 year-old planted forests are mainly red spruce, long lived trees that will continue to help combat climate change for at least another 150 years while also supporting increasing levels of biodiversity as old growth characteristics develop.
- **A mosaic of diverse forest types and ages.** This area encompasses a remarkable combination of intact old growth and near old growth hardwood forests on drumlins around Goldsmith Lake; old-growth and near old growth mixed forest near both Goldsmith and Corbett Lakes; stands of ancient Hemlocks; numerous forested wetlands, several supporting Black Ash and species at risk lichens; widely distributed pockets of old forest; early mature areas of Red Spruce; open wetlands, still waters and brooks; a river known to support salmon, and a pristine lake. Those areas degraded by past forest management are optimally placed for restoration. Protecting them protects the whole assemblage of rare, rich and intact landscapes.
- **Indigenous interest in this area.** Sites of Mi'kmaw archeological interest have been identified on the west side of the southern end of Dalhousie Lake, leading to the amendment of harvest plans for that area. In June members of Bear River First Nation are bringing Mi'kmaw youth to experience the old growth forest and Black Ash northwest of Goldsmith Lake.

- **Research and education potential.** For anyone interested in studying the habitat of species at risk lichens, Goldsmith Lake offers a rare opportunity to study conducive habitat for *Sclerophora peronella* – Frosted Glass Whiskers.
- **Healthy communities need healthy nature.** Half an hour's drive from Bridgetown and a half hour hike takes you into the nine hectare stand of old growth Yellow Birch and Sugar Maple NRR recently assessed as having an average age of 250. The opportunity to spend time in old growth forest is rare, soothing, inspiring, educational. There is no better way to build support for protecting 20% of Nova Scotia than to give people a glimpse of what our forests can be again, if we protect them.

### High Conservation Values of Goldsmith Lake



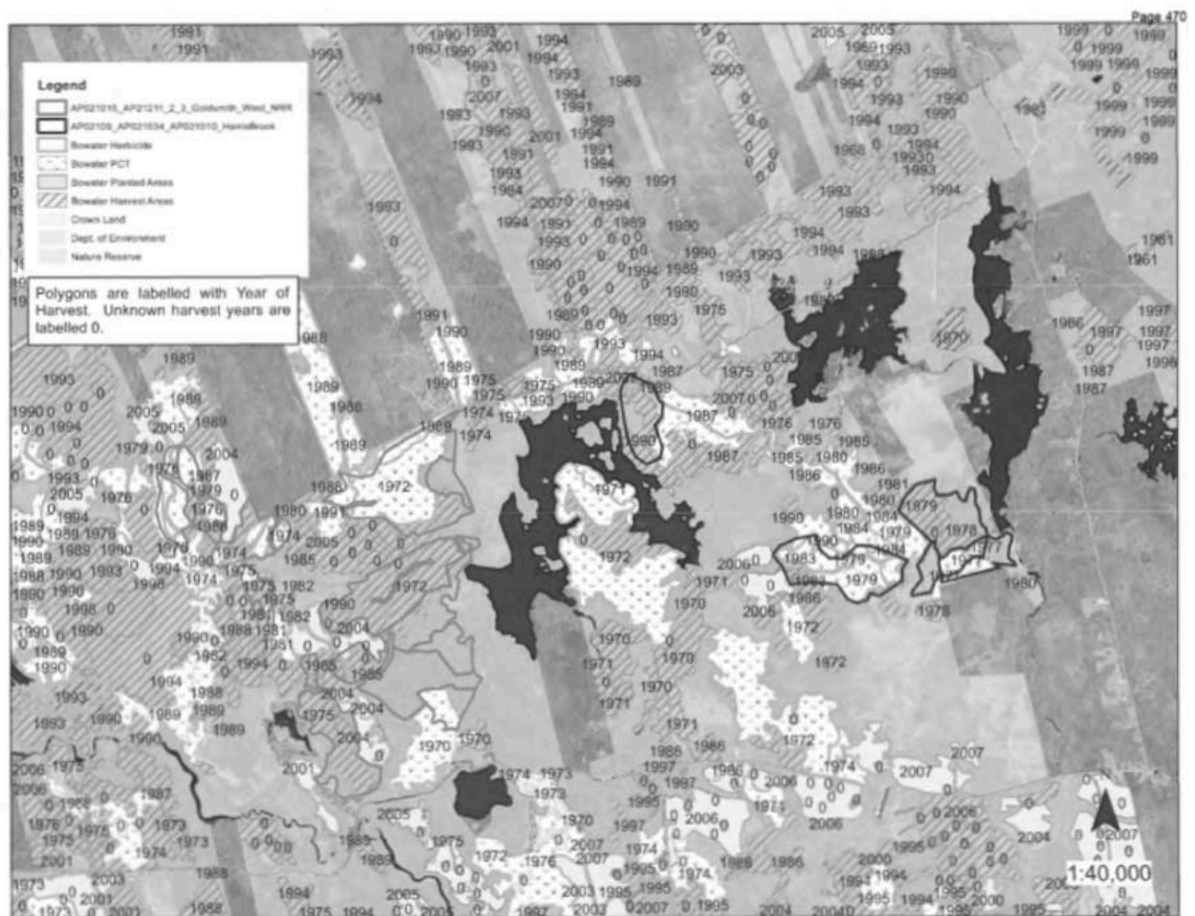
*Goldsmith Lake from the north, 2023 Malachi Warr*

Much has been made of the amount of managed forest in the proposed Goldsmith Lake Wilderness Area, based on historical records received when the province bought this

land from Bowater Mersey Paper in 2012. A Freedom of Information request shows that NRR went to the trouble of drawing the harvest plan boundaries they approved in 2022 onto the old Bowater map of the area, presumably to illustrate this point.

Leaving aside the substantial areas of intact old forest west of Goldsmith Lake and between Corbett and Dalhousie Lake, the Bowater map of harvesting and treatments done in the area might lead to the conclusion that as much as half of the 3900 ha area proposed for protection had been clearcut and could accurately be referred to as managed forest.

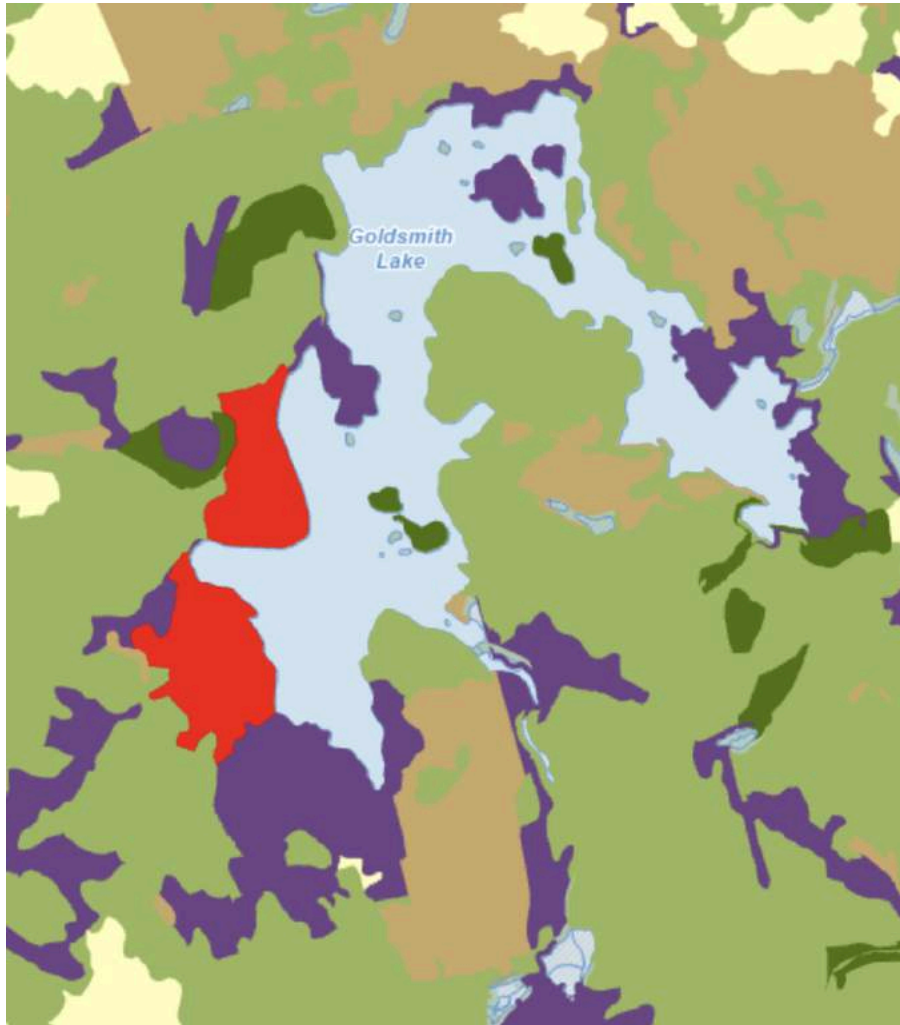
Ground truthing the area tells a different story. Maps cannot always be taken at face value.



*Bowater map with 2022 harvest approvals added by NRR. Source: Freedom of Information request*

Consider, for example, the peninsula that separates the east and west arms of Goldsmith Lake. The Bowater map shows the whole peninsula having been cut and

treated in 1971 and 1972. You would not expect to find Old Growth Forest on this peninsula. NRR certainly didn't. The development class shown on their Provincial Landscape Viewer map of the peninsula in August 2023 indicated that it was early mature, in other words between 41 and 80 years old.



*Provincial Landscape Viewer, Development Class layer*

Cream: Establishment

Tan: Young Forest, 25 - 40

Pale green: Early Mature, 41 - 80

Dark green: Late Mature, 81-120

Purple: Old/Mixed Age.

Red: Old Growth Forest Policy.



*Drone shot, Goldsmith Lake from the north, 2023 Richard Bennett*

What we found when we kayaked to the east side of the peninsula was something altogether different: a steep slope full of very large yellow birch with some sugar maple and substantial red maples.





Along the foot of this slope grow large eastern hemlocks, many festooned with Coral Lichen, the only lichen NRR uses in its old growth scoring protocol. Subsequent core samples showed that one of the smaller hemlocks (53cm diameter at breast height) was over 276 years old. Two yellow birches were in all likelihood over 300 years old. (Like many yellow birches, the middles were hollow but the 50% or so of the radii of the trees we sampled came in at 175 and 188 years old.)





Once we had informed them of the find, NRR came out and assessed the 4.2 ha hardwood stand. They determined that it was indeed old growth. They did not assess the neighboring stands where the hemlocks were found but have committed to doing so.

Was the Bowater map simply wrong in showing that the whole peninsula had been treated and harvested in 1971 and 1972, or were we reading the map the wrong way?

The more time we spend on the ground in the area, the clearer it becomes that Bowater's harvest practices were quite different from Westfor's. Rather than clearcutting

huge blocks at a time, Bowater cut smaller areas, going for the softwoods required by their business, frequently leaving hardwood stands as well as some mixed forests.

The section of their map showing the peninsula as having all been harvested should be understood to mean that they had cut what they wanted from the peninsula, not that they had cut everything on the peninsula.

Our lichen surveys indicate that the same lens should be used when viewing the rest of their map of this area.

### **Species at Risk Habitat: Frosted Glass Whiskers**



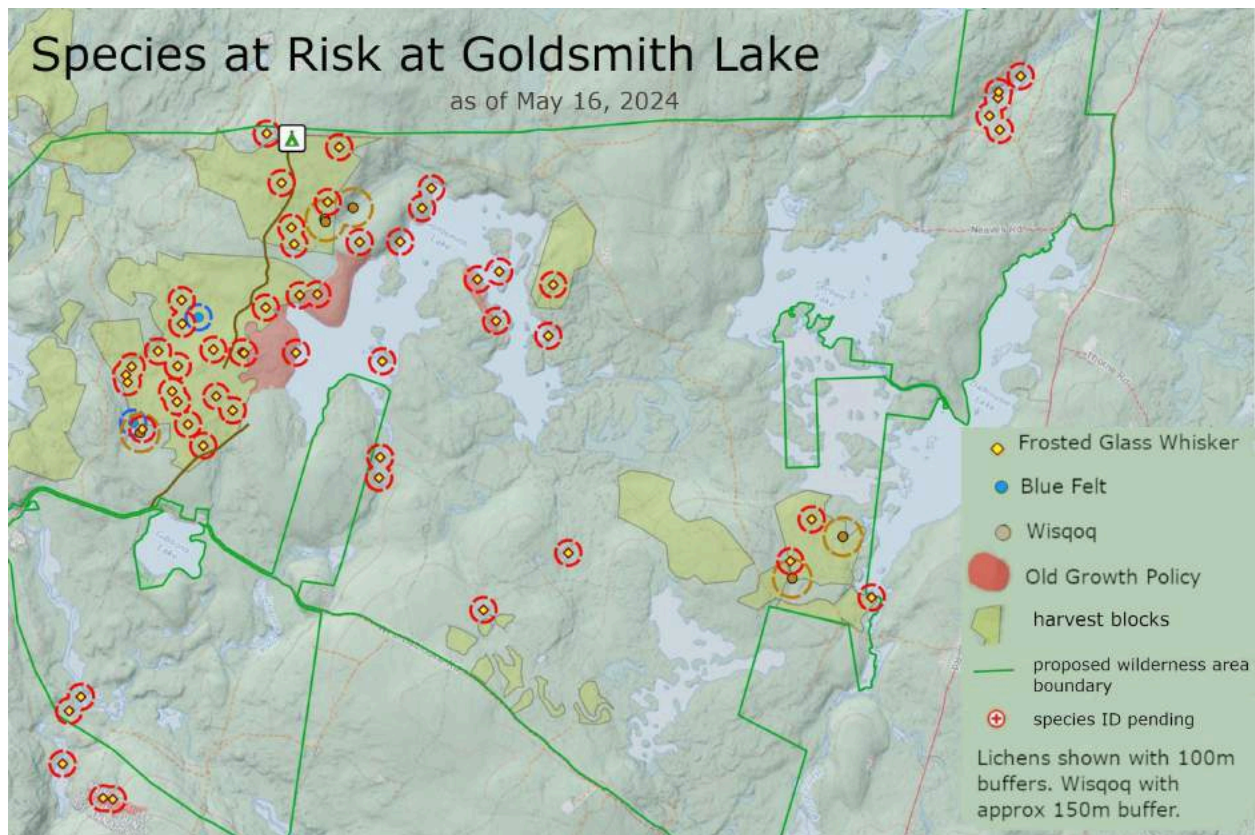
*Frosted Glass Whiskers, photo credit Ashlea Viola*

Listed as a species of at risk federally, the *Management Plan for the Frosted Glass-whiskers (Sclerophora peronella), Nova Scotia Population* (2011) states:

Frosted Glass-whiskers is an indicator of old-growth forest habitats, where it occurs on the exposed heartwood of mature trees. It may also be sensitive to air pollution, acid rain and acid fog. Combined with its presumed dependence on specific microhabitat conditions, this makes Frosted Glass-whiskers a sensitive bioindicator of old-growth ecosystem health. (ii)

The Goldsmith Lake area appears to be extraordinarily good habitat for Frosted Glass Whiskers. To date we have identified 54 occurrences within the area we have proposed for protection. Experienced lichen hunters tell us that they have combed lichen rich habitats in other parts of the province without finding a single occurrence of this particular lichen.

Indeed, at Beals Brook, 16 km to the east, Citizen Scientists found only one Frosted Glass Whiskers lichen among the 17 species at risk lichen occurrences identified there in 2022.



All species at risk (SAR) occurrences have been confirmed by experts and reported to Atlantic Canada Conservation and Data Centre as well as to NRR. We are happy to make available to department staff the reference database of locations and information we maintain for SAR and late-successional calicioid lichens in the proposed protected area.

Nova Scotia's Special Management Plan requires a 100m buffer around each occurrence of the Frosted Glass Whiskers lichen. The sheer area covered by the required buffers indicates the vital importance of the area as habitat. It should be afforded every protection.

It is unfortunate that NRR's Integrated Resource Management process failed to identify any SAR in the areas proposed for harvesting. The damage already done by the construction in 2022 of a new logging road to access the harvest areas they approved should not be compounded by any effort to cut within an area that has proved to be such extraordinary habitat. The fact that the harvest plans are 'ecological' and would remove 50% of the forest cover, not 70-100%, is not enough to make any further forest removal in the area acceptable.

As the 2011 Management Plan states, clearcutting is not the only threat:

(S)elective cutting within an old-growth forest, or any industrial activities in adjacent areas (e.g. tree harvesting, road or building construction), could potentially alter the conditions within the old-growth such that they are no longer appropriate for Frosted Glass-whiskers. For example, clearing a roadcut adjacent to an old-growth forest could result in increased wind speed, which decreases humidity and increases the probability of windthrow damage. It could also create a pathway for exotic invasive species to enter the old-growth.

It remains to be seen how much damage the 2 km long roadcut (shown in brown on the SAR map) has done and will do to several Frosted Glass Whiskers living in what were previously interior forest conditions. They are now living 100m or less from a 30m wide wind tunnel.

In November 2023, NRR did amend harvest plans on the west side of Goldsmith Lake, scaling back from 252 ha to 138 ha, based on the 16 SAR the Citizen Scientists had identified as affecting those cutblocks by that date. As of May 16, 2024, the number of SAR affecting these cutblocks stands at 31. It is time to recognize that plans to cut in this area should be abandoned. Biodiversity is supposed to be prioritized in the Ecological Matrix, the leg of Lahey's triad to which this area is currently assigned.

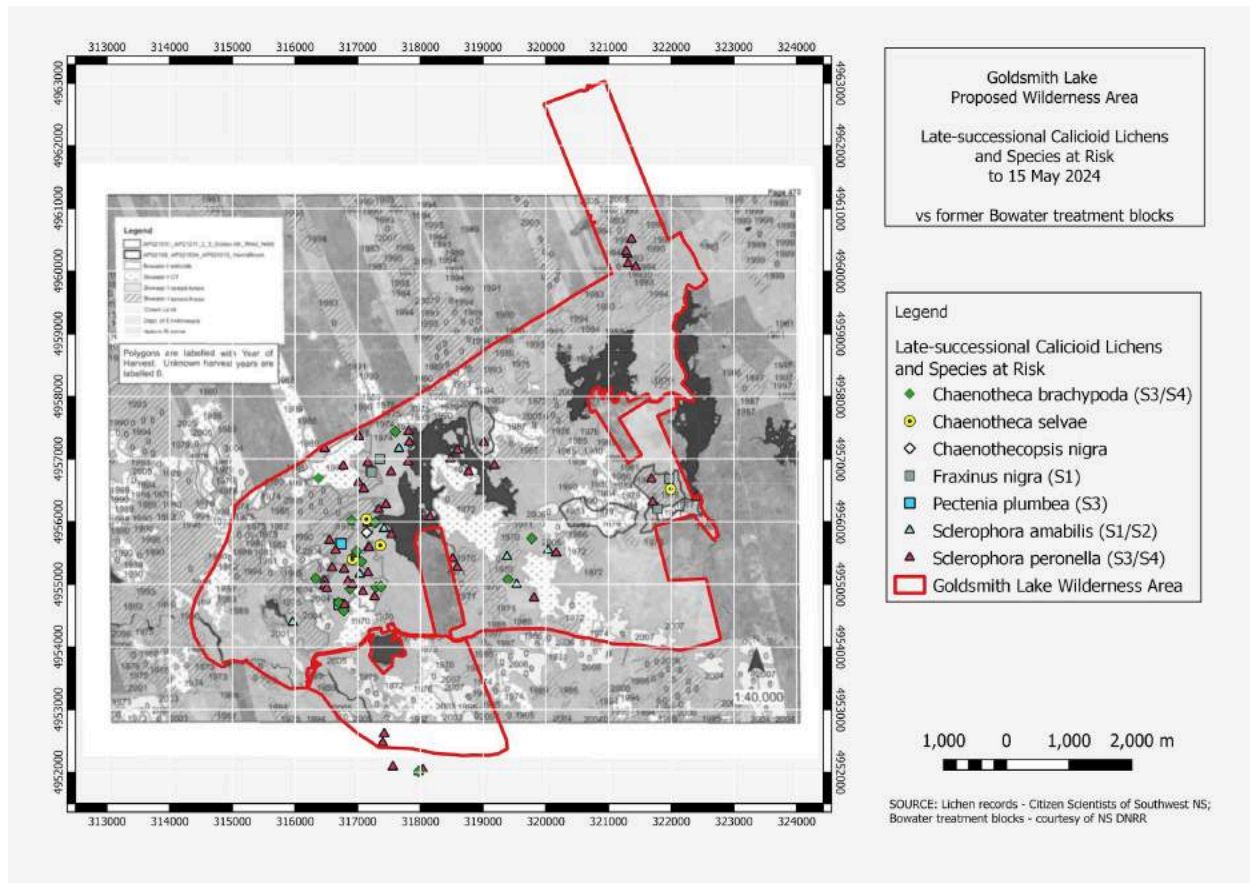
Habitats such as Goldsmith Lake where an at-risk species thrives are particularly important to protect since climate change is likely to put ever greater pressure on these species. If they are to survive at all, they need the most congenial habitat available.

### **Stories stubble lichens tell**

Frosted Glass Whiskers – *Sclerophora peronella* – is a calicioid or stubble lichen, a class of tiny lichens that are particularly picky about their habitats. It turns out that stubble lichens have a story to tell about this area.

In November 2022, the observation that we were seeing a lot of stubble lichens in the forest west of Goldsmith Lake prompted the Citizen Scientists to contact North America's calicioid lichen expert, Dr. Steven Selva of the University of Maine. Under his tutelage, we conducted a survey of stubble lichens in the old mixed forest west of Goldsmith Lake in 2022-23. The scientific paper we wrote about the survey, *Bursting the stubble bubble: citizen scientists measure ecological continuity near Goldsmith Lake, Nova Scotia using calicioid lichens and fungi*, was published last month in the peer reviewed journal *Evansia* Vol. 41, no.1. Suffice to say that Dr. Selva has determined that the presence of 20 different species of stubble lichens in a forest indicates a level of ecological continuity typical of very old forest and indicative of high conservation value. We found – and Dr. Selva identified – 27 calicioid species, one of which was new to the Maritimes.

Of these 27 species, five, including Frosted Glass Whiskers, *Sclerophora peronella*, are considered to be late successional in the habitat they require.



Clearly the greatest concentration of late successional species is in the area west of Goldsmith Lake that Bowater left alone. Equally notable, though, is the distribution of late successional calicioid lichens across the broader area we have proposed for protection. The presence of so many species of stubble lichens, and of late successional species in particular, is a direct measure of biodiversity. The stubbles tell us a story about the extraordinary old forest that once clothed this whole area, a forest so full of nooks and crannies, so complex in its structure and composition, that supported a vast diversity of life. Remnants survive not just in the larger intact areas but in the pockets of old forest we keep finding, often in areas Bowater's maps show as having been cut over in the past 50 years. These reservoirs of biodiversity suggest that, in spite of the number of areas that were logged, this whole area is capable of excellent recovery, if it is protected.

Our work at Goldsmith is ongoing. We continue to discover more patches of old forest and more late successional species of stubble lichens, including Frosted Glass Whiskers, *Sclerophora peronella*. The absence of finds in some parts of the proposed wilderness area may merely mean that we haven't checked the area yet. For example, we explored two new areas this spring, one in the northeast corner of the proposed wilderness area, the other to the southwest. As you can see from the two maps above,

we found *Sclerophora peronella* in both directions. We also found more of the late successional calicioid, *Chaenotheca brachypoda* in the northeast as well as in another area to the west that Bowater's map shows as having been cut over in 1981.

### **Coral Lichens and Hemlocks**

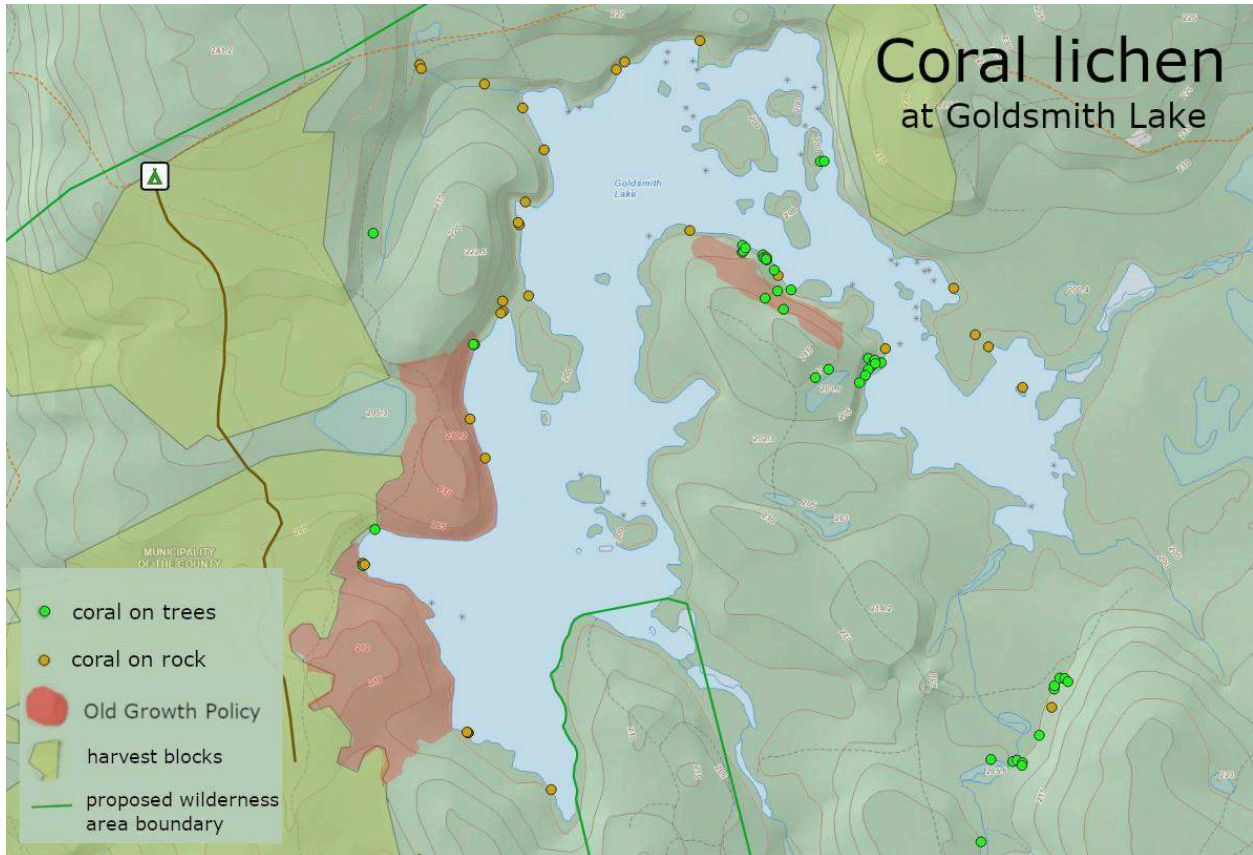
Another calicioid lichen that does exceptionally well at Goldsmith Lake is the mid-late successional Coral Lichen, *Sphaerophorus globosus*. This is the only lichen that merits points in the scoring protocol used by NRR to identify old growth forest. On July 20, 2023 several of the Citizen Scientists met with Dr. Peter Bush, NRR's Old-Growth Forest Coordinator, and other members of his team in the forest at Goldsmith to learn about their protocol for identifying old growth. The team were quite excited to hear that we had just discovered Coral lichen growing near the lake as they had never actually seen it before.





Since then, we have discovered over 76 occurrences of Coral Lichens, some of which may be a recently described species, *Sphaerophorus tuckermannii*. (This is according to microscopic identification by Dr. Stephen Selva.)

While the Coral Lichens we found on northeasterly facing rocks around the shoreline of Goldsmith Lake don't necessarily indicate old forest, the ones growing on Hemlock trees may. As we continued looking for Coral Lichens, we found more Hemlock trees ranging from 26cm to 97cm diameter at breast height (dbh.) Many of the hemlocks had Coral Lichens growing on them. Of the 76 Coral lichen observations, 43 were on trees, mainly Hemlock but also four on Yellow Birch and one each on Red Spruce and Red Maple. While Coral Lichen is known to grow in profusion on hemlocks in a few extremely old forests, this is an unusually high concentration of Coral Lichens for an inland area of Nova Scotia.



Many of the large hemlocks are at the foot of the 4.2ha stand of Old Growth hardwoods we identified and reported to NRR. The hardwood stand has been given Old Growth Forest Policy protection but the hemlocks growing between this stand and the lakeshore have not, to the best of our knowledge. They are showing early signs of HWA, according to forest ecologist Donna Crossland and must be treated within 2-3 years. If these large old hemlocks go untreated, their loss will expose the old growth hardwood slope to wind off the lake, compromising it as habitat. Our group is happy to do the preparatory stand marking at no cost, and Donna Crossland has volunteered her services as a licensed pesticide applicator to treat the trees. When we made this offer to Sally Steele, ECC's Western Region Protected Areas Coordinator, last fall we learned that ECC policy precludes treatment of hemlocks on unprotected crown land.

The stand of old hemlocks on the peninsula at Goldsmith Lake is rare in this part of the South Mountain eco-district, necessary to the health of the adjacent stand of old growth forest, and still in good enough condition for treatment to be highly effective so long as it is done soon. It is our hope that inclusion of the proposed Goldsmith Lake Wilderness Area in the list of candidate sites for protection by March 2026 would create enough certainty for ECC to permit treatment of these hemlocks.

## Old Forests and Old Growth Forests



*Drone shot, west shore of Goldsmith Lake, 2023. Richard Bennett*

Many of the scattered pockets of old growth or near old growth forest we have found would not be identified by NRR as old growth forest because the patches are smaller than the one hectare minimum stand size recognized by the Old Growth Forest Policy, or because they are not mapped as separate stands but are instead included in larger, younger stands. As in most of Nova Scotia's forests, habitat fragmentation as a result of road building and harvesting is a major issue.

Nonetheless, numerous stands are being assessed by NRR for inclusion in the Old Growth Forest Policy. Whether they pass the grade is less important in terms of conservation value than the fact that they are old enough to merit investigation. The hardwood stand on the drumlin to the south of the eastern arm of Goldsmith Lake, for example, was found to have an average age of 128, below the 140 year old threshold

set by the OGF Policy for that forest type but plenty old enough. The five sample plots came in at 83, 85, 91, 178 and 205 years old.

Looking at the array of stands that are being added to the Old Growth Forest Policy layer or are currently being assessed, it is striking to see just how much old, intact forest surrounds this pristine lake, particularly along the western shore. Our stubble lichen survey showed that the area of ecological continuity extends well to the west of the two long recognized old growth stands. In a part of the South Mountain that has been heavily degraded by clearcutting, it is quite extraordinary to find this extent of old forest.

The most impressive old growth stand to date, identified by NRR and the Citizen Scientists independently of each other, covers 9.2 ha on top of a drumlin just north of those recognized old growth stands. The whole drumlin is visible in the foreground of the drone shot of the western shore of Goldsmith Lake. Walking into that hilltop hardwood stand for the first time, there was no doubt in our minds that this was old growth. The pit and mound topography of the forest floor was immediately visible. The columnar trunks of Yellow Birch and Sugar Maple towered overhead, branches sparse, most at wide angles to the trunks. Moss covered beech, dwarfed by disease, spread their twisted limbs in the space between the larger trees. Fallen limbs and trunks lay scattered, some nursing seedling yellow birch, all melding back into the soil.



Bounded by the lake on one side and a swampy gully on the other, the whole hill seems to have escaped forestry's more damaging efforts. When NRR assessed the stand, the youngest of the five sample plots came in at 227 years old, the oldest two at 263. To our eyes, the forest surrounding this stand is all near old growth, if not actual old growth. The understory reflects the richness of soils capable of growing huge Yellow Birch and Sugar Maples. As icing on the cake, three endangered Black Ash have been identified in the swampy gully and an associated forested wetland west of this hill.

What is also remarkable is how accessible this area is to anyone willing to walk through the woods for half an hour. People hunger to see old growth forests. In the Maritimes, patches are usually small and frequently remote. They rarely match the grandeur people have in mind from images of coastal rainforest old growth in BC. At Goldsmith Lake, people willing to make a moderate effort can glimpse what undisturbed Wabanaki hardwood forest looks like. They won't be disappointed.



## Summary

From the point of view of protecting and restoring ecosystem health – Lahey’s overarching priority – and preserving biodiversity, the lichens tell the tale: far from being an area too degraded by past forestry activities to be worth protecting, Goldsmith Lake is a treasure chest full of surprises.

There is really no substitute for boots on the ground when it comes to assessing the conservation value of an area. The current system for identifying species at risk concerns in proposed harvest areas is clearly inadequate. The addition of a field biologist to the process would help to avoid situations like the one at Goldsmith Lake where harvest plans were approved and a road built in what has turned out to be important habitat for a species at risk. Citizen Scientists are happy to collaborate with both ECC and NRR in the work of protecting biodiversity.

We recognize that it would be prohibitively expensive for any government department to pay staff to spend the kind of time we have spent in the past 18 months exploring the proposed Goldsmith Lake Wilderness Area. It has been a joy to explore Goldsmith, Corbett and Dalhousie Lakes as well as the forests around them, coming to know the area more deeply. The quality of the data we have collected has been recognized by *Evansia*, the peer-reviewed scientific journal that published our article about the stubble lichen survey we conducted at Goldsmith Lake, as well as by Troy McMullin, lichenologist at the Canadian Museum of Science in Ottawa.

As a group of dedicated volunteers we are eager to work with the departments responsible for reaching the goals of protecting 15% of Nova Scotia by March 2026 and 20% by 2030. We hope that this update to our original proposal to protect the area surrounding Goldsmith and Corbett Lake is helpful, supplying your department with some of the data we have gathered. Please consider including the proposed Goldsmith Lake Wilderness Area in the list of candidate sites for protection in March 2026.

Notes:

<https://www.annapolisriver.ca/subwatershed-management-planning>

[Bursting the Stubble Bubble: Citizen Scientists Measure Ecological Continuity Near Goldsmith Lake, Nova Scotia Using Calicioid Lichens and Fungi](#)

[Coral Lichen \(\*Sphaerophorus globosus\* \(Huds.\) Vain\) as an indicator of coniferous old-growth forest in Nova Scotia](#)