

# Rare Lichens in Fairfax County Parks

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## Abstract

The distribution and abundance of lichens are still poorly known in Virginia, and we need to know where rare species occur to help guide land management. I surveyed three Fairfax County parks (Elklick Woodlands Natural Area Preserve, Scott's Run Nature Park, and Riverbend Park) for lichens in the spring of 2023. I visited mature and early successional forests as well as undisturbed rock outcrops. Expert lichenologist James Lendemer of the New York State Museum checked my specimens and identified 47 of them to species. I found 57 species of lichens (37 at Elklick, 34 at Scott's Run, and 14 at Riverbend). I found three rare species: *Strigula americana* (American Bark-bumps), *Lecanora caperatica* (no common name), and *Rinodina oxydata* (Pale Pepper-spore), and three uncommon species: *Circinaria caesiocinerea* (Blue-gray Sunken-Disk), *Xanthoparmelia subramigera* (Branching Rock-shield), and *Lecanora appalachensis* (Appalachian Powdered-rim). Mature forests at Scott's Run and Riverbend and undisturbed rock outcrops at Elklick and Scott's Run all hosted rare or uncommon species. Overall, riparian forests at Riverbend had lower lichen diversity compared to the other two parks. The lichen community at Scott's Run was much poorer than that sampled at nearby Plummer's Island in the early 1900s but it was still surprisingly rich given its proximity to vehicle emissions from Interstate 495 and Washington, D.C. Based on these cursory surveys, I would recommend that undisturbed rock outcrops and especially mature forests in the county parks be protected from development, logging, and prescribed fire. This work is a small step towards documenting lichens in Fairfax County; many more surveys need to be done to get a more complete picture of the lichen community in the county.

## Introduction

The diversity of lichens is poorly known on our planet, even in well studied regions such as northern Virginia. As many as 700 species of lichens may be present from northwestern Virginia to the Delmarva Peninsula (Harris unpubl. data.; Lendemer and Hollinger 2026; Lendemer and Noell 2018; Tripp and Lendemer 2020), but many of these have not yet been documented with certainty in the region, and new species for science are still to be discovered in Virginia. At the same time, we already know enough about lichens to see that many of them are threatened with extinction (Allen et al. 2019; Tripp and Lendemer 2020). Most species are sensitive to disturbances such as logging and fires as well as to air pollution.

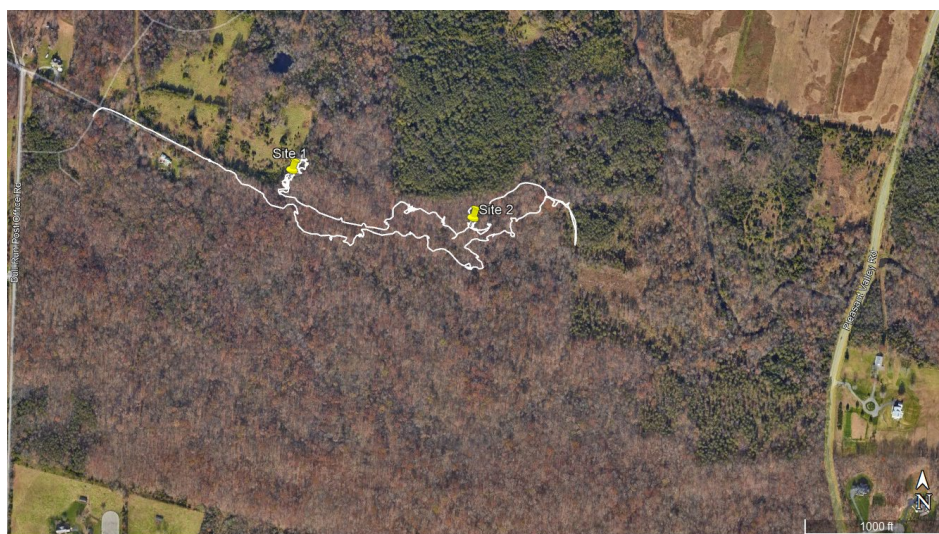
The most comprehensive research on lichens near Fairfax County was done on Plummers Island, Maryland, across the Potomac River from Scott's Run Nature Park. An impressive 91 species have been documented on the island, including many species that are sensitive to pollution such as *Fuscopannaria leucosticta* (White-rimmed Shingle Lichen) and four species of *Peltigera* (Leonard and Killip 1939; Lawrey 2025). Those species and many others have now disappeared from the island as a result of pollution. Another relevant survey was a study of heavy metal accumulation in lichens that was done by Lawrey (2025) in nine parks in the Washington, D.C. region. Five of Lawrey's study sites were in Fairfax County (Wolf Trap, Great Falls, Turkey Run, Dyke Marsh, and Fort Hunt). Lawrey did not survey crustose lichens (which make up roughly 70% of lichen diversity in our region), but he found 45 species of macrolichens, none of which were rare.

The aforementioned studies gave us a glimpse of what lichens may occur in Fairfax County, but we still have a lot to learn. I was approached by Fairfax County Park Authority (FCPA) staff to survey the parks for lichens. The goal was to determine if there were any rare species present or any lichen hotspots that are particularly worthy of protection. I was also tasked with studying the literature on the lichens of Fairfax County (and to a lesser extent, surrounding counties) and with reviewing all lichen observations from Fairfax County on iNaturalist.

## Methods

I surveyed lichens at Ellick Woodlands Natural Area Preserve on 4 March 2023, Scott's Run Nature Park on 12 March 2023, and Riverbend Park on 3 April 2023. FCPA staff suggested these would be good parks to survey because of their mature forests and large rock outcrops. I walked the tracks shown in Figure 1 and concentrated on surveying substrates that were likely to yield rare species (big trees and rock outcrops in both sun and shade). I spent three hours in the field at Ellick and Scott's Run each and two hours at Riverbend. I identified common species in the field and took high-resolution photographs. I also collected 56 specimens for chemical spot tests (10% potassium hydroxide, 12% sodium hypochlorite, and paraphenylenediamine in ethanol) and microscopic analysis. James Lendemer at the New York State Museum checked the identifications on all of my specimens (including with thin-layer chromatography) and I will deposit them in the George Mason University Herbarium.

I reviewed 1,848 lichen observations on iNaturalist (all records of lichenized Pezizomycotina in Fairfax County that were submitted before 10/31/2023). I corrected hundreds of identifications but I was unable to confirm or deny many because the photos provided insufficient evidence or chemical or microscopic analysis was lacking. I also reviewed all of amateur lichenologist Aljoscha Nern's lichen observations on iNaturalist from Loudoun County to check identifications and look for rare species that are likely to be found in Fairfax County.



**Figure 1A.** Survey route and main collection sites in Ellick Woodlands Natural Area Preserve.



**Figure 1B (left panel).** Survey route and main collection sites in Scotts Run Nature Preserve. **Figure 1C (right panel).** Survey route at Riverbend Park.

## Results and Discussion

I found 57 species of lichens (37 at Elklick, 34 at Scott’s Run, and 14 at Riverbend; Table 1). All three parks had moderate quality lichen communities that are worthy of protection, especially given their suburban setting. The mature forests at Scott’s Run and Riverbend, the schist outcrops along the Potomac River at Scott’s Run and the diabase outcrops at Site 2 at Elklick are especially interesting.

I found three rare species (*Strigula americana*, *Lecanora caperatica*, and *Rinodina oxydata*) and three uncommon species (*Xanthoparmelia subramigera*, *Circinaria caesiocinerea*, and *Lecanora appalachensis*) during the surveys (Figure 2). *Strigula americana*, which I found on a hickory (*Carya* sp.) trunk at Riverbend Park (39.02675° N, 77.25106° W ± 50 m), is rare across its range and this is only the second record for Virginia, and the first for iNaturalist globally (Lendemer and Noell 2018; CLH 2026). *S. americana* is widespread in the eastern US but rare, inconspicuous, and poorly known. It has been found on the bark of *Carya* sp., *Acer* sp., *Carpinus caroliniana*, *Nyssa sylvatica*, and *Liriodendron tulipifera* (Hodges and Beeching 2022; Tripp and Lendemer 2020). *Lecanora caperatica*, which I found on an oak (*Quercus* sp.) trunk at Scott’s Run (38.96046° N, 77.19720° W ± 10 m), was only described in 2018, and this is the first record for Virginia outside the eastern shore, and the first record for iNaturalist globally (Asher and Lendemer 2018; CLH 2026). This species is widespread in the eastern US on hardwood bark but it is genuinely rare in most areas (Asher and Lendemer 2018). *Rinodina oxydata*, which I found on a schist outcrop in the Potomac River at Scott’s Run (38.96764° N, -77.19575° W ± 10 m), is rare in Virginia and this is only the second record for the state. It is otherwise widespread in the US on non-calcareous rocks.

I found all three of the uncommon species (*Xanthoparmelia subramigera*, *Circinaria caesiocinerea*, and *Lecanora appalachensis*) at Elklick. The first two species, which I found on diabase boulders in full shade at Site 2, are uncommon in our area, and they probably require undisturbed rock outcrops. *X. subramigera* has been found at several sites in the southern portion of Shenandoah National Park, and *C. caesiocinerea* has been found at Big Meadows in Shenandoah National Park and at the Oak Spring Garden Foundation (CLH 2026). I found the *Lecanora*

*appalachensis* on a hardwood trunk at Site 1. This species is apparently uncommon in our area, having only been collected at two sites in the nearby Blue Ridge as well as two sites in the central Piedmont, but it is easily overlooked (CLH 2026; Lendemer and Noell 2018).

**Table 1.** Lichens recorded from three Fairfax County Parks in the spring of 2023. Specimens that were reviewed by James Lendemer of the New York State Museum are specified as such. All other records were identified by Bert Harris and most of them were not collected.

Scientific name	Ellick Woodlands Natural Area Preserve	Scott's Run Nature Park	Riverbend Park
<i>Anaptychia palmulata</i>	2, on rocks		
<i>Arthonia quintaria</i>	a few (confirmed by Lendemer)		
<i>Bacidia schweinitzii</i>	common (confirmed by Lendemer)		
<i>Baculifera curtisii</i>	a few (confirmed by Lendemer)		
<i>Biatora printzenii</i>	present (confirmed by Lendemer)	present (confirmed by Lendemer)	present (confirmed by Lendemer)
<i>Buellia maculata</i>		present (confirmed by Lendemer)	
<i>Candelaria concolor</i>	fairly common on rocks	a few	a few
<i>Circinaria caesiocinerea</i>	present (confirmed by Lendemer)		
<i>Cladonia caespiticia</i>	present (confirmed by Lendemer)		
<i>Cladonia peziziformis</i>	present (confirmed by Lendemer)		
<i>Crespoa crozalsiana</i>	present (confirmed by Lendemer)		
<i>Dermatocarpon luridum</i>		a few on rocks on edge of river (confirmed by Lendemer)	
<i>Flavoparmelia baltimorensis</i>	common	common	
<i>Flavoparmelia caperata</i>	common	uncommon	a few
<i>Graphis scripta</i>	common (confirmed by Lendemer)	a few	common
<i>Gyalolechia flavovirescens</i>		common on rocks by river	
<i>Heterodermia obscurata</i>	1 (confirmed by Lendemer)		
<i>Heterodermia speciosa</i>	a few on an oak		

<i>Lecanora appalachensis</i>	present (confirmed by Lendemer)		
<i>Lecanora caperatica</i>		present (confirmed by Lendemer)	
<i>Lecanora strobilina</i>	common	common on fallen branches	uncommon
<i>Lecidella enteroleucella</i>		present (confirmed by Lendemer)	
<i>Lepraria caesiella</i>	present (confirmed by Lendemer)	present (confirmed by Lendemer)	
<i>Lepraria finkii</i>		present (confirmed by Lendemer)	
<i>Lepraria neglecta</i>	present (confirmed by Lendemer)		
<i>Lepraria xanthonica</i>		present (confirmed by Lendemer)	
<i>Leprocaulon adhaerens</i>	a few (confirmed by Lendemer)		
<i>Leptogium cyanescens</i>		a few on one tree (confirmed by Lendemer)	
<i>Myelochroa aurulenta</i>	abundant	a few	
<i>Nadvornikia soreliata</i>		a few (confirmed by Lendemer)	
<i>Parmotrema cf. hypotropum</i>	fairly common	fairly common	uncommon
<i>Parmotrema reticulatum</i>	2 (confirmed by Lendemer)		3
<i>Pertusaria paratuberculifera</i>	common	1	
<i>Pertusaria plittiana</i>	common (confirmed by Lendemer)	common (confirmed by Lendemer)	
<i>Pertusaria pustulata</i>		1 (confirmed by Lendemer)	
<i>Phaeophyscia pusilloides</i>		1	
<i>Phaeophyscia rubropulchra</i>	a few (confirmed by Lendemer)	1 (confirmed by Lendemer)	
<i>Phlyctis petraea</i>	a few	abundant on shaded rocks	
<i>Physcia millegrana</i>		common	a few
<i>Physcia stellaris</i>	1, collected		
<i>Porpidia albocaerulescens</i>	common	common	uncommon
<i>Protoparmeliopsis muralis</i>		common on rocks by river	
<i>Pseudosagedia cestrensis</i>			present (confirmed by Lendemer)

<i>Punctelia caseana</i>	6 (confirmed by Lendemer)		
<i>Punctelia rudecta</i>	abundant	common	uncommon
<i>Pyrenula pseudobufonia</i>	a few		
<i>Pyxine soredata</i>	fairly common		
<i>Pyxine subcinerea</i>	fairly common	a few	2 (confirmed by Lendemer)
<i>Rhizocarpon grande</i>		a few patches (confirmed by Lendemer)	
<i>Rinodina oxydata</i>		2 (confirmed by Lendemer)	
<i>Sarcogyne clavus</i>		present (confirmed by Lendemer)	
<i>Squamulea subsoluta</i>		common on rocks by river (confirmed by Lendemer)	
<i>Strigula americana</i>			1 (confirmed by Lendemer)
<i>Usnea pensylvanica</i>	1 (confirmed by Lendemer)		
<i>Viridothelium virens</i>	1		2
<i>Xanthoparmelia plitii</i>		present (confirmed by Lendemer)	
<i>Xanthoparmelia subramigera</i>	present (confirmed by Lendemer)		
<b>Number of species</b>	<b>37</b>	<b>34</b>	<b>14</b>





**Figure 2.** Two of the rare species encountered (both at Scott’s Run Nature Park), *Rinodina oxydata* (top) and *Lecanora caperatica* (bottom).

I found [80 putative species of lichens in Fairfax County on iNaturalist](#), including my observations. I should reiterate that I was unable to confirm or deny the identity of several of these species because insufficient evidence was provided in the observation. The iNaturalist records for lichens in Fairfax County are very incomplete. For example, common species like *Dimelaena oreina*, *Myelochroa obsessa*, *Pyxine soredata*, and *Xanthoparmelia conspersa* have only 1 record in the county. And many other common species have fewer than 5 records. I didn’t find any clear records of rare species in Fairfax County on iNaturalist but [Pycnothelia papillaria](#) is uncommon.

I also found 16 rare or uncommon species in Aljosha Nern’s records and on my trips to other parks in the area (Table 2). It is surprising that so many uncommon lichens are able to persist at the Janelia Research Campus in the polluted Washington D.C. area. It is also of note that Nern found many of these species on landscape trees. So searches of old landscape trees along the Potomac River in Fairfax County parks may be fruitful.

**Table 2.** Additional rare, uncommon, or pollution intolerant lichen species to look for in Fairfax County parks.

Species	Location and observer
<i>Abrothallus pezizicola</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Haematomma rufidulum</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Haematomma persoonia</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Hyperphyscia adglutinata</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Loxospora elatina</i>	Prince William Forest Park, Prince William County (Bert Harris)
<i>Phaeophyscia hirsuta</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Phaeophyscia hirtella</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Physcia halei</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Punctelia bolliana</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Pyrenula fetivica</i>	Hemlock Overlook Regional Park, Fairfax County (Bert Harris)
<i>Sporodophoron americanum</i>	Prince William Forest Park, Prince William County (Bert Harris)
<i>Teloschistes chrysophthalmus</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Xanthomendoza fallax</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Xanthomendoza ulophyllodes</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)
<i>Xanthoparmelia viridouloubrina</i>	Janelia Research Campus, Loudoun County (Aljoscha Nern)

Clearly much more field and lab work is needed to inform lichen conservation in northern Virginia. And it would be fruitful to review all lichen records from the county on the Consortium of Lichen Herbaria (CLH 2026) and check the original specimens. But my surveys, plus the literature, strongly indicate that mature forests and undisturbed outcrops are critical refugia for rare lichens. Disturbance from construction, logging, and prescribed fire would all be detrimental to rare lichens. Therefore I recommend that these disturbances be excluded from parts of the parks that are likely to host the most rare lichens. I am happy to meet with park staff to provide more detailed guidance.

### Acknowledgements

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