

Lichens of Rock Creek:

Understanding Fungal Biodiversity and helping DC residents find wonder and surprises in their landscapes

PRESENTER



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BACKGROUND:

Mushroom mania is sweeping the nation, as people are realizing how good mushrooms are for our health and for the planet, and they want to learn more about them. Since lichens are fungi that grows in the forest all year round and many of them are sensitive to pollution, learning about lichens is a great way to learn more about fungi and forest ecology. Visitors to Rock Creek are perfectly situated to learn more about urban lichens right now, thanks to a new field guide on the topic (Allen and Lendemer, 2021). Learning lichens is also more accessible thanks to Inaturalist, a phone app we can use to identify our forest finds, that also allows us to look at and learn from other peoples' findings. Based on all this interest, we're making a new lichen list of rock creek park!

What do we know already? 76 lichen species have been reported from Rock Creek Park since 1855 (Consortium of North American Lichen Herbaria, 2020), but only three specimens are documented in Rock Creek since 1950, suggesting a need to better understand current conditions in the park. Several of the historic specimens represent taxa unlikely to persist in urban areas so we want to know what's really here. Our lichen list will help us use lichens as a way to train people in observing and appreciating the wildlife of the urban forest.

What will we learn? We expect to find species that were never known from Rock Creek before, as several inconspicuous but cosmopolitan urban species have been reported from other studies of preserved land in urban areas (Benson 2012; McMullin et al. 2014; Tripp 2015).

Who cares? Because many lichens are sensitive to pollution, if we see a very diverse lichen community in rock creek, we know city planners and park managers are helping us create a city that's good for nature and people at the same time. Conversely, if there are very few lichen species in Rock Creek, that tells us that we should rethink how we prioritize the air quality in our city.

METHODS

To make the lichen list, I hike, pick up lichens, bring them home, identify them, ask experts to verify my I.D.s., and donate the specimens to a lichen museum (New York Botanical Garden Herbarium).

I surveyed 8 sites for lichens in Rock Creek Park

- Fort Circle at Galloway St
- Fort Slocum
- Fort Stevens
- Fort Totten
- Pinehurst Branch
- Piney Branch
- Soapstone Trail
- Valley Trail at Sherrill Dr.

The next 10 I'd like to visit are:

- Valley Trail at Juniper St.
- Barnard Hill
- Fort Bunker Hill
- Fort DuPont
- Fort Davis
- Fort Ricketts
- Reservation 630
- Glover Archbold
- Battery Kemble
- Fort Reno

Finding Specimens. I walked on trails and looked for lichens, going off trail only to collect specimens I saw from the trail, and collecting only lichens that I see many of in the habitat.

Collecting Specimens: Since I need to examine many of the specimens in a microscope to identify them, I collect a lichen specimen (about 2 x 4 inches total), with a portion of the substrate it is growing on. Many lichens grow on bark, and we can find some on fallen twigs and branches. Or, you can use a knife to take a lichen with the small amount of bark it is growing on, so the living tree is minimally damaged. Other lichens only grow on rock, and you use a rock chisel and hammer to collect those specimens (of course, not if it is growing on buildings, monuments, or other structures).

Documenting specimens, For each specimen I collected, I recorded information including collection location, date, substrate, and habitat (surrounding vegetation).

HIGH air quality MANY lichens



High lichen diversity in historic forests and wetlands of Rock Creek

Rock Creek Park 26 + lichen species!

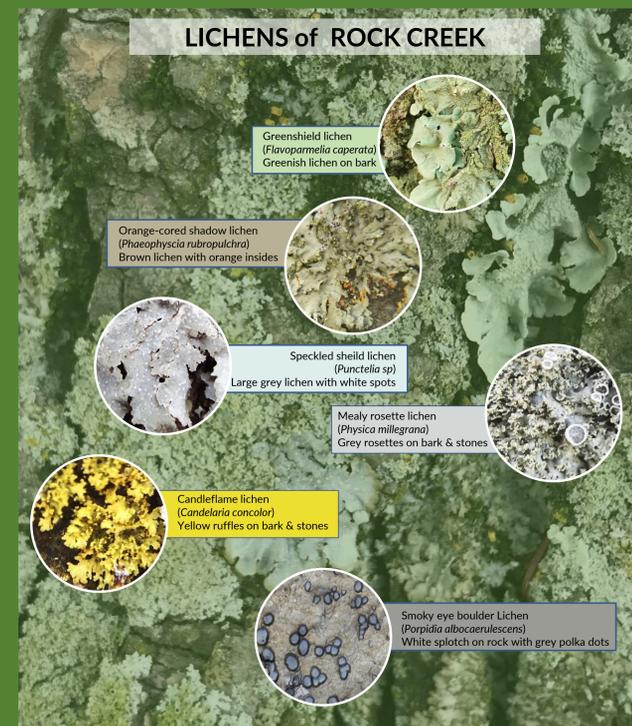


Medium levels of lichen diversity in urban forest with high air quality

LOW air quality FEW lichens



Low lichen diversity in urban forest with low air quality



RESULTS

How many lichen species? 26 +!

Over the course of the survey, I collected 120 specimens that will be sent to the NYBG for verification. This included the 26 taxa listed here, I expect that when the unknowns are identified at NYBG, we'll have at least 50 species.

Lichens of Rock Creek in the 2020s:

- *Amanitina* sp.
- *Bacidia schweinitzii*
- *Candelaria concolor*
- *Candelariella efflorescens*
- *Canoparmelia* sp.
- *Cladonia* sp.
- *Flavoparmelia caperata*
- *Graphidaceae* sp.
- *Hyperphyscia adglutinata*
- *Lecanora* sp.
- *Lepraria* sp.
- *Parmotrema* sp.
- *Pertusaria* sp.
- *Phaeophyscia pusilloides*
- *Phaeophyscia rubropulchra*
- *Physcia millegrana*
- *Physcia pumilior*
- *Physcia stellaris*
- *Physciaceae*
- *Physciella chloantha*
- *Porpidia albocaerulescens*
- *Punctelia caesiana*
- *Punctelia rudecta*
- *Pyxine soredata*
- *Pyxine subcinerea*
- *Usnea* sp.

Which species did we find most often?

(These are pictured to the left)

- Common greenshield (*Flavoparmelia caperata*), a large and distinctive lichen.
- Mealy rosette lichen (*Physcia millegrana*), a lichen that grows well all over D.C.
- Candleflame lichen (*Candelaria concolor*), a nitrogen-loving species growing along park roadsides.
- Smoky eye boulder lichen (*Porpidia albocaerulescens*) is also a common lichen in the park on the boulders.
- Other common lichens were ruffle lichens (*Parmotrema* sp.), speckled shield lichens (*Punctelia* sp.), *Pyxine soredata*, and *Cladonia* sp. The most common crust lichen taxa were *Lecanora* sp., *Amanitina* sp. and *Lepraria* sp.

Unusual finds:

We found an *Usnea* along the Pinehurst branch trail! These "old man's beard lichens" are often restricted to places with higher air quality, and are rarely found in urban areas. Pinehurst branch is in a part of rock creek where the protected area is large. There may be some great finds still lurking in the unknown pile!

FUTURE WORK

Want to join the rest of the lichen surveys? Email me at nataliemhowe@gmail.com (I don't have a 2022 survey schedule yet)

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