

Field Notes – First Week of January
Carrie Crompton

A MOSS DAY

The shortest days of this winter are behind us, but the coldest days are still ahead of us. Every year, sometime between the shortest day and the coldest day, my joie-de-vivre meter goes nearly flat. And then I step outdoors and see the Fire Moss (*Ceratodon purpureus*) living it up in the crushed stone between the patio pavers, and feel a jolt of joie: It's a moss day!



Fire Moss (*Ceratodon purpureus*), January 2, our yard

Not all days are good for mosses. Most of the summer, the fire moss is shriveled and dark, looking almost like dried mud. The recent snow and rain have revived it, and on January 2, it's looking like green velveteen.

I take a tiny sample—the smallest pinch I can get between my fingers—and bring it inside for closer inspection.



A tiny pinch of Fire Moss – at least a dozen individuals

I break the pinch apart with a needle to separate the stems. Under the stereoscope, I can see the moss's beautiful long, inward-curved leaves. Pointing my phone camera lens at one of the two eyepieces of the stereoscope, I take a few pictures. (The definition isn't great, but the photos give you an idea of what I see.) Each fire moss plant is about 2 mm (less than 1/16") in height. The number of individuals between the patio pavers must be in the gazillions.



Fire Moss (*Ceratodon purpureus*)

I wonder how long that Fire Moss has been growing in those cracks. I remember that the patio was installed by previous homeowners in the 1980s, so I'm guessing what I see is at most 30–35 years of growth.

I go back outdoors to look for more mosses. The first I encounter along the footpath into the woods is Star Moss (*Atrichum angustatum*), another soil-covering moss.



Star Moss (*Atrichum angustatum*)

There's been a frost overnight, and this has accentuated the starry outline of each individual plant. The Star Moss is sporulating, with ruby-red capsules ready to open. This species is much larger than the Fire Moss – about 15 mm (5/8") high. It covers long narrow stretches of disturbed soil next to the footpath.



Star Moss (*Atrichum angustatum*)

Standing up again, I see the rich, dark-green circular colonies of Rock Tuft Moss (*Orthotrichum* sp.) on the large boulders near the path.



Rock Tuft Moss (*Orthotrichum* sp.) on granite boulder

These tufts dotting the rock look a bit random in their placement, but they actually show very clearly the pattern of rain runoff from the crown of the stone. The higher-up tufts capture the first drops of runoff and then release them slowly down the shallow gullies that mark the rock face. The steepest, flattest slopes are almost bare of moss. I

expect that as more tufts develop, rainwater will wash more and more slowly down the rock, and gradually, the rock will become covered with mosses.



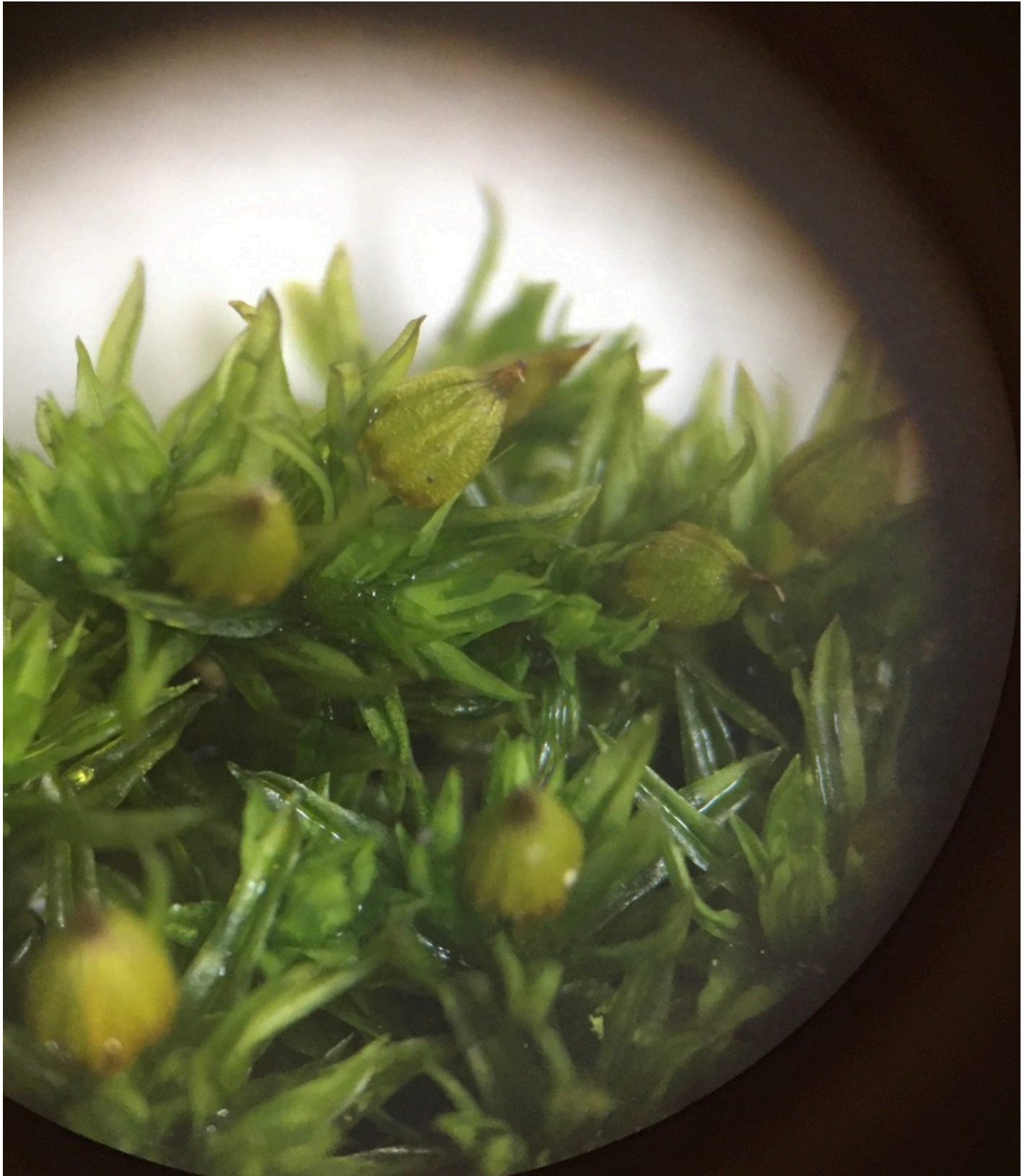
Rock Tuft Moss finding its moisture levels

Tuft mosses are also comfortable in the crotches of trees where moisture collects and they are exposed to sunlight during the winter.



Starry Tuft Moss (*Orthotrichum stellatum*)

Like the Star Moss, the *Orthotrichum* is sporulating in this frigid weather. Its calyptrae (little hoods that protect the spores as they develop in the capsules) catch the light, like tiny Christmas tree ornaments, and delight the naked eye. I bring in a tuft to take a closer look:



Starry Tuft Moss (*Orthotrichum stellatum*) capsules with their characteristically ridged calyptrae

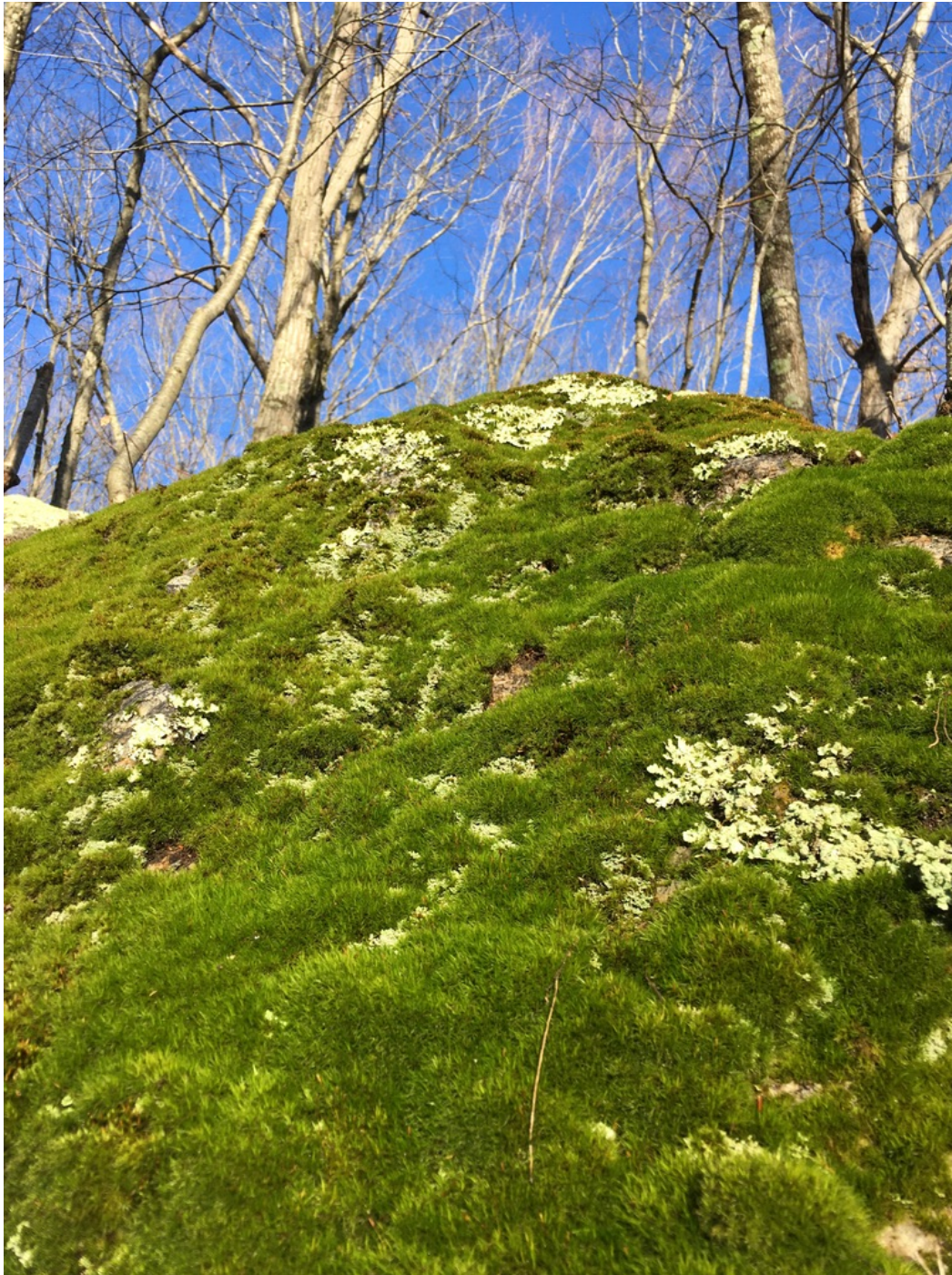
Deeper in the woods, on a north-facing ledge under the black oaks, I find a lush bed of Broom Moss.



Broom Moss, AKA Windswept Moss (*Dicranum scoparium*)

My joie-de-vivre meter jumps much higher.

Now I have the idea to visit Blackledge Falls, which I remember as having some extra-special moss habitat, thanks to many ledges and abundant water. Here the Broom Moss is able to spread out on enormous rock surfaces.



***Dicranum* and lichens on a rock face, Blackledge Falls, January 2**

Broom Moss is a dominant moss species—it represents a “climax moss vegetation” around here, the way hickories and oaks do in the overstory. Lichens would have been the first organisms to colonize this rock after the last glacier receded, some 15,000 years ago. Slowly, tiny pioneer mosses like Fire Moss would have seeded themselves into the shallow, moist crevices provided by the lichens. Every species that established itself on the rock provided more moisture for other species.

But these broom mosses haven't been growing here undisturbed for thousands of years. I am pretty sure that this whole hill was clear-cut in the nineteenth century (as was most of Connecticut). An archeologist I met on the Blackledge trail showed me the locations of two nineteenth-century charcoal mounds close by; the charcoal burners would have cut all the trees within hauling distance to feed their smoldering charcoal mounds. During the charcoal-burning era, the rocks would have been exposed to full sunlight year-round, so it's possible that their moss communities died out, though the lichens would have been all right. When the forest began to grow back, the moss succession would have resumed. I have no way of knowing for sure, but I suspect that the thick, emerald expanses of Broom Moss on the rocks around Blackledge may be over 100 years old, but less than 200.

Moss succession occurs on trees, too: often there are different species at different trunk heights.



Several moss species at the base of a black birch

Old white oak trees provide ideal living conditions for a number of “tree-skirt mosses.”



Tree-skirt Moss (*Anomodon attenuatus*) at the base of an old white oak, Blackledge Falls



Foxtail Moss at the base of the same tree (*Brachythecium* sp.)

On another white oak, I find hundreds of emerald “flowers” ornamenting a white oak trunk. They’re always there, but not always open. I caught them on a good moss day!



Rose Moss (*Rhodobrym ontariense*) – yet another tree skirt moss

In the very wettest soils, I find the very largest moss species. These tree mosses are about 6 cm tall, five times the height of the Star Mosses, thirty times as tall as the Fire Moss.



Tree Moss (*Climacium americanum*) growing near a stream, Blackledge Falls



Tree Moss (*Climacium americanum*) – one of the largest mosses. No need for magnification.

I am happier for having seen these beautiful, intricately formed, green, lively mosses. Having neither eyes nor endorphins, they are no happier for having seen me. They're just alive. Taking in carbon dioxide and sunlight, releasing oxygen and water. Sponging up water to replace that which they've lost, slowly releasing it to the surrounding rock, soil, and air. Slowing down the movement of rain and snowmelt, preventing erosion. Providing a blanket for the roots of trees and shrubs and their associated mycorrhizae. Sheltering tiny creatures that spend their entire lives within the moss forest. Doing what mosses do.

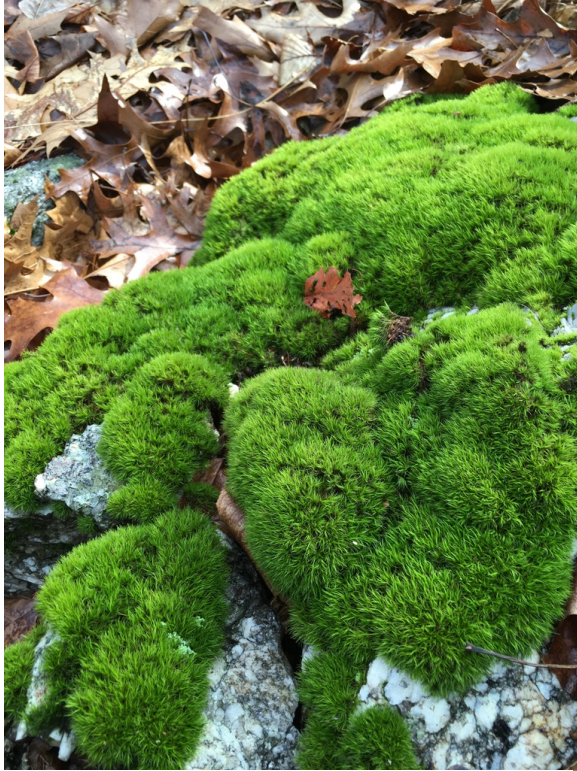
On a good moss day, the sheets and tufts and mounds and drifts of mosses in the local woods appear intensely alive, thriving and healthy. In fact, it seems that mosses don't suffer from the kinds of diseases that vascular plants do, and it's easy to think of them as immortal. (I google "diseases of moss" and not only does the query not autofill, not a single website comes up.) They are able to withstand freezing (by producing antifreeze sugars and proteins) and desiccation (samples of some species can survive for years in a drawer, and revive with a few drops of water). They're subject to disturbance, but because their spores are carried on the wind and moss fragments are scattered by birds, they always find new places to live.

On a good moss day, it's possible to find a variety of mosses peacefully coexisting in a small area, each filling a niche that favors its needs for light/shade, wet/dry, acid/alkaline conditions.



A mixed community of mosses. Each layer of ledge seems to privilege a different species.

I am so glad to have these resourceful, peaceful neighbors in the woods nearby. I like to learn their names, but most of all, I like to visit them on a good moss day in midwinter, and take in their many shapes, textures, and shades of green. Their presence is endorphin-inducing, soul-refreshing. I hope you can take some time to enjoy their green peace the next time you can get out for a walk on a mild winter day.



Top left: Broom Moss (*Dicranum scoparium*) Top right: Knight's Plume Moss (*Ptilium crista-castrensis*)
 Lower left: Pincushion Moss (*Leucobryum glaucum*) Lower right: Brocade Moss (*Hypnum imponens*)