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LAURA TEMPLE

Learning Lichen

I have the urge to say, “it doesn’t usually look like this!” I’ve hiked this loop through the boreal fog forest many times, and it is a place of constant unfolding. The loons on the pond spend their spring and summer here but go to the ocean in the winter. The starflowers and crackerberries disappear in the fall and emerge anew in the spring. Waves of migratory songbirds like sparrows, warblers, and robins weave through the forest in groups during their seasonal migrations.

I’ve grown used to these types of changes in the forest. However, the lichen is usually reliably the same, draped across branches, climbing trunks, creeping across boulders, nestled together on the forest floor or on dead stumps; here through every season, year after year.

But this year, something has changed. It looks like lichen has fallen from the sky like some kind of oddly-shaped snow. There’s a dusting of lichen across the trails and forest floor. Much of it is white; the pieces are stark against the verdant mosses and the muddy path.

This “snow” is the aftermath of a hurricane that happened last month. It whipped through this forest and ripped up hundreds of trees by their roots. They toppled together like dominoes, crisscrossing the network of trails.

Most of the trees have been moved off to the side, through the work of a chainsaw and many hands, but the smaller pieces of what fell are still on the ground. You’d have to crawl around the forest floor on hands and knees, picking up one twig and piece of lichen at a time to make it look like it did before.

I look behind me at the eleven-year-old students I’ve been hiking through the forest with. They’re bouncy with youthful energy and the novelty of being in the woods.

This urge to point out the lichen on the ground, the damage from the hurricane: where does it come from? Do I want them to understand more about lichen and climate change? Or is it a yearning for them to appreciate how precious this place is and what’s being lost?

“Okay folks, let’s head left towards Moose Mountain!”

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“Have you ever seen a lichen and knew it was a lichen? Not many people know what lichens are and who would? They seem as though they are from another planet! Lichens are bizarre organisms and no two are alike.” I find this description of lichen on the US Forest Service website and its emotive tone is similar to many who try to express what lichen is.

In the introduction to the field guide, *Lichens of the North Woods*, Joe Walewski writes:

Time and again, I hear students saying [they have never seen lichens before]. But we have seen them. Lichens are right in front of our eyes. Everywhere [...] They are so ubiquitous, yet so small; it’s no surprise that many people inadvertently overlook them. Lichens are perhaps the most “obvious” overlooked component of our landscape. (1)

This is definitely the case in the fog forest at the outdoor centre where I work. The centre is in a remote location in the middle of Newfoundland’s Avalon Peninsula, accessible only by dirt road. If you stand still at any given point in these woods, lichen will materialize in front of you.

By your feet you’ll see clumps of lichen like airy heads of cauliflower, intermingled with upturned trumpets and matchsticks.

Near your ankles you’ll see lichen like paint, smattering bark, stumps and rocks in every colour, from vibrant yellow to cyan, stippled with pink dots.

Reach your hands out wide and they will brush against papery lichen that coats branches like sticky snow, yet stays behind when the real snow melts.

Bend your head way back and look up to see spruce and fir trees, their profiles fuzzy against the sky, coated with horsehair, witch’s hair, old man’s beard and more; they clump and knot together, making it hard to distinguish which is which.

These trees, cloaked in lichen, give off a certain presence. Walking through these foggy woods at dusk or dawn, you feel like you’re not alone.

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Usually, on the second day of a two-day field trip, we divide the students and their teachers into small groups, and each leader will take a group for a full morning exploration of the woods. We call it a “biodiversity hike.”

In other words, we try to find out who lives around here.

We invite the kids to help choose the route by telling us what they are curious to see in the forest. We give them a map of the trails, bogs and forest, each with names and illustrations. Some of the favourites are Dragon’s Tongue Bog (named after an orchid), Ravenwood Path (ravens are frequently heard here), and the Forgotten Forest (the old trail that was there was grown over, which inspired the name, but with this new mysterious name it’s quickly become less “forgotten”). A place called Molly’s Bog has a little drawing of bones beside it and the Frog

Bog has a drawing of an adorable frog with bulging eyes. This bog is a small amphitheatre, echoing with “music” in the spring.

When the kids suggest some of the places they’d like to see, the leader makes a quick mental map and figures out a potential route.

Each leader has a favourite topic or place in the woods. There have been staff who know all about songbirds. Others are specialists in freshwater invertebrates. Others have spent a lot of time in the woods and know a little bit of everything. Choosing what to focus on during the walk is a balance between what the kids are interested in and what the leader is passionate about sharing.

For me, lichen is a favourite.

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“Is it alive!?”

“Does it hurt the tree?”

“Old man beard—you can light fires with it! I lights fires with it at my cabin.”

As I attempt to untangle a long strand of lichen, I also try to untangle my thoughts to speak.

The lichen I’m holding is called Methuselah’s Beard, or *Usnea longissima*. Upon seeing it, many people call it old man’s beard. While old man’s beard is often used as a catch-all phrase for any hair or beard lichen, there are actually many distinct species. Methuselah’s Beard is one of them and is identifiable by having one central cord.

It looks like a string of tinsel or like worn-out twine with many individual threads popping out. The central cord is reminiscent of a thin electrical cable; there’s an outer coating that protects a fragile thread inside.

Methuselah’s Beard is the longest of the hair lichens and gets the most tangled. It winds around branches and twigs, jumps from tree to tree, and gets knotted and tangled, obscuring its length.

Some kids are so eager to see the lichen that they crowd around me, stepping on my boots and throwing me off balance like puppies excited for a treat. “Whoa whoa, step back,” says their teacher automatically. “Give her a bit of space.” With resignation, they take a couple of baby steps backward.

The strand of lichen I’ve picked up is longer than my arm. I could find a longer one, but I don’t want to pluck one off the tree. This one was attached to a branch that had already broken off.

There is much to say, but I know I’m working with limited attention spans.

“This type of lichen is extra special because it only grows in places with clean air.”

I invite the kids to take a deep breath with me, taking in the damp earth and the whiffs of spruce and fir.

Methuselah’s Beard is a bio-indicator. It can tell you whether or not the air is clean. It has vanished from many parts of the world, including Europe and much of western North America. It prefers old-growth forests and will often die out on secondary growth. On a more localized scale, it’s noticeable these are not present in the urban parks around St. John’s.

It’s a damp fall day, very typical in the fog forest, and the lichen is wet and springy like an elastic band. I pass it around.

“Whoa, it stretches.”

One kid who had up to now been in the back of the group prodding the ground with a stick, suddenly notices there’s something to touch and squeezes to the front.

“What is that!?”

I consider between giving the short, medium or long answer.

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This job is one of infinite learning. Whenever I think I know something, I’m challenged once again to expand my thinking. This goes for both the ecology of the land I’m teaching in and for teaching and learning itself.

Like Methuselah’s Beard, my thoughts on teaching grow, stretch, and tangle the older I get.

One of the “tangles” I’ve been contemplating lately came from reading a blog post written by an experienced Forest School educator, Sonya Lukassen. The blog post is called: *Letting a “Wrong” Answer Stand*.

In the post, she describes her sometimes controversial stance of not correcting kids when they say something that she perceives to be “wrong.”

She gives the example of an adult and child walking in the woods when suddenly the child points toward a bird singing in a tree.

“A chickadee!”

A typical adult response might go something like:

“That’s a nuthatch, see? Not a chickadee. Chickadees have more black on their faces.”

It’s moments like these that Lukassen chooses not to correct the child:

Letting a child's answer stand makes room for their imagination to make sense of their world [...] It nurtures the relationship they are building with the land [...] It] also nurtures their relationship with me. A child who knows I will listen to their original ideas is much more likely to take a chance to share those ideas [...] Do I really need to set them straight? Interrupting their moment of connection to tell them they've got it wrong lets all of the air out of their magic bubble. The filled-up, warm connection feeling is replaced by one of cold, lonely, wrongness.

On reflection, it's easy to relate to how this type of communication feels. That moment with a friend when you bring up something you're excited about, only to be told that they already knew everything you were telling them and also you're a bit wrong. It's a quick way to shut down a conversation. And many of us have been on both sides of this type of communication. If it becomes a pattern, it can create disconnection in the relationship.

It makes me wonder, if this type of communication creates disconnection, where does the urge to communicate in this way come from?

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One of the most fascinating things about lichen is that they are not actually an individual species: each lichen is a partnership between a fungus and an algae. In other words, they are a relationship; one that has existed for 400 million years.

During a stormy winter, while there is no programming happening at my workplace, I huddle under a blanket in my tiny apartment, reading about this and more, my appreciation deepening while snow accumulates outside. There's an entire chapter of Merlin's *Entangled Life* that is all about lichens:

Lichens are living riddles. Since the nineteenth century, they have provoked fierce debate about what constitutes an autonomous individual. The closer we get to lichens, the stranger they seem. To this day, lichens confuse our concept of identity and force us to question where one organism stops and another begins. (71)

I read that when Western science came to understand this in the nineteenth century, a question that promptly followed was about the hierarchy between the fungus and the algae: which was the master and which was the slave? This was the assumed relationship dynamic.

Decades passed before this understanding was revised and a new perspective established.

[Lichens] were a gateway organism to the idea of symbiosis, an idea that ran against the prevailing currents in evolutionary thought [...] evolution could no longer be thought of solely in terms of competition and conflict. Lichens had become a type-case of inter-kingdom collaboration. (Sheldrake 73)

This new understanding about lichen led to new understandings about life in general:

In 1967 the visionary American biologist Lynn Margulis became a vocal proponent of a controversial theory that gave symbiosis a central role in the evolution of early life. Margulis argued that some of the most significant moments in evolution had resulted from the coming together and staying together of different organisms. Eukaryotes arose when a single-celled organism engulfed a bacterium which continued to live symbiotically inside it. Mitochondria were the descendants of these bacteria. Chloroplasts were the descendants of photosynthetic bacteria that had been engulfed by an early Eukaryotic cell. All complex life that followed, human life included, was a story of the long lasting “intimacy of strangers.” (Sheldrake 80-81)

At the time, many scientists were very vocal about their dismissal of this theory. However, “endosymbiotic theory, as it came to be known, rewrote the history of life. It was one of the [twentieth] century's most dramatic shifts in biological consensus” (Sheldrake 81).

Now in the twenty-first century, lichen continues to offer more surprises, including that there is another essential partner along with the fungus and lichen: bacteria. The exact role of bacteria in the relationship is still being studied. “It's a very different picture from [...] the fungus and alga as master and slave,” writes Sheldrake, the “duet has become a trio, the trio has become a quartet, and the quartet sounds more like a choir” (90).

It turns out that the history of lichens is all about how “wrong” answers can become right.

*

It strikes me that lichen are excellent teachers.

They provoke us to ask a lot of questions, to wrestle with seemingly impossible tangles and knots, to never assume that we know all of the answers, to be patient and let learning unfold as it will.

This comes in contrast to many assumptions about teaching and learning. I think sometimes it's easy to think that it's our job to know all the answers, perhaps because that's how we were taught. On a more subconscious level, teaching in this way can come from a need to assert power, to create a hierarchy. Acknowledging that we don't know everything means a ceding of control. It's vulnerable.

Isn't part of the reason for the climate crisis a lack of humility? We assume that we know things we don't actually know and tinker without caution as if we have all of the answers.

What if my role as an educator isn't to answer questions perfectly or to conclude conversations neatly? Perhaps the point is to inspire kids to begin their own tangly conversations with lichen and with the natural world in general; to realize that there are many conversations to be had.

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It's almost lunchtime, and our little group begins the walk back to the cookhouse. My eyes continue to wander over the moss, littered with the broken bits of lichen and as I walk, I remember that I read somewhere that some lichens actually have to break. They are meant to break. This is how they reproduce and grow in new places.

It doesn't exactly make me feel better about the hurricane damage, but it does make me feel a little bit better about these footsteps I'm making on the ground, my feet sometimes crunching living caribou lichen, unavoidably. I don't need to assume that this relationship of humans and nature is all take and no give.

We stop to do one unified "ECHO!!" across the pond and I watch their eyes widen as the echo bounces back to them. Then we continue along, everyone focused on something different. Some walk in front and know right where to go; others have no idea where we are. Others are laughing and swishing their hands against the tree branches as they go.

Walking right beside me, almost underfoot, a kid leans over and picks up a long piece of lichen off the forest floor and looks right in my eyes: "I love moss, it's so weird and stretchy."

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