Lasting and Lovable Lichens

by Sally L. White, copyright 2013

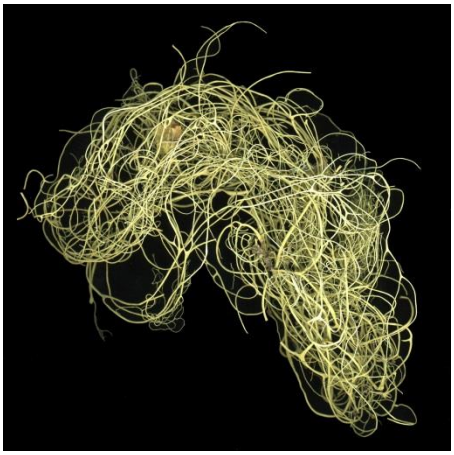
At times like these long weeks of heat and little or no rain, we might think that there isn't much going on outdoors. All of us living beings are waiting out the weather. If you can get out, this is a good time to take a closer look at our lovely little lichens. They're cute, colorful—and they're always there. In sun or shade, snow or not, on rock, soil, or tree—they brighten our landscape, whether in your backyard, or quite possibly, even in your living room. Like the rest of us, they may be dormant, but they will endure until conditions improve. After a summer storm, you'll find them delighted to be soaking up the moisture and taking full advantage of it—along with the rest of us! Soft and full of life, that's when they're at their best, but it's nice to know we can always observe lichens, even when it seems most inhospitable out there.

One of my favorite lichen memories, in fact, was of a March hike in a blinding blizzard. With virtually zero visibility, lichens made up the only available scenery, as a friend and I wandered through a veritable forest of lichens, all shades of green, yellow, orange, and gray. The snow and fog obliterating any other attraction, our full attention was focused on the colorful rocks before us. On a warmer day, with a hand lens, we could have spent hours on a single granite boulder.

Lichens, we've been taught, are the quintessential example of a true symbiotic relationship. As with much we've been taught, the story isn't quite that simple. In fact, when the idea that lichens were combination organisms was first proposed in 1867, scientists were skeptical. Fifty years later, most were convinced that lichens were indeed an unusual amalgam of fungus and alga, but the true role of each partner remained unclear. Today, though studied by more scientists than ever before, lichens have managed to hang on to a few of their mysteries.

What once appeared to be a glorious example of two independent organisms cooperating in altruistic service later began to look like a powerful fungal partner taking complete advantage of its captive algal cells. Clearly, the photosynthetic algae produce carbohydrates that the fungus gobbles up, but what does the algal cell gain in return? As the fungal strands surround and protect the algal cells, perhaps the answer is a secure home, buffered from environmental vicissitudes more than it would be if free-living. Because they cooperate to change both themselves and their environment, together they can occupy a tremendous range of habitats that are inhospitable to either algae or fungi when apart. They have a resilience and endurance other organisms lack. Their complexity suggests that lichens can even be considered entire ecosystems in themselves.

Because many lichens are distinguished either by microscopic details or by the exotic chemicals they produce, or both, you might guess we ordinary mortals would have difficulty discussing them. Discussion, after all, requires a common language. But so few lichens have common names that the specialists have felt compelled to create some, usually awkward contrivances like "puffed shield lichen." True common names are usually given by people, out of familiarity or even fondness, are succinct and recognizable, and are used. If you've ever lived east of the Mississippi and spent time in the woods, you know instantly that "British soldiers" describes a greenish ground lichen with jaunty red caps. In places where lichens are more obvious and where people use them, as in Scotland, many of them have effective common names.



"Old man's beard" likewise holds little mystery, and is a name most of us might automatically assign to the long streamers that decorate trees in moist forests. That common name fits so well that it has been applied to four genera of lichens (*Usnea* especially, but also *Alectoria*, *Bryoria*, and *Evernia*) containing at least 25 western species. Useful, but not terribly specific.

Why are lichens lovable? Even the most obvious of them is overlooked by almost everyone these days. It wasn't always so. Beyond their aesthetic interest, they have proven themselves useful to humans in many ways. Traditionally used as dyes, they were responsible for the muted tones of Harris tweed in Scotland. The antibiotics some produce, including that old man's beard we already mentioned, have long been a reliable source of healing. To keep a supply of *Usnea* handy, you could use it to stuff cushions, as they do in India. In what may be the most creative use, lichens like *Bryoria*, known as "tree hair" to some Indians of the Northwest, were twisted into cordage to make clothing and shoes.

Interested in MORE on lichens? Check out

The North American Lichen Project at Lichen.com
For photos, ethnobotanical references, and other great information

Sharnoff Photos Lichen Page Sharnoff Lichens
Excellent collection of identified photos, by genus and species

Colorado Lichens (and Friends) ColoradoLichens.org
Photos of foothills lichens, and other lichen-watching tips

Scottish Natural Heritage: Lichens
All about the abundant lichen communities in Scotland

Lichens have even been used as food. Some North American peoples are said to have considered them delicacies, others used them only in emer-gencies, as a famine food. One abundant in our area is known as rock tripe (*Umbilicaria americana*), and can be boiled into a soup, probably about as tempting as its namesake.

Scholars now suspect that the "manna" reported in the Old Testament may have been a lichen, *Lecanora esculenta*, picked up and accumulated by desert winds and dropping from the sky in sudden abundance. It saved the Israelites in the wilderness from starvation, and lichens could be similarly used today. Most species are bitter enough, however, to be acceptable only in true emergencies. Some are downright poisonous, and have been used to poison arrows, as well as wolves and other feared animals.

Today, lichens serve us, inadvertently, in another way. They are the modern canaries in the coal mines of industrial civilization. Everything they need to grow comes to them from the air, and conversely, everything in our air is indiscriminately incorporated by the sponge that is the body of a lichen. Some of it kills them. Though durable, they are not indestructible. Some lichens, like the Usneas, are sensitive to air pollution and will not survive in urban areas. Others, like the common wall lichen (*Lecanora muralis*), will apparently stay with us no matter how bad it gets. In fact, researchers suspect some species have mutated recently to better accommodate their urban environment. As economical and effective air pollution monitors, lichens can tell us about concentrations of sulfur dioxide, heavy metals, acid rain, and even radioactive fallout. Analyzing living lichens, as scientists do, tells us how far pollutants travel from their sources and what concentrations we are breathing. Noticing their presence, while they last, we novices can gain a sense of the quality of our surroundings. Their absence, of course, can tell us even more.