

discovery





What's to Like about Lichens?

A lot, it turns out. They are a source of food, of medicine, and of concern to environmentalists.

By Jim Cornish

We see them hanging like hair

from the limbs of spruce and fir trees, covering exposed bark and rocks like shields, and sprouting like matchsticks and pixie cups from the forest floor. But seldom, if ever, do we stop and take in the diversity in size, colour and form of lichens.

Lichens are not plants, but a perfect example of a mutually beneficial living arrangement between fungus and algae. For its part, the fungus absorbs minerals and water from the air and shares them with the algae. Algae then uses these nutrients to

Jim Cornish photo



British Soldier Lichen

Cladonia cristatella

These red-tipped lichens resemble in colour a late 18th-century British soldier's hat, hence their common name. They typically grow along the edges of trails and on decaying wood, often among other lichens. The tallest one pictured here measures just 2 cm.



Sulphur Cup Lichens

Cladonia deformis

These cup lichens are the comedians of the lichen world. Their deformed shapes create some interesting structures.



Hair Lichens

Alectoria and *Bryoria*

Commonly called witch's hair (the green strands) and horse's hair (the brown strands), they are good indicators of air quality; they are often missing from urban and industrial areas.

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produce the food both organisms need to grow and reproduce. Consequently, this dynamic duo is able to survive in places and under conditions together that they could not possibly endure on their own.

Very resilient, lichens can remain dormant during long dry spells and come back to life when moistened by rain, dew and high humidity. Although brittle and dull in colour when dry, within minutes of being wetted, they become brighter (an indication the algae is actively making food) and pliable. Because they are often dormant, lichens grow very slowly, from as little as a millimetre to just a few centimetres over a growing season.

The last of this lichen

One lichen species is rapidly becoming unique to the island of Newfoundland. Called the boreal felt lichen (*Erioderma pedicellatum*), it has survived since the time when North America, Africa and Europe formed one continent about 500 million years ago. Unfortunately, it's not likely to survive our impact on its environment. Listed as one of the most endangered lichens on the planet, just about all of the world's remaining individual specimens live in eastern Newfoundland.

The plight of the boreal felt lichen became public knowledge in the mid-1990s, largely through the efforts of Eugene Conway, who found the lichen while on a fishing trip in Locker's Waters on the Avalon Peninsula. When the area was about to be logged, Conway advocated for the protection of the lichen. As a result, it was declared a "species of special concern" by COSEWIC, the Committee on the Status of Endangered



Mac Pitcher photo

The boreal felt lichen, *Erioderma pedicellatum*, is rapidly disappearing from Newfoundland. It grows mostly on the trunks of balsam fir. Its light grey to greyish-green surface is covered with felt-like white hairs and showy reddish coloured buds. The edges are light-fringed and typically curl upwards to reveal a mat of white hairs.

Wildlife in Canada, and “vulnerable” under the Endangered Species Act of Newfoundland and Labrador.

According to environmental consultant and researcher Dr. Ian Goudie, there is some debate over the total number of individual lichens remaining. A documented population of about 1,000 individuals found in the Lockyer’s Waters area in the mid-1990s is now down to less than 300. These numbers are unsustainable and the species may well be completely gone within a few decades.

The boreal felt lichen is threatened by natural and manmade stressors. The natural ones include forest fires, aging stands, windfall, insect outbreaks and climate change. Of greatest concern is browsing by moose. While moose don’t eat the lichen,



Mac Pitcher photo

The vole ears lichen, *Erioderma mollissimum*, was recently discovered in the old growth forest of the Avalon Wilderness Reserve. It, too, is threatened, but a larger distribution worldwide may help ensure this species survives a little longer.



Star-tipped Reindeer Lichen

Cladonia stellaris

Several lookalike species of this lichen are collectively called reindeer lichen. It often carpets large patches of open forest floor and barrens. It is the main food source for caribou in Newfoundland and Labrador, particularly in winter.



Lung Lichen

Lobaria pulmonaria

So-called because it looks like lung tissue and has been used to treat a variety of respiratory ailments, this lichen is beige to pale green when dry, and rapidly turns bright green when wetted.



Tube Lichens

Hypogymnia physodes

Growing like tubes on the branches and bark of conifers and birch, it is one of our most common forest lichens. These lichens are found in damp areas and are more tolerant of air pollutants.

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they destroy the seedlings on which future tree growth – and lichen habitat – depend.

“About 95 per cent of our balsam fir trees are not regenerating,” says Goudie. “Trees that should be about 30-50 years old are just not there because of over-browsing by moose.”

The immediate threat, however, is wood harvesting and land development.

Why we like lichens

Lichens are an important source of food for insects, slugs and caribou. Some varieties are even used as nest liners by some 50 species of birds.

They are useful to people, too. Our great-grandparents called lichens “moldow” and “molly fudge,” and collected them for firestarters and boiled them to make clothing dyes – a practice that still exists in cultures around the world. Some lichens are also used to make soaps and perfumes. Rich in carbohydrates, they can be eaten in emergency situations, despite their rather acidic taste. And if you are really stuck, lichens such as the familiar old man’s beard make acceptable toilet tissue. In folk medicine, lichens were also used to treat headaches, toothaches, tuberculosis, diabetes and asthma. Maybe a cure for some of our most devastating diseases will one day be found in lichens.

For those watching environmental change, lichens are like the canaries in the coal mine. They are used to monitor air quality and serve as umbrella species – living indicators of a wide range of environmental and ecological problems. Although lichens are hardy, it doesn’t take much to wipe them out. And because they prefer pristine environments and extract nutrients from the air,



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Map Lichen
Rhizocarpon geographicum

These brightly coloured lichens are nature’s pioneers. They grow almost exclusively on exposed rocks and are commonly named for their map-like appearance. They grow slowly and at predictable rates, allowing geomorphologists to use them to estimate when landscapes became exposed from under retreating glaciers.

lichens are particularly sensitive to air pollution and micro-environmental change. Consequently, metropolitan and industrial areas are referred to as “lichen deserts” because they are often stripped of their lichens by air pollutants.

A unique combination of landscape, weather and geography has created very diverse ecosystems across Newfoundland and Labrador, from arctic-like barrens to heaths, bogs and boreal forests. Lichens are a conspicuous and highly diverse part of all these areas. So, the next time you are walking the wilds, stop and take a closer look at the exquisite world carpeting the ground and decorating the trees above. It may be an “enlichening” experience! 📷

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