

# Mysterious Lichens

Lacy patches of grey, tufts of orange string, green leaf-like growth, colorful crust covers on rocks or trees ... what are these mystery organisms found throughout Brightwood Park? They vary in shape and color and can be found growing on rocks, trees, and other surfaces. Not to be confused with moss, lichens are a complicated organism.

Lichens are found all over the earth from polar regions to the tropics! Most grow on land but a small percentage can even live in water. They are especially unique in that they are comprised of both fungi and alga – in this symbiosis, each component sustains the other. The fungus provides moisture allowing alga to grow in otherwise inhospitable climates. Alga absorbs nutrients and uses photosynthesis to create food thereby feeding the fungus.

What is unique about the fungal component of lichen is that it cannot feed for itself off decay like other types of fungi. It has no roots or other components to feed from soil or decay. Rather, it is entirely dependent on its algal cells for food. On the other hand, in the right environment, the algal cells could survive.



Photo courtesy of Chuan-Chu Chou



Lichens can have either green algae and/or cyanobacteria algal components. These can be layered or mixed together with the fungus.

There are three basic categories of lichen: foliose, fruticose, and crustose.

**Foliose lichen** like those pictured to the left appear leaf-like.

Photo courtesy of Chuan-Chu Chou

**Fruticose lichen** have a central stem with branches like the pictured orange lichen.



Photos courtesy of Chuan-Chu Chou

**Crustose lichen** grow on rock surfaces and become embedded in the rock's composition:



Photos courtesy of Denise Ricci

The color variety of lichens, including yellow, orange, red, green, black, brown, silver and gray, is determined by its chemical composition. There are thousands of varieties of lichen, and their chemical composition helps identify them from one another.

Lichens grow slowly but can live for decades or even centuries. Since they depend entirely on water and nutrients in the air, they are sensitive to pollution. Scientists can study lichens to determine historical pollution levels.

Lichens are significant ecologically in what they do for ecosystems. They bind and build soil. The cyanobacteria component also “fixes” nitrogen from an otherwise unusable form into a usable form. Plants need this nitrogen to survive. Lichens also provide food for a

variety of mammals and invertebrates and nesting material for birds. Lichens have also been used by people for food, fabric dye and medicines.

Sadly, like so much of our environment, lichens are declining due to loss of habitat and pollution.

For more information, check out:

<https://www.fs.fed.us/wildflowers/beauty/lichens/about.shtml>