



Lichens

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Photos by Peggy and Pete Romfh

What Lichens are NOT: Mosses but both like damp/wet



Mosses are often found in moist cracks in patio, base of trees, on soil or on shaded rocks near lichen locations. Mosses are **PLANTS** in the division **BRYOPHYTA**.

What Lichens are NOT: Bromeliads but both are epiphytes



Ball Moss and Spanish Moss are flowering **PLANTS** in the family **BROMELIACAE**. Epiphytes absorb nutrients and water from the air and rainfall.

What Lichens are NOT: Mushrooms but both contain fungal elements



Splitgill Mushroom

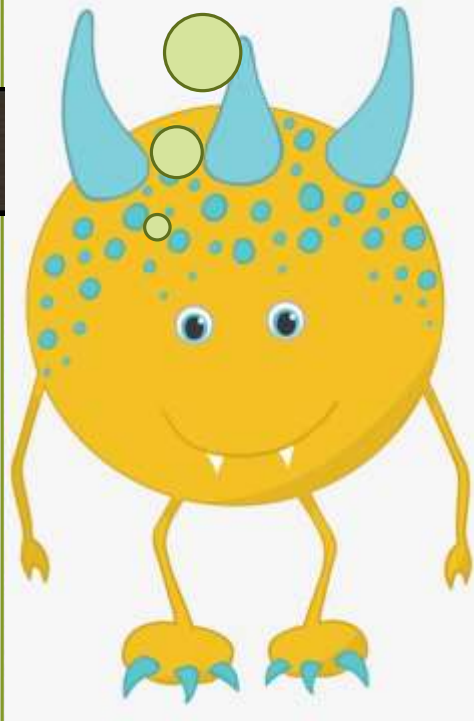
Fungi do not contain chlorophyll. They rely on plants and trees for nutrients and are the principal decomposers in ecological systems.

Lichens are Fungi that have discovered agriculture (Trevor Goward)

Lichens are a complex life form that is a symbiotic partnership of two separate organisms.

- **Fungi** (Kingdom Fungi) – dominant partner; incapable of making their own food
- **Photobiont** – manufacture food by photosynthesis:
 - **Algae** (Kingdom Protista) (85%)
 - **Cyanobacteria** (Kingdom Monera) AKA blue-green algae (10%)
 - **Both** (5%)

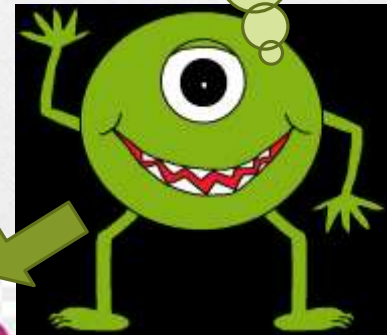
I'm the
fungus
amongus!



Let's get
together!
I'm like-in'
you both!

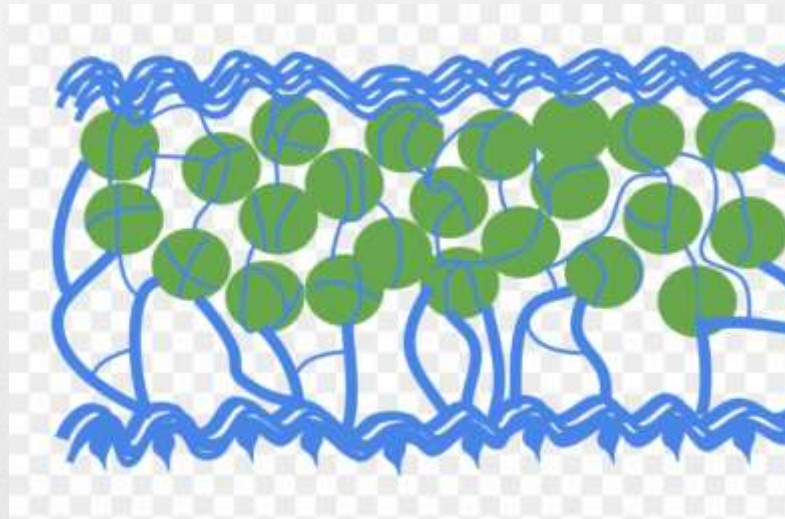


I'm algae!



Structure of Lichens: 80/20

- Outer layer – fungus
- Inner layer – algae or cyanobacteria



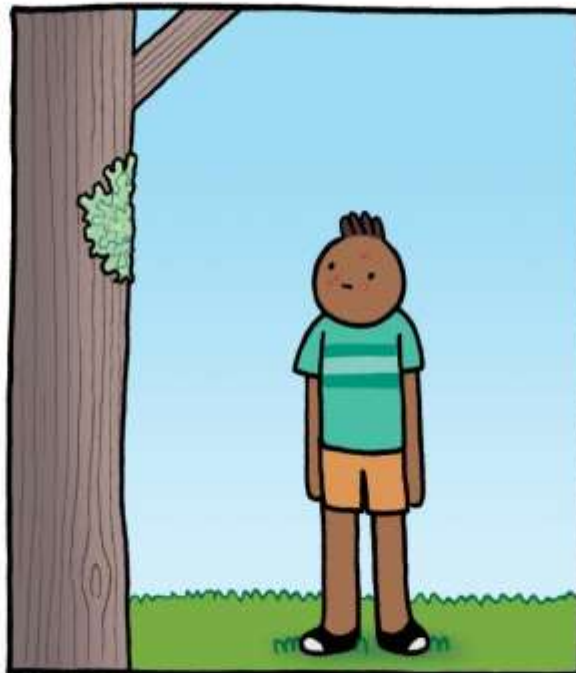
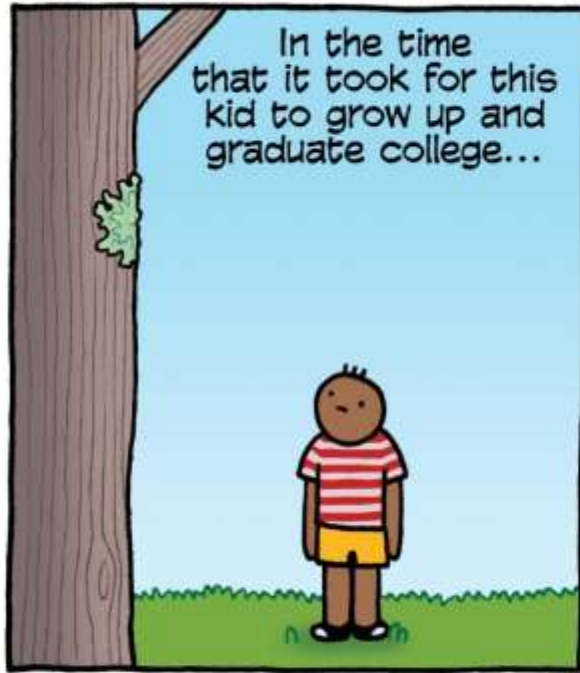
Fun Facts About Lichens

- Among oldest living things on the planet: 3000-5000 years old
- 3600 species in USA and Canada (20K in world)
- Bio-indicators: Some are sensitive to atmospheric pollution such as nitrogen.
- Provide food for animals such as reindeer.
(Reindeer moss is really a lichen.)

Fun Facts About Lichens

- Grow on leftover spots of the natural world – bare rock, desert sand, soil, dead wood, bones, bark
- Dominant organisms on about 8% of the world's land surface
- Most grow slowly.....< 1 mm – 4 mm/year; high diversity of lichens implies pristine habitats
- Are used in deodorant, toothpaste, salves and perfume

GREENSHIELD LICHEN THIS PACE



Fun Facts About Lichens

- Edible mostly
 - A few are toxic, e.g. Wolf Moss Lichen.
 - Considered starvation food
 - All must be boiled with wood ashes or sodium bicarbonate to neutralize acids then
 - ‘....either eat the resulting goo or add it to any stew, soup, or bread recipe.’ [source: foragingtexas.com]

Growth Form: Crustose

CRUSTY



Lichens on Flagstone



Poikilohydry

May look cracked when dry

Crusting lichens are very tightly attached to rocks, trees, sidewalks and soils; often very colorful.

Growth Form: Crustose

CRUSTY



Firedot Lichen

Crusting lichens with fruiting bodies are shown attached to top of brick wall. Crusting lichens have an upper but no lower surface.

Growth Form: Foliose

LEAFY

Foliose lichens are leaf-like; they are loosely or tightly attached to a substrate like a tree branch or bark.



Growth Form: Foliose

LEAFY



Bottom -
brown

Top - green

Foliose lichens have a top side and a bottom side of different colors.

Growth Form: Foliose

LEAFY



Common Greenshield Lichen

Candleflame Lichen

Different species of Foliose lichens may grow next to each other.

Growth Form: Fruticose

SHRUBBY

Fruticose lichens are upright and shrubby (or sometimes they hang down).

They have an outer surface rather than an upper/lower surface.



All on Same Branch: Crusty, Leafy, Shrubby



Chlorolichens
have green alga
as the Photobiont.

Lichen the Colors – Especially after a rain



Pink
Black
White
Yellow
Green



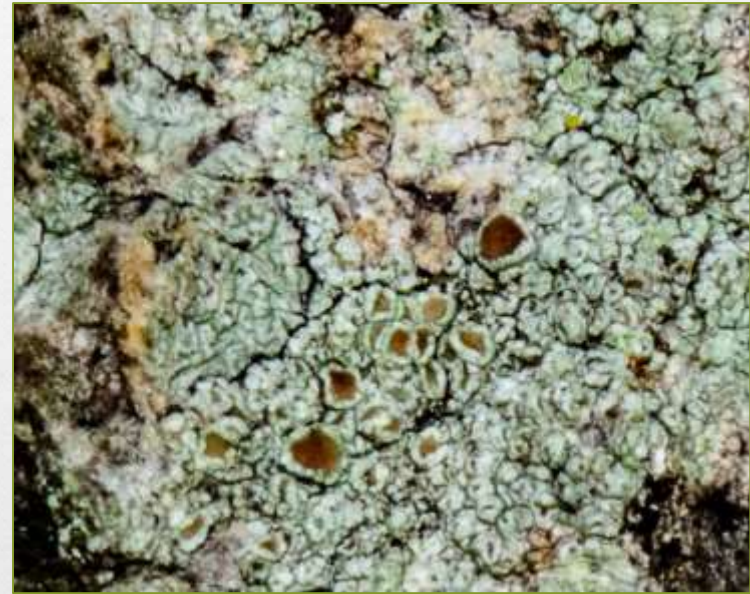
3 Types of Reproduction

F = Fungus; P = Photobiont

- (F+P): Isidia – tiny buds
- (F+P): Soredia – eruptions of cells
- (F): Apothecia – sexual or asexual spores



Fungal Reproduction - Apothecia



Apothecia – the most common sexual reproduction structure by the lichen’s fungal partner; produces spores.

Bushy Beard Lichen (Old Man's Beard) – QNBS



Apothecia – large, fruiting cups on the terminal ends of lichen branches

Powdered-Ruffle Lichen - QNBS



**Cilia – hair-like
projections**

**Soredia – dusty powder
on edges**

Fungi and Lichens May Coexist



Tree
branch,
SBNWR

Lichens as an Art Form



Tree branch,
SBNWR

Impact of Hurricanes/ Brackish Water on Lichens



**Trees, GCBO after
Hurricane Harvey**



**Live Oaks, New Orleans
after Hurricane Katrina**

[photo: Loyola Center for Environmental
Communications, New Orleans]



References

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- <https://www.eealliance.org/assets/Documents/Conference Resources/Conference Resources2017/guide to 12 common lichens of georgia piedmont.pdf>
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