

Lichen Introductory Research Review:

1. What is a lichen? What are the different organisms that make up a lichen?

Lichens are a compound organism made up of algae and fungus.

2. How do each of the organisms that make up a lichen contribute to the lichen as a whole? In other words, what purpose do each of the parts of a lichen serve?

Algae use photosynthesis to create food (sugar).

Fungus provides shelter for the algae.

3. How do the different organisms of a lichen get their food and energy?

Algae get sugar through photosynthesis. Some sugar leaks out and is used by the fungus.

nutrients

sugar

Lichens get nutrients from air and rainwater.

4. What type of symbiosis (mutualism, commensalism, or parasitism) characterizes lichens? Use your research to justify and explain your answer.

Mutualism: both organisms benefit

5. What are some of the different environments in which lichens can grow?

- Deserts (cold/hot)
- Tropical environments
- Barren environments (no soil, no plants, no animals)

6. Briefly explain how lichens can reproduce by using spores.

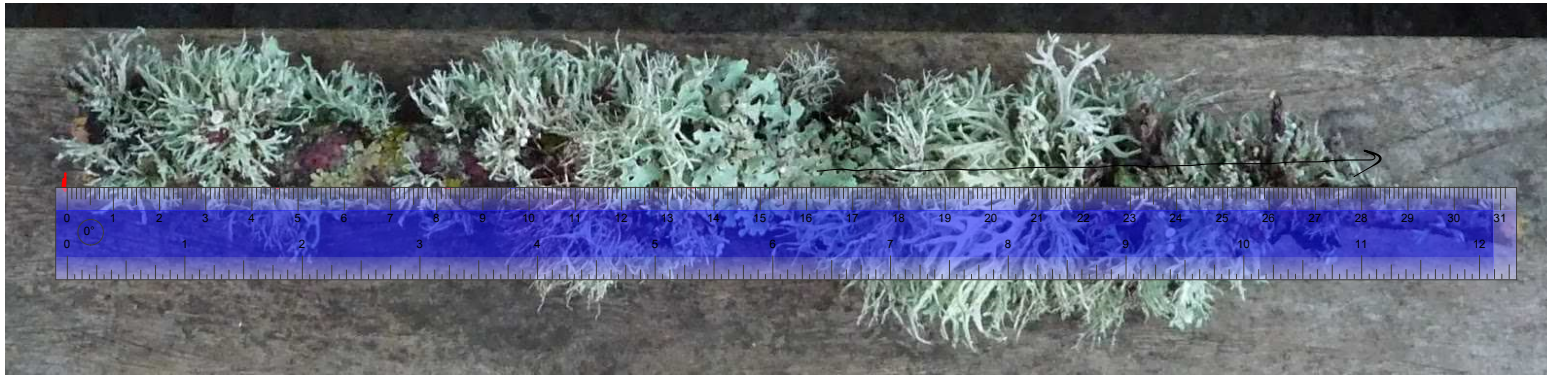
Lichen spores are baby fungi. (There is no algae.)
The spore (or fungus it grows into) needs to
be colonized by algae.

7. Briefly explain how lichens can reproduce vegetatively.

1. The lichen can break into parts — each part continues growing.
2. Lichens can package up some algae in a small amount of fungus in special reproductive structures. The packages are released and grow into new lichens.

Measuring Lichen Abundance:

1. Get a ~1 ft stick with lots of different lichens.
2. Hold a ruler up to the stick (cm side).
3. Along a 30-cm stretch, identify all the lichens and measure their length.
4. Ignore other organisms, lichens we don't know, and "bald spots".
5. Overlaps? Measure the top lichen.
6. Find the total length of each lichen, divide by 30, and multiply by 100 to get a percentage.



Evernia: 4.5 cm

Parmelia: 1.2 cm

Evernia: 1.3 cm

Ramalina f.: 2.2 cm

Parmelia: 0.5 cm

Evernia: 0.5 cm

Parmelia: 1.3 cm

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Evernia: $6.3 \text{ cm} / 30 = 0.21 \times 100 = 21\%$

Parmelia: $3 \text{ cm} / 30 = 0.1 \times 100 = 10\%$

Ramalina f.: $2.2 \text{ cm} / 30 = 0.073 \times 100 = 7.3\%$

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Work with a partner:

- Each of you should turn in a copy of the data
- If you have time, trade, measure, and compare with another group

When I tell you, turn your work in to the silver.