

LICHEN LOOKING

BIO Observation
KEY Plant Investigation
Lichens



OVERVIEW

The youngsters investigate the locations, sizes, shapes, colors, and number of lichens.

BACKGROUND



Lichens (pronounced “lie-kens”) are small plants that grow where most other plants cannot: on rocks, the trunks of trees, logs, and sand. You can find lichens almost anywhere, from the hot desert to cold coastal beaches. However, due to the lichens’ susceptibility to air pollution, they are relatively rare in large cities.

A lichen is a combination of a fungus and an alga living together. The alga makes the food, while the fungus provides moisture, physical protection, and minerals for the alga. The fungus cannot live independently.

Lichens come in many sizes, shapes, colors, and textures. Some people put all lichens into one of three classifications: crusty, leaflike, or shrubby. *Crusty* lichens usually grow flat on rocks and tree trunks and may even be embedded in these surfaces. *Leaflike* lichens have lobed surfaces that are only partially attached to other surfaces. *Shrubby* lichens are branching plants that stand upright or hang from other surfaces such as branches.

Lichens sometimes resemble mosses. You can tell them apart, however, because mosses have tiny leaf stalks, and lichens do not. Lichens take a long time to grow and any damage to them, however small, could be long lasting. Lichens should therefore be treated with care.

CHALLENGE: GO “LICHEN LOOKING” AND INVESTIGATE THE NUMBERS, LOCATIONS, AND KINDS OF LICHENS IN YOUR AREA.

MATERIALS



For each team of two:

- 1 lump of clay* (about the size of a golf ball)
- 20 flags in an envelope†
- 1 bag of investigation materials containing the following items:
 - 5 pieces of wax paper* (10 cm x 10 cm)
 - 1 felt-tip pen* (fine point to write on wax paper)
 - 1 roll of transparent tape*
 - 1 magnifying lens or bug box*
 - 1 small plastic bag*
 - 2 medium size plastic bags* (1 labeled “LICHENS” and the other labeled “NO LICHENS”)
 - 1 plastic or wax paper band (7 cm x 150 cm) marked off in 15-cm sections†



- 1 piece of string*, three meters long, marked off in meters†
- 1 set of Action Cards

For the group:

- 1 meter tape*
- 1 compass*
- 2 sheets of Action Cards*

* Available from Delta Education.

† See the “Preparation” section.

PREPARATION



Group Size. This activity is suitable for any size group.

Time. Plan on fifty to seventy minutes for this activity.

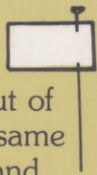
Site. Choose a site with a variety of lichens growing on several rocks or trees. Before the group arrives, decide whether to use Action Card 5a or 5b. Card 5a should be used in a site with a plentiful



lichen population (three or more lichens for each youngster); card 5b should be used in a site with a sparse lichen population.

MATERIALS

1. Paper Flags. Make paper flags out of construction paper. Cut the flags the same size as that shown in the illustration, and insert a pin in each one. Place twenty flags in an envelope for each team.



2. Bags of Investigation Materials

- With the felt-tip pen, mark off 15-cm sections on a 7 cm x 150 cm strip of plastic or wax paper. Beginning at the right end, number each section 1 through 10. Write the letter "N" in section #1. (See the illustration on Action Card 5a.) Make one strip for each team.
 - Mark off one-meter increments on a three-meter length of string for each team.
 - Make up one bag of investigation materials for each team. (See the "Materials" section.)
- 3.** Duplicate a set of Action Cards for each team.

ACTION



- Designate boundaries for the site, and tell the youngsters they are going "Lichen Looking."
- Point out two or three different kinds of lichens. Ask the youngsters to pair up, and give each team an envelope of paper flags and a small lump of clay. Challenge the teams to find all the places where lichens are growing in the site. The youngsters should pin a paper flag near the lichens they find. (If the lichen is growing on a rock, the youngsters can secure the flags with a small piece of clay.) Caution the youngsters to be gentle; lichens grow so slowly that any damage to them could be long lasting.

3. After five minutes, call the teams back and, as a group, examine some of the lichens the teams have flagged.

4. Give each team a bag of investigation materials and a set of Action Cards (include either Action Card 5a or 5b). Send the teams out to conduct the Action-Card investigations.



5. Move from team to team, offering assistance if needed and allowing the youngsters to share their discoveries with you.

6. When most of the teams have finished their investigations, or when only ten minutes of the period remain, assemble the group. Encourage the teams to share their discoveries.

LOOKING FURTHER



- How many different colors of lichens did you find? Show your samples to the group.
- What was the most common shape of the lichens growing in the site? The most unusual shape?
- What kinds of animals did you find living on lichens? What were the animals doing?



4. Examine the leaves you collected. What kinds of trees have lichens growing on them? Why do you think lichens don't grow on the other trees?

5. Do lichens seem to grow on certain sides of trees and rocks? Why might this be? The sectioned bands used with Action Card 5a can be superimposed on each other so the group can look for patterns.

10	9	8	7	6	5	4	3	2	1	N
10+	10+	8	6	4	3	6	10+	10	9	N
10	9	8	7	6	5	4	3	2	1	N
10+	8	8	5	5	4	5	3	10+	10+	N
10	9	7	3	6	5	4	3	2	1	N
10	10+	7	3	6	5	4	3	2	1	N

LICHEN LOOKING REVISITED



1. Find a lichen that is dry and brittle. Water it and observe the changes in a few hours. If possible, look again after a few days.

2. Be on the lookout for lichens wherever you go. Where do they grow?

3. Some air quality control councils use lichens as indicators of air pollution. Check with your local environmental council to see if it has such a program. Perhaps your group could assist in a survey.



Lichen Looking Action Card #5a

For Plentiful Lichen Populations

HOW MANY LICHENS?

Place the plastic or wax paper band around the trunk of a tree (or around a large rock) so the band end labeled "N" is on the NORTH side of the tree or rock. How many lichens are there in each band section? Use this card to keep score.

10	9	8	7	6	5	4	3	2	1	N
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10	9	8	7	6	5	4	3	2	1	N
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Try another tree. Are the lichens evenly spaced on the tree or do they grow mainly in certain areas? What might cause this? Do the lichens seem to be clustered on the west, east, north, or south side of the tree?



MATERIALS: sectioned band, pen or pencil, compass



Lichen Looking Action Card #5b

For Sparse Lichen Populations

HOW MANY LICHENS?

Select several trees (or large rocks) with lichens. Tie the marked string around the trunk of one of them, one meter from the base of the tree. You can use the marked-off string to measure one meter. The one-meter area merely limits your counting area. How many lichens are there below the string? Try this on several other trees (or rocks) and compare results. Use this card to keep score. Do the lichens seem to be more plentiful on one side of the tree (or rock)?

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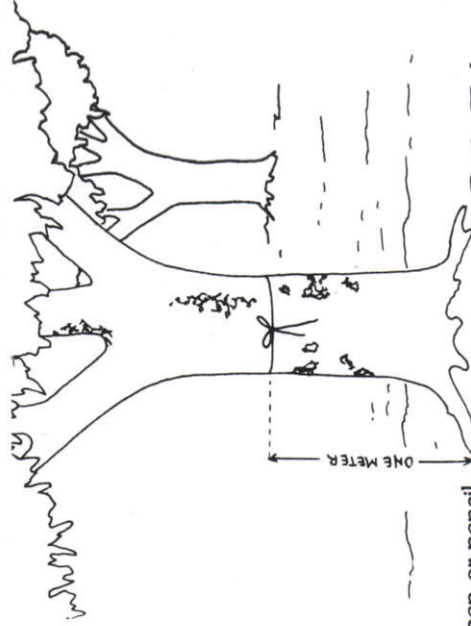
Rock or tree.

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Rock or tree.

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Rock or tree.



MATERIALS: string, pen or pencil