

# LEAF HUNT



## BACKGROUND

Many people enjoy being outdoors in nature. Often we think of “nature” as a pristine wild place, away from the concrete and tall buildings of the city. However, urban environments, like a city park or a schoolyard, offer great opportunities to discover the diversity in nature. The living (plants and animals) and non-living (rocks, air, water, buildings) exist together and make up a **habitat** – a place where an animal or plant lives and can find food, shelter, air, water, and space to survive. Both non-living and living things play a role in a habitat. Living organisms often use other living things and non-living objects for survival.

The Leaf Hunt lesson focuses on the diversity of nature by honing students’ observation skills and encouraging attention to detail. Color, texture, fragrance, and shape are some **characteristics** that describe the variety found in leaves. An awareness of this diversity can enhance appreciation for the natural world in an urban setting.

A casual observation tells us that there are many different kinds — or a diversity — of plants, even in an urban environment. In fact, a green lawn, which looks uniform, will have a number of different types of plants growing within it. A closer examination reveals distinctive features of plants that allow us to tell them apart. Some leaves are flat and wide while others are spiky and thin. Plant spines, like those on a cactus, are actually modified leaves. We can distinguish plants from one another by observing key characteristics of leaves such as color, texture, overall shape, and the shape of the leaf’s edge. The shape of the whole leaf is called the **leaf form**, whereas the edge is referred to as the **leaf margin**.

A diversity of plants is important to ensure the health of a habitat. Plants provide animals with food, shelter, and protection from predators. Not all animals depend on the same plants in a habitat. For example, one animal may depend on a specific type of plant for food, while another type of animal depends on a different type of plant for food. The more diverse the plants are in a habitat, the more types of animals will be able to survive there.

In this activity, students will learn how to identify differences between the leaves of plants as a way of estimating how many different types of plants are present in their schoolyard habitat. Students will also discuss the importance of having various types of plants in their schoolyard habitat.

## MATERIALS

Each Group Guide will have a kit containing:

- 1 guide card
- 7 pencils
- 7 hand lenses
- 1 laminated leaf characteristics sheet
- 1 plastic graphing sheet
- 6 crayons
- 1 sheet of scrap paper (for leaf rubbing demo)

**TIP** The Group Guide may want to collect some leaves from their study site prior to the lesson as examples of what the students will collect.

**Site** Choose a site where collecting leaves from plants in the area is permitted. Try to choose a site where the students will find diverse leaf samples.

**Vocabulary** Throughout the activity be sure to use and reinforce the vocabulary words:

- **habitat** – a place where an animal or plant lives and can find food, shelter, air, water, and space to survive
- **characteristics** – traits that describe living and non-living things (e.g., color, shape, texture)
- **species** – a group of individuals that share a unique set of characteristics
- **leaf form** – the overall shape of the leaf (e.g. oval, heart, or triangle)
- **leaf margin** – the outer edge of the leaf (e.g. smooth or toothed)

### Keep in mind ...

- Prior to the start of the lesson, ask your Team Leader what areas you should avoid. Team Leaders will discuss off-limit areas with the teacher.
- Remember to pick only one leaf from each plant. Pick the leaf from the inside or back of the plant. This will prevent harming the plant.
- Some schools may have a limited number of plants. Limit your collection to the number available.

## Key Learning Objectives

- A place that an animal or plant lives is called a habitat. Most everything, including animals and plants, are important elements of a habitat for all that live there.
- Animals depend on different plant species to survive. Diversity of plant species present in a habitat affects the diversity of animals that will be able to survive there.
- A bar graph is a way to visually represent data and helps scientists quickly notice patterns, similarities, and differences in their data.

## INTRODUCTION by TEAM LEADER (5 minutes)

*The Team Leader will introduce the lesson to the entire class before dividing the students into their small field groups.*

### Introduce the activity to students

- What is a habitat? What are some things that animals and plants need to survive?
- We are going outside "as scientists." What does that mean? (e.g., respectful to guides and fellow scientists, asking questions, listening)
- Today we will observe plants in our schoolyard habitat.
- Why are plants important?
- Discuss the general off-limit plants in your area.

# OUTDOOR ACTIVITY by GROUP GUIDE

The Group Guide will complete the activity with their small field group as described below.

## TELL ME (5 minutes)

### Gather the students into a circle and point out the study site boundaries

While not looking for any specific answers, facilitate the discussion by asking questions like:

- What do you know about plants?
- Do all leaves look the same? Why are leaves an important part of the plant?

**State the challenge:** Today we will investigate different types of plants by observing their leaves and graphing our data.

## ACTION (25 minutes)

### 1. Reiterate the boundaries of your study site.

**2. Introduce the activity.** Tell the students that they will observe differences in leaves.

- Have the students stand where they are and look at the study site. Have them predict the number of different types of plants present within the boundaries of the study site based on the differences they see among the leaves on trees, shrubs, and grasses. Have them record the number in their journal.
- Have the students share their predictions.

### 3. State that the students will be going on a leaf hunt and their goal is to find five distinct leaves from five different kinds of plants.

- Split the students up into pairs or trios.
- Demonstrate how to pick a single leaf without damaging the plant: use one hand to stabilize the main stem of the plant, and the thumb and pointer fingers on the other hand to pinch off the leaf.
- Allow the students about 5 minutes to collect their 5 leaves.

**Keep in mind...** If it is windy you'll need to either find a sheltered spot for your discussion or find rocks to weigh everything down.

### 4. Have students share what they have found.

- Gather the students into a circle.
- Have each group lay their leaves on the edge of the plastic graphing sheet.
- Have them, collectively, group leaves from the same species together in piles on the sheet.
- How can one tell that some leaves are the same? What key characteristic helps determine if there is a match?
- Repeat the above steps for each of the leaves the students collected.

### 5. Examine and classify the leaf collection based on leaf form.

- Explain that plants are often identified by the shape of the leaf, called the **leaf form**.
- Have the students choose one or two leaves from the collection. Using the leaf observation sheet, have the students identify the leaf form.
- Have the student place all of the collected leaves into groups based on the leaf forms.

## ⇒ Graph Skills Practice

- Now place the leaves, in their groups, onto the graphing sheet to create a bar graph. (There should only be one leaf per section/square.) Discuss which leaf form was the most common, and which was the least common. Record the data in their journals.

## 6. Examine and classify the leaf collection based on leaf margin.

- Introduce the term **leaf margin** (the edge of a leaf) as another key characteristic scientists use to identify plants. Have each student choose one leaf from the collection and use a hand lens to observe the leaf margin. Remind them to run their fingers along the edges. What are some characteristics of the leaf margins?
- Using the leaf observation sheet, have the students identify the margin of the leaf and re-sort the leaves into categories based on the leaf margins. Graph again, and record the data in their journals.

## 7. Classify the leaves based on other characteristics.

- What other key characteristics could you observe? Are the leaves the same texture, color, or size? Do the leaves have any similarities or differences in their veins? If there is time and interest, sort the leaves again using different characteristics, and graph the leaves again.



## DISCUSSION (5-10 minutes)

*Group Guides will find most of these questions on their guide cards in the activity kits.*

### Encourage the students to reflect on their observations.

- How are the leaves similar? How are they different?
- Looking at the bar graphs, what type of leaf form or leaf margin is the most common? What is the least common?
- Did you find a leaf from all the plants in the habitat?
- Explain that each type of leaf may represent a different type of plant. Send the students back into their study sites to count the number of different plants in the habitat, based on the differences they see in the leaves. Compare to the number they first predicted.
- Why is it important to have different types of plants in your schoolyard habitat? (*Animals depend on plants for food, shelter, and protection from predators. Not all animals depend on the same type of plant. The more diverse the plants are in a habitat, the more types of animals will be able to survive there.*)
- How have some plants adjusted to having humans be a part of their habitat?

## STUDENT JOURNAL (5-10 minutes)

Have the students complete the Leaf Hunt worksheets in their field journal.

## IF THERE IS TIME...

### Leaf Rubbing

- Have each student choose a leaf from the collection to make a leaf rubbing.
- Demonstrate how to do a leaf rubbing. Using a blank piece of paper, place a leaf underneath the paper on a hard, smooth surface. While holding a peeled crayon horizontally over the paper, gently rub over the area where the leaf is so that it reveals a pattern. Make sure to hold the paper firmly down so that the leaf will not move.
- Have the students do rubbings on the blank sheets of paper in their journals and label the leaf form and leaf margin.

## **CLEAN UP**

*The importance of clean-up is critical to the smooth operation of the program. Children are expected to help.*

1. Collect and organize all materials. Put the activity materials back into the kit.
2. Wrap the strings around all hand lenses and return them to their plastic bag in the kit.
3. Remember the goal is to leave no trace. Scatter the leaves collected during this lesson.

## **CONCLUSION by TEAM LEADER (5 minutes)**

*After all the field groups have returned to the classroom, the Team Leader will do a brief wrap-up discussion at the end of the lesson.*

### **Concluding Questions**

- What are some of the key characteristics that you used to describe the leaves you collected?
- Why is it important to have different types of plants in your schoolyard habitat?
- How do animals depend on the leaves in order to survive? Do all animals depend on the same type of plant?
- How have some plants adjusted to having humans be a part of their habitat?
  - Are some plants thriving in the presence of humans?
  - How do you think the animals that rely on these thriving plants are doing?
- What do you think happened to the plants that could not adjust to having humans in their habitat?
  - What do you think happened to the animals that relied upon these plants?

Talk briefly about the next activity.