



ECOSYSTEM EXPLORATIONS

EDUCATOR GUIDE

Thank you for registering for the Ecosystem Explorations field trip at New England Botanic Garden at Tower Hill. This guide provides an overview and introduction to the program. The optional pre and post-visit activities on the following pages will support your students' learning during the program and will help to extend their knowledge beyond your trip. Prior to your visit you are not mandated to complete any specific lessons or units of study.

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OVERVIEW

During this guided program your students will investigate how living and non-living things interact within different habitats. Students will observe and define these relationships in a forest, meadow, pond, and garden habitat. We recommend you complete the pre- and post-visit activities on the following pages to enhance your visit and support the integration of the concepts addressed during this program.

Throughout the 90-minute field trip Teacher Naturalists will guide small working groups of 10 to 15 students to four different habitats; garden, pond, forest, and meadow. Students will be encouraged to make observations, explore, and ask questions throughout. Each student will be provided with a hand lens, clipboard, and data collection field notebook to use during their visit. Teacher Naturalists will engage students using a combination of stories, investigations, experiments, and games.

LEARNING OBJECTIVES

Students will...

- Know three or more factors that plants and animals require for survival.
- Define different relationships between plants, animals, and non-living factors in each habitat.
- Make field observations to help understand the differences and similarities between habitats.

BACKGROUND

All animals require food, water, shelter, air, and space to survive. Plants require nutrients, water, air, light, and space. Plants and animals are able to meet these needs within their habitats, but not all species can survive in the same habitat. A habitat is a plant's or an animal's home. Many homes or habitats together make up an ecosystem. An ecosystem is an interconnected community of living and non-living factors and the physical environment.

VOCABULARY

Habitat: a place where plants or animals live and find the things they need to survive.

Ecosystem: an interconnected community of living and non-living factors and the physical environment.

Survive: to be alive and healthy.

Basic Needs: what living things need to grow, reproduce, and survive.

Garden: a defined area of plants that are planned and cared for by humans.

Meadow: an open habitat, or field, or grassland.

Forest: an area covered by trees.

Pond: a small, shallow body of freshwater that can be formed naturally or intentionally.

Nutrients: something that provides food or vitamins to a living organism.

Observation: something we notice with our five senses.

Data Collection: gathering information through observations, questioning, or measurement.

IN ALIGNMENT WITH THE 2016 MASSACHUSETTS SCIENCE AND TECHNOLOGY/ENGINEERING CURRICULUM FRAMEWORKS

STANDARDS

GRADE 2

- **2-LS2-3.** Develop and use models to compare how plants and animals depend on their surroundings and other living things to meet their needs in the places they live.
- **2-LS4-1.** Use texts and local environments to observe and compare (a) different kinds of living things in an area, and (b) differences in the kinds of living things living in different types of areas.



PRE-VISIT ACTIVITY GUIDE

The following optional pre-visit activities and resources are designed to support the understanding of concepts that will be addressed during the Ecosystem Explorations program.

HOME SWEET HABITAT

Students will identify the basic needs of all living things and recognize the similarities and differences between habitats.

MATERIALS

Paper

Magazines

Scissors

Markers

Glue



Brainstorm as a class, the things that animals, people, and plants need to survive. Write down student responses and narrow the list to five basic survival needs: food, water, shelter, air, and space. Introduce the word habitat and explain that a habitat is a place where living things find what they need to survive. Our homes and habitats may be very different from that of an animal or plant, but we all have the same basic needs for survival.

To begin thinking about different habitats, have students create a drawing and/or collage with magazine clippings.

1. Give each student a piece of paper and instruct them to fold it in half like a book.
2. On one side draw your home. On the other side draw a habitat for an animal of your choosing.
3. Draw or label the animal's basic needs, noting where they find food, water, air, shelter, and space.
4. Display art work around the room. Have students do a gallery walk and lead a discussion about habitats and basic needs.

HABITREK

Students will practice collecting data and making observations about their schoolyard habitat to learn that habitats exist in all shapes and sizes.

MATERIALS

Hand Lens

Spoons

Notebooks

Pencils



Review the basic needs of all living things; food, water, shelter, air, and space. Define habitat as a class and ask students if they think their schoolyard or backyard is a habitat, why or why not? Explain that wildlife includes even the smallest organisms and many animals and plants find the things they need to survive in places we may not even think of. Head out to the schoolyard and provide students with a list of items to search for or allow for free exploration.

- Flip rocks or logs and use hand lenses to observe areas and living things up close.
- Use spoons to dig in the dirt in search of life.
- Search for signs of living things, such as animal tracks, nests, holes in leaves, etc.
- Record findings in notebooks and conclude what animals and plants can and cannot live in this habitat.
- Discuss findings as a class and determine how the plants and animals they found are meeting their basic needs.

EXTENSION

1. Categorize and tally plants and animals that are found. Create a bar graph to show the results.
2. Analyze the results as a group and come up with conclusions about the data.
3. Create an original story or artwork based on the class findings.

POST-VISIT ACTIVITY GUIDE

The following optional post-visit activities and resources are designed to reinforce concepts that were addressed during the Ecosystem Explorations program. We would love to see your students' work! Please share with us by mail or email us at youtheducation@nebg.org.

HABITAT GRID

Students will work in groups to create a habitat drawing or painting using the data they collected during the Ecosystem Explorations field trip.

MATERIALS

Field Trip Notebook
Markers or Paints
Chart Paper



Split the class into small groups and explain that they will be working together to use their data and notes collected from their Ecosystem Explorations trip to create a habitat drawing that represents what they experienced.

1. Assign each group a habitat (pond, meadow, forest, or garden) and give each student their data collection notebooks, and each person a piece of chart paper.
2. Have each student document their data for their habitat on the chart paper. How many trees, shrubs, animals, etc.
3. Have them discuss their data charts as a group and come to a consensus about what they saw.
4. Ask each group to create one group data chart that best represents what they saw.
5. Provide art supplies to create a group drawing or painting to document the amount of trees, shrubs, plants, etc. from their data charts.
6. Hang up all habitat artwork and discuss the similarities and differences. How do all of the habitats together create an ecosystem?

HABITAT HAIKU

Students will use data collected during the Ecosystem Explorations field trip to write a poem that documents what they experienced.

Return data collection notebooks to each student and have students turn and talk to a friend about what they saw in each habitat. What were the most memorable things they saw or experienced?

Explain to students that they will be using the data they collected to write a poem, haiku, short story, or even comic strip about their experiences.

Challenge students to use at least two vocabulary words of your choosing in their writing.

MATERIALS

Field Trip Notebook
Pencil
Paper



HABITAT HAIKU

*Meadow, forest, pond
Life in an ecosystem
Plants, animals, me*

EDUCATOR RESOURCES

- *Project Wild* by the Council for Environmental Education
- *The Curious Naturalist* by John Mitchell & Massachusetts Audubon Society
- *The Big Book of Nature Activities* by Drew Monkman & Jacob Rodenburg.

STORY BOOKS

- *The Magic School Bus Hops Home: A Book About Animal Habitats* by Pat Relf & Nancy Stevenson
- *I See a Kookaburra!* by Steve Jenkins
- *Habitats Infographics* by Harriet Brundle
- *The Wondrous Workings of Planet Earth: Understanding Our World and its Ecosystems* by Rachel Ignatofsky