



SEASONS IN NATURE

EDUCATOR GUIDE

Thank you for registering for the Seasons in Nature field trip at New England Botanic Garden. 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 help 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 seasonal patterns and changes in weather. Students will use instruments to track, record, and predict weather patterns and how that impacts people, animals, and plants. 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 13 to 15 students to explore our gardens and trails. 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...

- Make field observations and use instruments to gather data about the weather.
- Define different weather patterns that tell us what season it is.
- Know three or more ways that plants and animals adapt to different seasons.

BACKGROUND

Our planet has four seasons: winter, spring, summer, and fall. These seasons are determined by weather patterns, temperature, and the amount of sunlight during the day. Humans use many weather tools to track these patterns so that we can adapt to the weather. Not only do humans change with weather and seasons, but animals and plants do too. Different seasons, especially winter calls for a change as animals hibernate, migrate, and adapt.

VOCABULARY

- **Season:** a time of year that has similar patterns in weather and daylight.
- **Weather:** the current conditions outside.
- **Climate:** the usual weather for a particular location.
- **Temperature:** a measurement of how hot or cold something is.
- **Habitat:** a place where plants or animals live and can find the things they need to survive.
- **Adaptation:** a characteristic or behavior that helps a plant or animal survive.
- **Hibernation:** the resting (dormant) state that some plants and animals enter during winter.
- **Migration:** the movement of animals from one region or habitat to another according to the seasons.
- **Observation:** something we notice with our 5 senses.

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

STANDARDS

KINDERGARTEN

- **K-LS1-1.** Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.
- **K-ESS2-1.** Use and share quantitative observations of local weather conditions to describe patterns over time.
- **K-ESS3-2.** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment.

FIRST GRADE

- **1-LS1-1.** Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant.
- **1-ESS1-2.** Analyze provided data to identify relationships among seasonal patterns of change, including relative sunrise and sunset time changes, seasonal temperature and rainfall or snowfall patterns, and seasonal changes to the environment.

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 Seasons in Nature program.

WEATHER REPORT

Students will identify different types of weather and share the daily weather using the poster and observations.

MATERIALS

Weather
coloring photos

Poster
Glue
Phone



Ask the class what types of weather they are familiar with. Print out pictures to color with many different types of weather. Give all the students one type of weather to color and write the name of the weather below.

Glue all the pictures to a poster board and print out some arrows and a thermometer. Explain to the class that we are all going to become meteorologists and we are going to use this weather board to present the weather of the day. Every morning assign one student or group of students to share the days weather. You could even add a map of the state and mark your town with a star.

When presenting the students can tape the arrows into position to tell the class about the weather and temperature, write the days high temperature on a post it note to stick on the board. Finish the report with what type of clothes they should wear.

Use your phone to record the students throughout the month and add in other news segments about what is happening at school to create a morning announcements show.

WINDOWSILL BEANS

Students will learn about the needs of plants and watch their own bean plant grow.

MATERIALS

Ziploc bags
Bean seeds

Tape
Sharpie
Paper towels



Review the basic needs of plants; water, nutrients, air, and sunlight. Discuss the difference between the needs of animals and plants. They are pretty similar right? They both need food, water, and air to survive. Plants are different than animals because instead of finding their food; they make their own food using air, water, and sunlight.

Explain that the class will be planting beans. Everyone's beans will have sunlight, air, and water. Save three extra beans to experiment with. Place one in the dark, don't water the second one, and seal the last one in a bag and press all the air out.

Bean Planting

- Give each student a Ziploc bag, paper towel, and 3 beans.
- Fold the paper towels and place in each bag.
- Place the beans on top of the paper towel.
- Walk around and spray or pour water into the bag to wet the paper towels.
- Write each child's name on the Ziploc bags and tape them to the window.

Check on the beans every morning or every few days, making sure to water them when the towels are dry. Track the growth in a science journal. After 2 weeks compare the beans that had all of their needs to the three bean that did not. Which beans grew better? Challenge: plant any beans that grew roots and shoots into a container of soil and see what happens next.

POST-VISIT ACTIVITY GUIDE

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

SEASONAL SUITCASE.

Students will pack a suitcase for a winter, spring, fall, or summer vacation in New England. They will describe why they packed the items based on the season and expected weather.

MATERIALS

Printed out Suitcase
Drawing Supplies



Review the seasons that you learned about during your guided field trip. What is the weather usually like for each season? Write the weather and other descriptions for each season on the board or poster for the class as a reference.

Explain that each student will be going on a trip during one of the seasons. They must prepare for their trip by packing a bag with clothes and accessories that fit the season and the weather. Assign each student a season and give them a piece of paper with the outline of a suitcase on it. Give them time to draw and write what they plan to pack inside their suitcase. If there is extra time, have students cut out their suitcase and decorate the outside by flipping the paper over. Have one student from each season present what they packed or discuss as a class what items they would pack for each season. For example:

- Spring - rain jacket & boots, long sleeves
- Summer - shorts, bathing suit, sunglasses
- Fall - sweater, jeans, jacket, scarf
- Winter - coat, hat, scarf, mittens, snow boots

AMAZING ADAPTATIONS

Students will learn about how animals and plants adapt to different seasons.

MATERIALS

Winter and
Spring cards



Review the weather of each season with your class. Ask the class to think about what season we see the least amount of animals and fewest amount of leaves. In winter it is so cold and snowy, there is less food and water for animals.

Ask the students how animals can survive the winter. Introduce the words: hibernation, migration, and adaptation.

1. Hibernation - when animals enter a deep sleep to wait out the cold months.
2. Migration - when animals move south to a warmer place to avoid the cold winter.
3. Adaptation - when animals or plants change their behavior and characteristics to survive the cold and snow of winter.

Share some animal examples with the class like bear, fox, and Canada goose. Explain and create movements for a bear hibernating through the winter, a fox adapting and catching food, and a Canada goose migrating south.

Assign each child or group one of the three animals and hold up a winter or spring card at the front of the class. When you hold the winter card, bears will snore, foxes will hunt in the snow, and geese will fly south. When you hold the spring card, bears will awake up, foxes keep hunting, and geese will fly north. Add in more animals and movements depending on your students' level.

STORY BOOKS

- *Over and Under the Snow* by Kate Messner
- *Bear Snores On* by Karma Wilson