Grade: 2
Topic: PrePreserve
Class title: Have to Have a Habitat

Class Overview: Students will understand the variety of habitats in an ecosystem, and identify habitats within a garden.

Learning Objectives:

- Define garden
- Define habitat
- Describe 3 types of habitats
- Have fun!

School Standards:

- ✓ 2-LS4-1 Make observations of plants and animals to compare the diversity of life within different habitats.

Agenda:

Background

- Let your students know that they will be part of a year-long program to learn about and help grow a teaching garden at the Springs Preserve. They'll be studying gardens throughout the year, and visiting the Springs Preserve twice to work with the garden. Ask the students what they know about gardens. Why are gardens important? Who has a garden at home?
- What is a habitat? Your students are probably already aware of what components animals need to live: food, water, shelter, space. The habitat is the region that makes up an animal's living space, and it contains all those components.
- Ask your students some questions. Are all habitats the same? Can a garden be a habitat? Make a list of all the creatures that would make their home in a garden. Would a gardener want these creatures? Why or why not? Challenge your students to think critically. Many animals, such as earthworms, aerate the soil and add nutrients which makes them beneficial. Animals such as the horned worm, which becomes a hummingbird moth, eat vegetables and are unwelcome by gardeners.

Activity

- Show your students some photos for travel advertisements. Be sure to include a variety of destinations. Examples might include a rainforest destination, a mountain destination, a beach destination, and a desert destination. Have each student choose which destination they have the

greatest desire to visit. Ask the students to share what appealed to them the most about that destination. Search to unravel the components of each habitat that appealed to the student. Have each student make a list of animals that might live in the habitat they selected.

- In their Springs Preserve Journal, create a travel poster that will encourage an animal to come live in their garden habitat. Think about what elements an animal would be looking for in a "vacation" to a garden.

Materials/logistics:

- Springs Preserve Journal
- Travel ads
- Markers and crayons

Grade: 2
Topic: Garden Science
Class title: Pollination Party

Class Overview: Students will understand how plants depend on animals and environmental factors to disperse seeds and pollinate plants.

Learning Objectives:

- Define pollination
- Visualize the impact of animals on seed dispersal through the creation of a model
- Categorize plants based on method of pollination
- Have fun!

School Standards:

- ✓ 2-LST-1 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

Agenda:

Background

- Pollination is simply the act of moving pollen from one plant to another. A plant needs to be pollinated to make its fruit and seeds. Some plants are self-pollinating, some plants depend on the wind to spread their pollen, but about ¾ of the plants people eat depend on animals and insects to pollinate their food.
- Have your students make a list of favorite foods, and trace each food back to the plant to see how pollination affects the students' day to day lives. For example, on pizza the tomato in the tomato sauce needed to be pollinated, as well as the wheat in the dough. In ice cream, the vanilla or the cocoa both need to be pollinated. It is believed that 1 out of every 3 bites of food depended on pollination.
- Different plants are pollinated by different animals and use different methods to attract those animals. Bees are most attracted to flowers that are blue or yellow, hummingbirds prefer flowers that are red or purple and tube-shaped for their long beaks, bats prefer flowers that are white, sweet scented, and open at night.

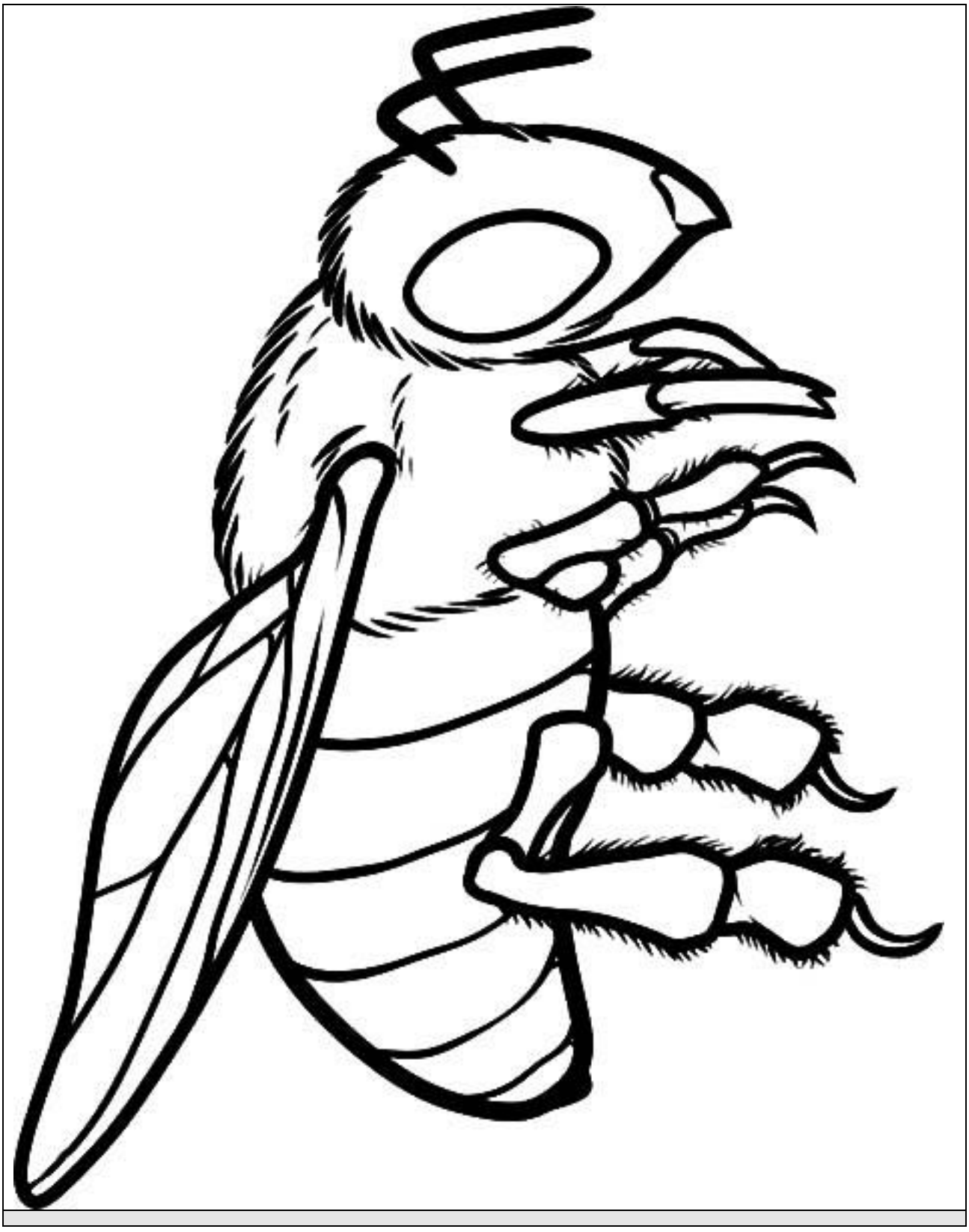
Activity

- Have each student use tissue paper to decorate a paper plate as a flower. They may also use scissors to make petals from their plate, but do not cut it too small.

- Place a paper cupcake liner in the center of each flower, and use a glue dot to secure the liner in place. Fill the cupcake liners with a variety of different powders. Powdered drink mixes of different colors work well for this, as do cupcake mix, brownie mix, or flour.
- Have your students decorate and cut out a paper bee or run off the example bee included in this lesson plan. Attach a popsicle stick as a handle, and a cotton ball to the bee's undersides. Allow your students as bees to land on each flower. As they travel from flower to flower, the cotton balls should pick up various shades of pollen and deposit residue from each color within the cupcake liners of the other flowers.
- Discuss the results of your pollination game with the students. Were there certain flowers or colors of flowers that each student was drawn to? What features might attract a real-life bee to a certain flower? Answers may include shapes, smells, colors or "bee guides" which are lines on a flower pointing to where the pollen is.
- Break your students into groups and provide them with pictures of flowers. Ask the students to categorize each flower based on what animal they think might pollinate it. Discuss your answers as a class.

Materials/logistics:

- Bee cut outs
- Paper plates
- Tissue paper
- Glue
- Cupcake liners
- Assorted colors of powder
- Cottonballs
- Assorted flower pictures



Grade: 2
Topic: STEM for Stems
Class title: Sunflower O'Clock

Class Overview: Students will understand plants maximize energy from the sun, and building functioning sundials.

Learning Objectives:

- Design a working sundial
- Use an analog clock to determine time
- Draw correlations between the movement of the sun and the passage of time for both humans and plants
- Have fun!

School Standards:

- ✓ CCSS.MATH.CONTENT.2.MD.C.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- ✓ CCSS.MATH.CONTENT.2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object

Agenda:

Background

- Review with the students the basic elements that plants need to grow; water, soil, sunlight, air. Do all plants need the same amount of sun?
- One plant that needs a particular amount of sun is a sunflower. Sunflowers are able to follow the rays of the sun throughout the day. They begin the morning facing east and gradually move as the sun rises so at noon they are facing straight up, and in the evening they are facing west. During the night, they move so that they are facing east by the time the sun rises.

Activity

- Begin by covering all the clocks in the classroom. Take the students to an outdoor area and have them work in teams to determine the time. Each team must be able to share their reasoning for their answer. Use your Springs Preserve Journal to gather evidence about the time of day. Do people have any internal cues, like the sunflower, that indicate what time of day it is? Answers may include signals such as being hungry at lunchtime, or sleepy at nighttime. This internal rhythm is called a

circadian clock. Ask the students to brainstorm any other plants or animals that might respond to a circadian clock in the garden.

- Provide each student with a paper plate, and have them fold the plate in half twice to determine the center point of the plate. Use a bamboo skewer to attach the plate by its center point into the ground.
- Have each student use a pencil to trace the shadow on the paper and write the time (to the nearest 5 minutes.) Revisit the paper plates throughout the day, each time tracing the different shadows. Measure the length of the shadows each time, as well as the length of the bamboo skewer. How do the shadows move throughout the day? When are they shortest or longest? Challenge the students to create a working clock/sundial based on their paper plate.

Extension

- Plant some sunflower seeds in your classroom. As the flowers bloom have the students monitor and measure which direction the flower faces at various points in the day. Can they use their sunflower to estimate what time it might be?

Materials/logistics:

- Paper plates
- Bamboo skewers
- Pencils
- Rulers
- Springs Preserve Journals

Grade: 2
Topic: PostPreserve
Class title: Grateful for Gardens

Class Overview: Students will write persuasively about garden benefits.

Learning Objectives:

- Gather evidence to support an argument
- Identify three reasons why gardens are beneficial
- Construct a persuasive paragraph
- Have fun!

School Standards:

- ✓ CCSS.ELA-LITERACY.CCRA.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience

Agenda:

Background

- Reflect with the students everything that the class has learned about gardens so far. Do the students think that having a garden is important? Brainstorm together some of the benefits of having a garden. Review your visits to the Springs Preserve. What were some of the students' favorite parts?

Activity

- Begin by using the worksheet in the Springs Preserve Journal to make a list of reasons why gardens are beneficial, and use those reasons to form a paragraph convincing someone to plant a garden.
- Review the parts of a thank-you letter with your students. Why do people write them? What information should a thank-you letter include? Answers should include date, address, salutations, the reason for the thank you letter, closing remarks, and a signature. Have each student craft a thank you letter to the Rogers Foundation or the Springs Preserve, explaining why gardens are important and what they learned during this experience.

Materials/logistics:

- Springs Preserve Journals