

Explore Natural Spaces

What can you observe in the natural environment near you? How can wild places be nurtured and protected?

Overview

Students use an exploration journal in a nearby natural place for a series of five mini-field trips. They have a different task on each trip, including mapping, listening, and observing and documenting plants and animals. Students consider how to protect or enhance the natural space they have explored.

For the complete activity with media resources, visit:

<http://education.nationalgeographic.org/activity/explore-natural-spaces/>

With Support From



Directions

1. Prepare for the mini-field trips.

Tell the class that they will have an opportunity to take a closer look at the natural environment around their school. Have a short class brainstorm about the natural aspects of the school grounds. Have students raise their hands if they have observed plants, animals, or other living things around their school. Give them time to describe what they have seen, and make a list on the board.

Explain to students that they will explore a nearby place each day for five days. With each exploration, they will focus on observing different things, and in different ways. Distribute the Exploration Journal pages to students and have them place the pages in order into a folder or loose-leaf binder. Preview the activity by looking through the notebook with students.

Next, ask students to create a drawing or write a word cloud on the title page showing what they expect to see in the natural space. Provide markers or colored pencils so they can personalize their journals.

Each day before going into the field, prepare students by letting them know what the focus of their observation will be. Have them bring the page or pages from their field notebook for that day, as well as the map they create on the first day. Make sure they take a moment to record the weather report data while outside and to respond to the “Think About It” questions. Debrief after each exploration by having students talk about what they observed and their reflections.

2. Take students outside for the Explorations.

Introduce students to the natural space they will explore. Define the boundaries. Remind students not to touch animals, poison ivy, or other potential hazards in your area.

Exploration #1: Map Your Space

Have students spread out in the natural space you have selected and sit down, more than an arm’s length apart. Have them spend two minutes observing the space without talking. They then write five descriptive words on their Exploration #1: Map Your Space page; prompt them with ideas. Also, have them fill in the weather report at the bottom of the page. You can look up the temperature with a smartphone.

Next, stand on the north side of the natural space and have students turn so they are facing you. Explain that they are now facing north, and ask them to mark an “N” for north on the map box on the page. Then have them mark south, east, and west in relation to north. Have them turn the page so that the “N” is in the same direction as the north where you are standing. Next, have them make a light mark in the map box to show where they currently are within the natural space.

Have them imagine they are a bird flying overhead and looking down. Ask: *Where would you be? Close to the north edge? In the middle?* Have students look to the north and find the most significant landmark within the natural space. Have them add this to their map, paying attention to where it is in relation to them and to the boundaries of the space. Then have them turn their bodies and their map to face the south and do the same thing. Repeat with east and west. Have them add more landmarks, paying attention to where they are in relation to the other items on the map. Have them mark the location of any trash cans or recycling bins within the space. After students respond to the “Think About It” section, discuss their ideas.

Exploration #2: Listen

Have students find a place within the natural space to sit, more than an arm’s length distance from each other. Have students close their eyes and listen for one minute, paying close attention to the sounds they are hearing. Then, on the Exploration #2: Listen page, have them make a sound map of what they heard using words, symbols, or drawings with labels—whatever they prefer. On the map, students should try to record where the sounds came from in relation to where they are. Next, have

them fill in the T-chart by separating the sounds they heard into natural or human-made sounds. Have students open the maps they made on day one and add an interesting sound they heard to the map. Finally, give them a few minutes to answer the Think About It questions.

Exploration #3: Plant Life

Before going outside, give students a few minutes to examine two similar leaves from different plants. Have them focus on and discuss the fragrance, waxy texture, number of points, thickness, and other characteristics.

Once outside, have students walk around the natural space and observe the plants that grow there. Have them use the chart on Exploration #3: Plant Life to record information about what they find. They can then count and record the number of different kinds, or species, of plants they see. Students should also sketch plants they cannot identify. Then have them open the map they drew on day one and add at least one interesting plant to the map. Finally, have them answer the Think About It questions and discuss.

Exploration #4: Vertebrates

Before this exploration, review with students the difference between vertebrates and invertebrates. Have them name some examples of each that might be found in the area.

Provide student pairs with binoculars, if possible. Have students walk around the natural space and observe any animals they see, such as birds, lizards, frogs, or squirrels. Have them record the names of these animals on the Exploration #4: Vertebrates page. They can also indicate evidence of animals, such as burrows, scat, feathers, tracks, or partly eaten nuts or pinecones. Have them open the map they drew on day one and record at least one animal they observed. Then have them answer the Think About It questions on the second page.

Exploration #5: Invertebrates

Divide students into pairs and distribute string circles, small shovels, a hand lens, and white paper plates to each pair. Have pairs spread out around the natural space and place their string circles on the ground to mark the area they will observe. Have students search for insects and other small creatures using any of the following methods that are appropriate to their location:

- Observation: Observe visible insects on the ground within the circle and in the air above the circle.
- Bush Shaking: Place a paper plate under a bush and shake the bush.
- Rock Peeking: Gently lift rocks, and look underneath.
- Leaf Litter: Pick up handfuls of leaf litter from the ground and place on a paper plate. Carefully look through the leaves for any insects or other animals.
- Digging: Dig a small hole about 3-6 inches deep (if allowed) and deposit the dirt onto a

paper plate. Sort through the dirt.

- Rotting Log: Find a rotting stick or small log on the ground and carefully break it apart to observe the insects living inside it.

Have students record what they find on Exploration #5: Invertebrates, sketching invertebrates they are not able to identify. Have them open the map from Exploration #1 and record the location of their circle and at least one insect or other small animal. Then, have them answer the Think About It questions on the second page.

Remind students to return any leaves, rocks, or parts of logs back to their original positions where they found them.

3. Have students reflect and communicate about their explorations.

Have students reflect on their explorations, using the final Think About Your Explorations questions. Then, have them share their responses with a partner. Ask students to share with the class some of the most interesting, exciting, unexpected, gross, or beautiful things they observed on their explorations. Discuss the space you explored. Some additional discussion questions to ask:

- *In what ways is it valuable to have a natural outdoor space to visit? What do you like best about natural spaces?*
- *Do you feel differently about the space now than you did on the first day? In what ways?*
- *Do you think there is a connection between how natural the place is, and how many different plants and animals you observed? Why or why not?*
- *What do you wonder about this place and the plants and animals that live in it?*
- *What can you personally do to enhance or protect this natural space? What could we do as a class?*

Have students work in small groups or together as a class to write a letter to a school administrator describing their explorations and sharing ideas for enhancing and protecting the natural space. Have students include a rationale for why it is important to protect the space and also how they would like to contribute. Invite the administrator to meet with the class to discuss this natural place and its value for students.

Tip

Before beginning this activity, preview the natural space you have selected for any hazards, such as hornet nests, poison ivy, etc. Remove (if possible and allowed) or mark hazards and caution students. Discuss your plans with the caretaker of the space and get permission for each activity.

Tip

For Exploration #1: Map Your Space, you can use a compass or a smartphone app to determine cardinal directions.

Tip

For Exploration #2: Listen, prepare students for silent listening by having them practice in the classroom. Play music and ask students to listen for a particular sound cue and raise their hands when they hear it. You can also model how to mark sounds on the sound map before going outside.

Tip

For Exploration #4: Vertebrates, remind students to walk slowly and quietly and to freeze if they see an animal. This will increase their chances of observing wildlife.

Tip

For Exploration #5: Invertebrates, students can compare a variety of micro-locations within the natural area. For example, students might find a larger insect population under rocks, dead tree branches, or under a bush than they would in the middle of a high-traffic area.

Tip

Provide students with a clipboard or cardboard to help them write more easily as they do field work outside.

Tip

To add a math component to Exploration #1, have students map the natural space to scale. They can use measuring tape, or pacing, to measure distances, with each meter or yard being a certain number of centimeters or inches that you determine in advance, based on the space. Have them use rulers for map measurements.

Informal Assessment

Check students' Exploration Journals for completion and understanding.

Extending the Learning

- Have students use field guides to identify plants, animals, and insects that are new to them.
- Classes can document the organisms they observe in [iNaturalist.org](https://www.inaturalist.org), and then compare their observations with what other people have seen in nearby places.
- Students can present their findings from their "Explorations" to other students, teachers, parents, or local park personnel, including ideas for how to improve outdoor spaces as natural habitats for plants and animals.
- Local, state, and national parks have numerous opportunities for practicing observation skills. Look for a "bioblitz" or other opportunity in your nearby parks.

Objectives

Subjects & Disciplines

Geography

- [Cartography](#)

Language Arts

- Writing (composition)

Science

- Biological and life sciences
- Ecology

Learning Objectives

Students will:

- Construct a map of a natural space
- Observe plants and animals in a natural space
- Build on their observations and reflections to develop ideas to protect a natural space

Teaching Approach

- Constructivist
- Learning-for-use

Teaching Methods

- Brainstorming
- Discussions
- Hands-on learning
- Writing

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Learning and Innovation Skills
 - Communication and Collaboration
- 21st Century Themes
 - Environmental Literacy
- Critical Thinking Skills
 - Creating
 - Understanding
- Geographic Skills
 - Acquiring Geographic Information
 - Organizing Geographic Information
- Science and Engineering Practices
 - Obtaining, evaluating, and communicating information
 - Planning and carrying out investigations

National Standards, Principles, and Practices

National Council for Social Studies Curriculum Standards

- Theme 3:

National Geography Standards

- **Standard 1:**

How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

- **Standard 4:**

The physical and human characteristics of places

Next Generation Science Standards

- **3-LS4 Biological Evolution: Unity and Diversity:**

3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well. Some less well, and some not at all.

Preparation

What You'll Need

Materials You Provide

- Field guides
- Binoculars (optional)
- Clipboard or cardboard
- Colored pencils or crayons (optional)
- Graph paper (1 sheet per person) (optional)
- Hand lenses (optional)
- Measuring tapes and rulers (1 per group) (optional)
- Pencils
- Shovel or trowel
- String, tied into a circle about the size of a Hula-hoop (1 per pair)
- White paper plates (1 per pair)

Physical Space

- Outdoor natural environment

Setup

Before beginning the activity, locate a natural space around the school that you and your students can access quickly and easily. You can mark boundaries for where students can go with cones, or explain using landmarks.

Grouping

- Large-group instruction

Resources Provided: Handouts & Worksheets

- [Explore Journal](#)

- [Before You Explore](#)
- [Map Your Space](#)
- [Listen](#)
- [Plant Life](#)
- [Vertebrates](#)
- [Invertebrates](#)
- [Think About Your Explorations](#)

Background & Vocabulary

Background Information

Exploring the natural world is not only valuable for children’s health and well-being, it can also have a positive impact on their academic success, especially in STEM. Studies have shown that children who have regular opportunities to play in a natural setting have better motor skills than their peers (Fjortoft, 2001), tend to have better long-distance vision (McBrian, Morgan, & Mutti, 2008), and have lower rates of obesity. Teachers also report greater attention and focus and better behavior in children after the children have spent time in a natural setting (Grahm et al., 1997, in Wells, 2000; Romina, Silver, & Stein, 2009). Unfortunately, children are now spending increasingly less time outside. There is a trend toward eliminating recess in elementary schools, and studies show that children ages 8 to 18 spend an average of 7.5 hours a week using electronic media.

Field trips and other outdoors experiences in schools can have an impact on this issue. A study at Milwaukee’s Urban Ecology Center shows that students who visited the center on a field trip were three times more likely to come back to visit the Center on their own. Brief, targeted outdoor explorations can provide a way to integrate outdoor experience with core curriculum.

Prior Knowledge

["None"]

Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
biodiversity	<i>noun</i>	all the different kinds of living organisms within a given area.
habitat	<i>noun</i>	environment where an organism lives throughout the year or for shorter periods of time.
invertebrate	<i>noun</i>	animal without a spine.
natural	<i>adjective</i>	occurring in nature.

Term	Part of Speech	Definition
species	<i>noun</i>	group of similar organisms that can reproduce with each other.
vertebrate	<i>noun</i>	organism with a backbone or spine.

For Further Exploration

Websites

- [eNature Field Guide](#)
- [Create EOL/iNaturalist Field Guides](#)
- [How to create Collections using EOL](#)



© 1996–2016 National Geographic Society. All rights reserved.