

Local Ecosystem Scavenger Hunt

GRADE LEVELS	4th-8th Grade, supports NGSS for 5th Grade
DURATION	Prep: 15 minutes; Activity: 90-minutes, split up in 3 sections
SETTING	Outdoor area (e.g. park, garden, field, etc.)

Overview

This outdoor activity encourages students to explore a park nature area to look for evidence of how different organisms, including humans, interact with and affect each other. Students will work to answer the question: **In what ways is our local ecosystem healthy or unhealthy?**

Objectives

By the end of this lesson students will...

- have a deeper connection to a local ecosystem
- be able to identify a variety of healthy and unhealthy ecosystem interactions
- construct explanations on how an area, and the people who are in it, supports or does not support organisms and ecosystems

Materials

Tip: You can modify the field journal and slide deck to include organisms and ecosystems your students are familiar with. These examples come from parks within the city of San Francisco.

Lesson Part 1:

- load slidedeck on a computer with a projector; versions: [English](#), [Spanish](#), [Chinese](#)

Lesson Part 2:

- print a field journal for each student; versions: [English](#), [Spanish](#), [Chinese](#)
- gather pencils (1 per student)
- clipboards, or something hard to write on (1 per student)
- optional*: other tools, e.g. magnifying glasses
- optional*: garbage bags and litter grabbers / gloves
- optional*: water, hand sanitizer, and snacks for students

Lesson Part 3:

- Print one copy of Interaction Cards on single-sided paper. Cut apart the cards and group by number so you can pass out one sub-set to each small group of students; versions: [English](#), [Spanish](#), [Chinese](#)

Educator Prep

- Identify an outdoor area that is accessible from your school (e.g. park, garden, field), and has interesting exploration spots (e.g. logs to flip over, diversity of organisms, etc.).
- Scout the area for safety (e.g. poison oak, boundaries to set, restrooms, etc.).
- Develop your group management strategy: consider recruiting extra adults to help out.
- Prior to the field trip let your students know to wear clothes for exploring outdoors.
- Make a schedule that includes travel time, plus the ecosystem exploration time (20-40 minutes) so that students can connect to an outdoor community space in a meaningful way.

Part 1: Introduce Ecosystem Interactions (20-minutes)

The purpose of this section is to help students connect with their own prior knowledge, and to introduce students to scientific vocabulary that is essential to the lesson.

1. Explain to students that you all will be exploring a nearby area where plants and wildlife live. Ask students questions such as:
 - What wild plants or animals have you noticed nearby?
 - When you think of nature, what comes to mind?
 - What nearby places have nature, or do you like to explore outdoors?
2. Warm-up Activity: Put on your imaginary science detective hats - we're going to try to figure out what is happening in a series of short videos. Display the slide deck.
 - Play a video, and ask questions such as... "what do you notice? What does this remind you of?" You could also give students sentence starters such as, "I see... It reminds me of... I wonder.. I think..."
 - Then show the next slide, naming what was going on in the video. Introduce the vocab words as they come up. These terms will show up in the field journal.
3. Class Discussion:
 - Define ecosystem: "an area where living and nonliving things interact to form a web of life."
 - Collect students' ideas: What might you look for to know if a place is healthy or unhealthy for wildlife?
4. Introduce the Ecosystem Exploration field trip:
 - As a class we are going to collect evidence and clues that will help us answer this question: "How is our local ecosystem healthy and unhealthy?"
 - Share a copy of the field journal with students, and see what questions they may have.
 - Review how to tally (one slash for each time it's observed).
 - Prep the students to go outside for the exploration field trip by sharing any important information with the class (e.g. safety, logistics, clothing, etc.).

Part 2: Ecosystem Exploration Field Trip (45-minutes)

The purpose of this section is for students to learn how to collect evidence that will answer the question: How is our ecosystem healthy or unhealthy?

1. Gather your materials: field journals, pencils, clipboards, etc.
2. If walking somewhere, consider engaging students in a warm-up observation game, such as I SPY, to see what they notice on the walk.
3. When you get to your field trip location gather the students and discuss questions:
 - When you look around, what pops out to you so far?
 - What features of the ecosystem can you already see?
 - What areas seem interesting to you?
 - Optional: if some students are familiar with the location, you might have them share some experiences.
4. Remind students that they will be exploring the area to look for the items and interactions in their field journals.
 - Consider demonstrating ways to observe organisms respectfully (e.g. safely turn over a small log or rock, inspect what's there, and return it to the way it was found).
5. Set up the exploration: describe the safety rules, the boundaries, and the time allotted for exploration.
 - If you have adults, students can be split up into small groups to explore different "zones."
 - Or, if you want the explorations to be more student-led, set easily visible boundaries so students can explore on their own.
6. Explore! Try to give at least 15-minutes for students to explore. Below are some tips:
 - Model being excited to observe an interaction from the activity sheet.
 - Remind students to explore widely and look for different things.
 - Sneak! Try to blend in or sit still for a few minutes to see what comes out.
 - Ask students to share what they've found with you or another student.
7. Come back together and reflect. Invite students' observations and interpretation, including differences in opinion. This can be done outdoors, or back in the classroom. Ask questions such as:
 - What was an interesting interaction that you saw?
 - What type of organism does that observation/ interaction support or not support?
 - Was anything missing from your scavenger hunt? Or, did you add anything?
 - In what ways do people help and hurt this ecosystem?
 - Based on what you saw and have heard from others - do you think this ecosystem is healthy, unhealthy, or somewhere in between?

Part 3: Card Game (20-minutes)

The purpose of this section is for students to apply their thinking about ecosystem interactions to a creative writing activity.

- 1) Revisit the focus question and previous content:
 - a) To determine in what ways is our local ecosystem healthy or unhealthy
 - b) Ask students what evidence they looked for to answer that question
 - c) Help them to name the interaction types: Eating, Sheltering, Pollinators, Decomposers

- 2) Give an overview of the card game:
 - a) In this game each student will play the role of one part of an ecosystem, living or nonliving (e.g., a rock, creek, sunlight, ladybug, human, bee, cigarette butt, road).

- 3) Arrange the class:
 - a) Make sure students have their completed field journals and pencils.
 - b) Split students into small groups.
 - c) Distribute one subset of game cards to each group.

- 4) Role Play to reinforce the concept of interactions within an ecosystem.
 - a) Have each student take a card randomly from the pile.
 - b) The students will BE whatever part of the ecosystem they pick.
 - c) Give students a minute to think about how they might interact in an ecosystem.
 - d) Then have the students reveal what cards they selected to the rest of their group.
 - e) The group's goal is to come up with one or more webs of connected interactions.
 - f) If there are leftover cards, ask the students to discuss how those might interact within the ecosystem.

- 5) Comic Strip Story
 - a) On the back of their field journal, have students draw or write about the web of interactions they could imagine with the cards that their group discussed.
 - b) [See examples here](#)

- 6) Groups share their ecosystem and the interactions they created and discuss if the ecosystem is healthy or unhealthy.

- 7) Closing conversation:
 - a) What are your new ideas now about the focus question: How is our local ecosystem healthy or unhealthy?
 - b) What are some ideas of how we might make the ecosystem healthier?

Optional Extension Activities

Studies show that when teachers explicitly connect field trip experiences to classroom learning and real life settings students will better retain information and see the relevance of science in their everyday lives. You can extend the learning from this field trip in the following ways:

- Repeat the activity in a different location to extend the learning by having students compare and contrast the ways in which they think an ecosystem is healthy or unhealthy.
- Find historical photos of your location, and have students analyze them for clues about how an ecosystem's health has changed over time.
- Talk with someone working on a local conservation or parks project to see how they think about ecosystems and humans in their work.
- If your school uses the Amplify Science Curriculum, connect this to your unit on [Rainforest Ecosystems & Restoration](#) to build off of the idea that *"Human activities can have a negative impact on ecosystems; different communities are working to minimize that impact."*
- If your local ecosystem is impacted negatively by humans, consider having students [Create a Campaign](#) to advocate for change.

Scientific Terms for Students:

- **Decomposer:** an organism that breaks down dead matter.
- **Ecosystem:** area where the interaction of living and nonliving things form a web of life.
- **Interaction:** how different organisms affect one another.
- **Invasive species:** an organism that causes harm in an ecosystem where it is not native.
- **Organism:** A living thing, such as a plant or animal or fungus.
- **Observe:** to use senses, such as sight, hearing, and touch to gather information.
- **Pollinator:** an organism that helps carry pollen from flower to flower. The movement of pollen must occur for a plant to produce fruits, seeds, and young plants.

Background Information & Resources for Educators

What comes to mind when you hear the word “ecosystem?” We’re willing to guess that an expansive, natureful area such as a forest or lake are high on the list. That makes sense because many curricula teach students about different types of ecosystems like rainforests.

On a base level ecosystems are areas where living and nonliving things interact to form a web of life that is relatively self-sustaining. Within an ecosystem, there are different roles that organisms play that help an ecosystem function. Those roles include: pollinator, decomposer, producer, predator, seed disperser, erosion controller and more. Within each of these ecosystems there are organisms that have adaptations that help them get their needs met and fulfill some of the important ecosystem roles and functions. But not all organisms can survive in a given ecosystem. Some are better equipped than others to survive. That’s why examining different ecosystems can be so intriguing - how do animals survive in a desert ecosystem with so little water? What makes them special?

This activity seeks to create a space to identify interesting questions about ecosystems in areas that are relevant to students, and include everyday spaces that aren’t so remote: gardens, city parks, fields, etc. Studies show that students do not often see themselves as part of nature. Or, if they do, it is often for resource extraction like mining or deforestation. Both of these lenses are only part of a larger story on our planet. The fact is, every ecosystem on our planet is affected by humans. We are a part of all of them. And, even the small nature areas have the capacity to support organisms. Humans, including children, can positively affect these nature areas. For example, check out this story about the “smallest park in the world”: [Mills End Park in Portland, Oregon](#).

Connections to Next Generation Science Standards

This activity is designed to support the Next Generation Science Standards.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Analyzing and Interpreting Data Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions.</p> <p>Constructing Explanations and Designing Solutions Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.</p>	<p><u>LS2.A: Interdependent Relationships in Ecosystems</u></p> <p>Organisms can survive only in environments in which their particular needs are met.</p> <p>A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life.</p> <p>Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants.</p>	<p>Patterns Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.</p>