

CURIOSITY AT HOME

ECOSYSTEM SURVEYS



An ecosystem includes all the living and non-living things in a geographic community. Practice observing an ecosystem near you at a park, schoolyard, or in your own backyard by conducting a survey of a small study area. What might that sample teach us about the ecosystem as a whole?



MATERIALS

- approximately 3 m (10 ft.) of rope (substitute: hula hoop, wire, string, or square frame)
- clipboard or other hard writing surface
- science notebook or paper
- something to write with

PROCEDURE

- Find an area in nature that interests you and lay out your rope in a circle. This circle defines the small area you will study, called a quadrat.
- Make careful observations of what you find in the quadrat using some of the following options, or your own way of observing:
 - ◇ Journal about what you see, hear, smell or touch in the quadrat.
 - ◇ Make a table listing each type of plant and animal you find in the quadrat and tally how many of each you find in the study area.
 - ◇ Make a drawing of what you find in the quadrat. Use the “ABCDs” of scientific drawing when you make your sketches: Accurate, Big, Clearly labeled, and Detailed.
- Do you think there are any clues in your quadrat observations that might tell you something about the ecosystem as a whole? How many more quadrats would you want to study to get a better idea of what the whole ecosystem is like?



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EXPLORE MORE

Biodiversity means all the different kinds of living things in an area. One way to measure biodiversity is by counting how many types of living things are in an area. How many different kinds of plants did you find in the quadrat? How about different kinds of animals?

- Print out or copy the chart below and color in all the bars up to the number of types of living things you found.
- Remember, with this method we are measuring the types of living things, not the number of living things. So, if you found five dandelions, an ivy plant and ten clovers in the quadrat, that would be three types of plants.
- Try using an app such as Seek or an identification booklet such as the Audubon Field Guide to help you identify and tell apart different plants and animals in the quadrat.

10			
9			
8			
7			
6			
5			
4			
3			
2			
1			
	Types of Plants	Types of Animals	Types of Fungi



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WHAT'S HAPPENING?

It can be difficult to get detailed information about a large area like an entire ecosystem all at once. A survey is a tool many types of scientists use to collect information from a smaller sample of the whole study area, then use that information to make a good estimate, or guess, about what the larger area is like. Scientists who study ecosystems, called ecologists, can use quadrats to survey a region and learn more about the number, distribution and relationships of the organisms that live there. To get a good sample of the ecosystem, ecologists collect data from many different quadrats spread all over the area of study. To get a better sample of your chosen ecosystem, try collecting data on three or more quadrat areas. What similarities and differences did you find?



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6–8 GRADE EXPLORATION

- To get a more accurate and representative sample, scientists have to carefully consider how to choose the locations for their quadrat. How did you choose a spot? Was it an area that was easiest to get to? A spot that looked interesting? How do you think your method for choosing a spot might influence what you found in the quadrat?
- Practice using one of the suggested methods below for choosing quadrat locations, or come up with your own method to get a more representative sample:
 - ◇ Use a random number generator to give you a number between one and ten. Take that many steps forward and place your quadrat there.
 - ◇ Use a measuring device such as a yard stick and place each quadrat the same distance apart from each other.
 - ◇ Alternate placing the quadrat to your left, then to your right, repeatedly alternating left and right for each quadrat placement.
- Changes to a natural area can cause the biodiversity to increase or decrease. Find two locations for a quadrat, one with more human disturbance (for example next to a sidewalk or in your yard) and one with less human disturbance (perhaps in a park away from roads and trails). Measure the biodiversity for each quadrat location, as described above.
- In which location did you find higher biodiversity, or more different types of living things? Why might that be?
- What would you change or add to this experiment to make it more reliable?



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