Printable worksheet

Schoolyard biodiversity survey: quadrats and counts

A printable schoolyard biodiversity survey: compare habitats using 1 m quadrats, count plants and animals, record results and suggest ways to help wildlife.

Ages	Time needed	Materials
7–14	45–60 minutes outdoors, plus 20 minutes for analysis	String (about 4.5 m per quadrat) and 4 tent pegs or sticks, or a ready-made 1 m quadrat, Tape measure, Magnifying glasses, Clipboards and pencils, Simple identification charts for common local plants and minibeasts, Small clear pots with lids for brief close-up viewing (optional), Camera or tablet (optional), Gloves

Learning goals

By the end of this survey you will be able to:

- Use a quadrat to sample part of a habitat fairly.
- Count and group the living things you find.
- Compare biodiversity between two or more habitats.
- Suggest a change that could help wildlife in your school grounds, and explain why.

Your question

Which part of our school grounds has the most different kinds of living things?

The habitats we will compare: 1. _____ 2. _____ 3. _____

My prediction: _____

Step-by-step instructions

1. **Make a quadrat.** Measure a 1 m × 1 m square using four pegs and string, or use a ready-made quadrat.
2. **Choose habitats.** With your teacher, choose two or three different areas, such as mown grass, long grass, a flowerbed, under a hedge or a paved area with cracks.
3. **Place the quadrat.** In each habitat, close your eyes and toss a beanbag or pick a spot without looking. Place the quadrat there. This makes the sample fair.
4. **Look closely.** Kneel down and look inside the square for 10 minutes. Use a magnifying glass.
5. **Count plants.** Count how many *different* kinds of plant you see. You do not need names: "small round leaves" or "tall grass with fluffy top" is fine.
6. **Count animals.** Count the minibeasts you see (insects, spiders, worms, snails, woodlice). Note what type they are.
7. **Estimate bare ground.** Estimate roughly what fraction of the square is bare soil or paving: none, a quarter, a half, three-quarters or all.
8. **Repeat.** If time allows, do a second quadrat in each habitat and work out the average.
9. **Leave no trace.** Put back anything you moved, exactly as you found it.

Recording table

Date: _____ Weather: _____ Time: _____

Habitat	Quadrat	Number of plant types	Number of animals seen	Types of animals	Bare ground (none / ¼ / ½ / ¾ / all)	Notes
	1					
	2					
	1					
	2					
	1					
	2					

Averages:

Habitat	Average plant types	Average animals seen

Draw a bar chart of your results on the back of this sheet.

Reflection questions

1. Which habitat had the most different kinds of living things? Was your prediction right?
2. Which habitat had the fewest? Why do you think that is?
3. How did bare ground affect what you found?
4. Would you get the same results on a different day, time or season? Why or why not?
5. Suggest one change to the school grounds that could increase biodiversity. How would you test whether it worked?

Safety notes

- Stay within the boundaries your teacher sets and keep an adult in sight.
- Check for allergies to plants, pollen or insect stings before going outside. Bring any prescribed medication.
- Do not touch fungi, berries, unknown plants or animal droppings. Never put anything in your mouth.
- Watch bees and wasps without touching or swatting them.
- Handle animals as little as possible. If you look at one in a pot, keep it in shade and return it to the same spot within a few minutes.
- Wear gloves if you need to move leaves or stones, and lift them away from you.
- In hot weather, work in shade or early in the day, wear a hat and drink water.
- Wash your hands with soap after the survey.

Background for adults

Quadrat sampling lets children compare habitats fairly by looking at the same-sized area in each. The aim is to compare variety, not to identify everything to species level. Grouping by visible features is a valid scientific skill.

Biodiversity is under pressure globally. The 2019 IPBES global assessment reported that around one million animal and plant species are threatened with extinction, and ranked changes in land and sea use as the leading direct driver (IPBES media release). School grounds are a local example of land use, so surveys can lead naturally to a discussion about how land is managed.

A 2020 systematic review of 105 environmental education studies found that programmes achieving direct conservation results tended to focus on local places, include hands-on action and plan measurement from the start (Ardoin, Bowers and Gaillard, 2020). Repeating this survey each season, and after any habitat improvement, follows that model. For more activity ideas, see the related article on outdoor learning and biodiversity.