



BIODIVERSITY & QUADRATS

Scientists often collect data “in the field” which could mean underwater, in a forest, in a cave, on a reef, or even the moon. Two essential methods to gather ecological information in a standardized way are: Transect Sampling (using a single line) and Quadrat Sampling (counted within a grid or fixed area). These sampling methods provide more accurate data than random sampling or simply guessing, but they take less time than counting every specimen in a certain area. Sampling helps us estimate & compare different parts of an ecosystem.

MATERIAL

1 hula hoop and data sheet per group of students.

THE ACTIVITY

1. Throw down a hula hoop. This is the area in which you will be making your observations. You can send different groups to different areas to get varied results (pathway, field, forest).
2. Students will find out how many different types of **plants** are growing in AND ABOVE the plot. Trees growing above should be included because they are using the sunlight above the plot, the water underneath it, and are contributing dead leaves to the ground. To determine how many different plants there are look at the shape of the leaves, any fruit or seeds on the plant. If you think they are different, count them as such.
3. Students will identify and sketch the three most common plants found on the data sheet.
4. **Invertebrates:** Students will first pick through the plants in their circle. They will record the number of invertebrates found, and fill in the checklist to distinguish insects, spiders etc. Three critters should be sketched on the data sheet.
5. **Vertebrates:** Students will look inside, and within 3 strides of the circle for animal tracks, deer/rabbit browse on plants (deer ragged, rabbit clipped), scat from mice, deer, rabbit, or goose, any signs of carnivore activity (owl pellets, fur, etc), squirrel dreys, woodpecker





holes, bird nests. They can check off anything on their list. Advise students to listen for sounds: squirrels, birdsong, to help them complete the checklist on their data sheet.

6. Head back to the classroom to share and discuss your findings.

Specific Questions:

- Which type of habitat had a greater biodiversity of species?
- Is a quadrat a good way to estimate a whole population, why or why not? Is there any scientific error?
- How many different species of plants did the class total?
- How many different species of animals did the class total?

If you are interested in sharing your project's results, or would like more ideas on teaching outside at your school, please contact FortWhyte Alive by email at education@fortwhyte.org.





Eco Inventory Sheet

Your Names: _____

ANIMALS

A. **Invertebrates** - Animals without backbones such as insects, spiders, and worms.

We found _____ (#) invertebrates in our plot.

We found a...

- Insect (6 legs or less)
- Centipede (more than 20 legs, 1 pair per body segment)
- Spider (8 legs)
- Millipede (more than 30 legs, 2 pairs per body segment)
- Sowbug (14 legs)
- Worm (no legs)

Sketch and name three different invertebrates you found.

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B. **Vertebrates** – Animals with backbones, such as amphibians, reptiles, birds, and mammals.

We found the following signs of vertebrates in our plot:

- Animal tracks. What kind of animal made them? _____(Animal Tracks Key)
- Scat (poop).
- Bitten off twigs. Was it a deer (ragged edge) or a rabbit (clipped edge) (circle one).
- Fur
- Feathers
- Birds nests, woodpecker holes and/or squirrel dreys (clumps of grass or leaves in the trees)
- Birds (sight or sound). _____ Birds were found.





Other vertebrates (amphibians, reptiles, mammals). What did you see?

PLANTS

_____ % of our plots was covered in plant vegetation.

We found _____ different kinds of plants in our plot.

Sketch and name three different plants you found. Include leaves, and berries or seeds (if present):

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_____ is the name of the plant that covers most of our plot.

TIP:*Look up!* Your plot might be covered by tree branches above you!

