POPPY SCHOLARS · BIOLOGY: THE LIVING EARTH

Home lab 11 · Unit 11 · about 60 minutes

Which of two habitats near you has more biodiversity, and how do you measure it?

Name _____ Date _____

MATERIALS

You supply everything. Tick each item as you gather it.

- ☐ A trowel or spoon, and a bucket or container
- ☐ A white sheet, tray or pillowcase to spread soil on
- ☐ A magnifying glass
- ☐ Two habitats you have permission to sample, such as a mown lawn and a shady garden bed or leaf litter under a tree
- ☐ Gloves, paper, pencil and a calculator
- ☐ A field guide or phone app to name the groups (naming to group level, such as beetle or spider, is enough)

SAFETY

Wear gloves and wash your hands afterward. Look for and avoid wasps, ants that sting, and broken glass. Do not touch spiders or centipedes with bare hands, and handle every animal gently. Do not sample any protected or fenced area. Return the animals and soil to where you found them when you finish.

PROCEDURE

1. At each site, scoop 1 liter of the top layer (leaf litter and the first 3 cm of soil) from one spot, the same volume at each site.
2. Spread the sample on the white sheet in good light. Search for 15 minutes, using the magnifier and gently moving the material.
3. Sort every animal you find into groups (ants, beetles, spiders, earthworms, pill bugs, centipedes, snails, and so on). Count each group. Do not count plants or dead animals.
4. Return everything to its habitat.
5. For each site compute the total N, the proportion of each group (n divided by N), and Simpson's index of diversity: 1 minus the sum of the squares of the proportions.
6. Compare the two sites.

RECORD YOUR DATA

Group	Site A count	Site B count
Total (N)		
Simpson's index		

LAB REPORT

Write a report that states which site you expect to be more diverse and why, gives your counts, shows the Simpson's index calculation for at least one site, and explains what the number measures and what it leaves out. Say how your sampling could mislead you about the true diversity of the habitats.

Report the numbers you actually got, even when they disagree with the lesson. Write on the lines, or type your report on the website and send it to a teacher there.

Question and hypothesis *State the question in your own words, what you expect to happen, and why you expect it.*

Method *What you changed, what you measured, what you kept the same, and how many trials you ran.*

Observations *Describe what you saw, including anything unexpected. Your data tables are added to the report automatically.*

Calculations *Show each calculation step by step, with units.*

Claim and reasoning *Answer the question using your numbers, then explain why, using the biology from the unit.*

Limits and next step *What could have affected your results, and one change you would make next time.*