Exploring biodiversity using fieldwork skills

FSC

Aim : To investigate the relationship between land use on farms and biodiversity.

Learning Objectives

- Identify the different levels of diversity
- Describe differences in species richness, evenness, and diversity
- Set up an investigation to compare species richness in different conditions
- Add your own data to a live lesson data set using Survey 123
- Challenge pre-conceived ideas about the effects of farming on biodiversity

Biodiversity is described as the variety and variability of life on earth.
Understanding biodiversity and the importance of promoting and protecting it is a vital skill for biologists of all ages. Biodiversity and its loss are a global concern, as less diverse ecosystems are less able to cope with change. Today, our aim is to investigate its importance and components.

Levels of Biodiversity		

Species diversity has two components:

Species richness – _____
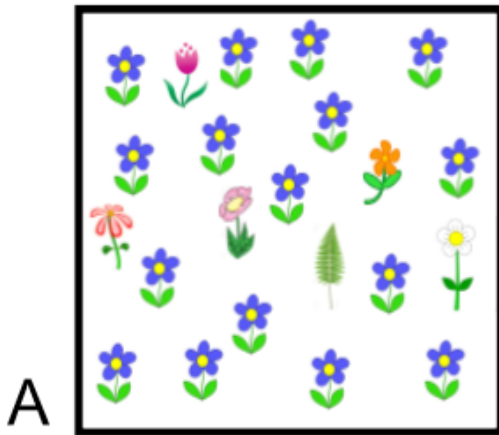
_____

Species evenness - _____

_____

Where is the species richness highest?   A ☐   B ☐

Where are the flowers most evenly distributed?   A ☐   B ☐

A

B

Species diversity considers both richness and evenness to give an overall view of the variety within a habitat or ecosystem.

Task 2: Comparing species richness in different areas.

Species diversity can be calculated using a variety of formulae - as we want to be able to share and compare our data, we are going to set up our investigation to focus on species richness. This will give us a good idea of diversity levels in a short space of time.

Investigation aim: To use pitfall traps to investigate invertebrate species richness in contrasting land use areas.

Variables:

Independent	Dependent	Controls

Investigation set up:

Draw a diagram of the pitfall trap and its components below. Note down why the method is a good way to measure species richness, and what makes it a technique we can use to fairly compare results. Also consider potential ethical issues with the methodology.

Justification of the method:

Ethical considerations with the method:

Next steps:
- We are going to leave our traps set over one night, in an area with higher human influence (such as a mowed playing field) and an area with lower human influence (such as an unmowed, tree-covered area)
- We will check our pitfall traps in the morning and use the ID guide to identify them as much as possible
- We will then count and record the species richness in the table below for both areas

Predictions / Hypothesis:

There will be a greater species richness (more species found) in the _____.

Results:
We want you to be involved in our investigation! Whilst we set up our study ready to count and collate our results, we want you to do the same. Over night tonight we want you to set up your own pitfall traps in your school grounds or garden. Collate your results below and add the total to the Survey 123 link: https://arcg.is/1Omby9

Site 1 (higher human influence) habitat:		
Species	**Number found**	**Notes:**
Ladybird		
Rove Beetle		
Ground Beetle		
Woodlouse		
Pill Millipede		
Spider (tiny, e.g. money spider)		
Spider (larger, e.g. wolf spider)		
Mite		
Harvestmen		
Centipede		
Millipede		
Earwig		
Springtail		
Ant		
Snail		
Slug		
Fly		
Caterpillar		
Other		
Total Species richness =		

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Site 1 (lower human influence) habitat:		
Species	**Number found**	**Notes:**
Ladybird		
Rove Beetle		
Ground Beetle		
Woodlouse		
Pill Woodlouse		
Spider (tiny, e.g. money spider)		
Spider (larger, e.g. wolf spider)		
Mite		
Harvestmen		
Centipede		
Millipede		
Earwig		
Springtail		
Ant		
Snail		
Slug		
Fly		
Caterpillar		
Other		
Total Species richness =		

Conclusion:

Did the evidence support your hypothesis or not? Why do you think you got the results that you did?

_____

_____

_____

_____