



Grade 7 Science

Unit 2: Ecosystems



Ecological Sampling

What will we do?

We will perform this activity in and around Tuck creek, in groups of approximately five students. When we get to the creek I will explain boundaries and safety instructions, you will then complete the following:

1. Use a 4 m length of rope and 4 tent pegs to mark off a 1 m² area near the creek.
 - Insert the pegs into the pre-tied loops in the ropes.
 - Insert one peg into the ground, using the mallet if it is difficult.
 - Stretch the rope out until tight and put the next peg into the ground.
 - Repeat until you have all four pegs in the ground, making a square.
2. Count the number of each type of organism, plant and animal, found in the area you have created.
 - Count all organisms found on the surface of the square.
 - Using a garden spade, gently turn over the soil and count any organisms found under the surface of the square
 - Do not dig more than 10 cm into the soil.



Ecological Sampling

What will we do?












3. Record all data in a chart.
 - Include columns for the name of the organism, the number of that type of organism, a description of the organism, and an image of the organism (see example)
4. Document, on a separate page, observations of other organisms you see around the creek.
5. Document additional observations (other things you notice with your senses) about the creek area.
6. After digging in one area for a while choose a new area.
 - You are not to move until instructed.

Note: There will be some organism for which you will not know the name. Simply draw them/take a picture of them, record observations, and then later you may use the internet to see if you can determine what type of organism it is.



Ecological Sampling

What Should I Bring?

-  Clothes that can get dirty
-  Extra shoes
-  Gloves
-  Jacket
-  Cardboard to kneel on
-  Clipboard
-  Small shovel (garden spade)
-  Pencils
-  Paper
-  Your chart (make ahead of time)
-  May bring a camera/phone AT YOUR OWN RISK

Insert weather forecast here.

Ecological Sampling

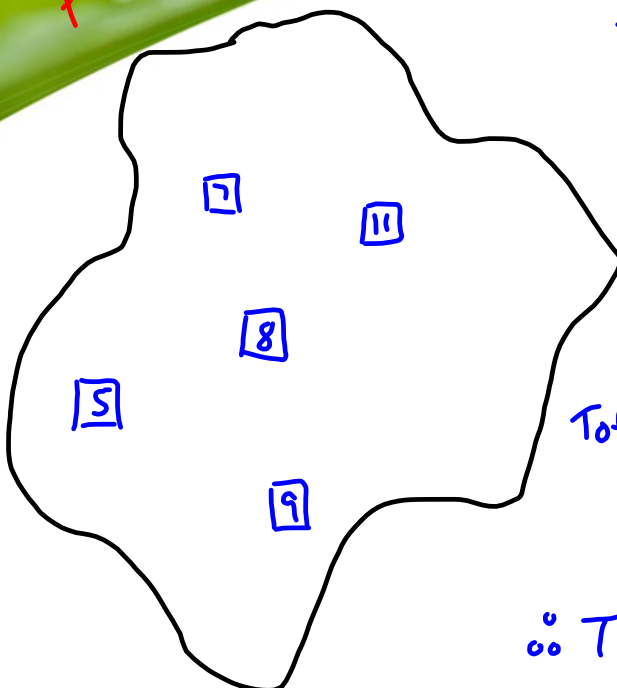
Why would a scientist do this?

An ecological sampling is a technique scientists use to determine a rough estimate of how many of a certain species live in a certain area. If you find out how many of that species are in a small part of the area, and repeat that process multiple times, you can calculate an average, and then apply that to the total area of your study.

Let's say we are studying pandas, and we would like to know how many are in a certain jungle. It would be impossible to count throughout the whole jungle, so you would need to take a sample.



How many pandas?



Example Calculations

$$\begin{aligned}\text{Total area} &= 200 \text{ km}^2 \\ \square &= 1 \text{ km}^2\end{aligned}$$

$$\begin{aligned}\# \text{ of pandas} &= 5 + 7 + 8 + 9 + 11 \\ &= 40\end{aligned}$$

$$\begin{aligned}40 \text{ pandas} / 5 \text{ km}^2 \\ = 8 \text{ pandas} / \text{km}^2\end{aligned}$$




$$\begin{aligned}\text{Total pandas} &= \text{pandas} / \text{km}^2 \times \text{area} \\ &= 8 \text{ pandas} / \text{km}^2 \times 200 \text{ km}^2 \\ &= 1600 \text{ pandas}\end{aligned}$$

∴ There are about 1600 pandas.

**obviously made up data.*

Ecological Sampling

Example Chart

Organism	Number	Details	Image
Spider		black, small, dots on it, moves quickly	
Bee		looked fuzzy, made a buzzing noise, black and yellow with white wings	
Dandelion	 	white, no yellow text, felt soft, very light	

This chart is very basic. You will be at the creek for two periods, so you should have many more observations. The best advice I can give you, to help with your upcoming lab report, is to document everything, sights, smells, even the feeling of the soil... everything. The more observations you have, the easier it will be later.

Ecological Sampling

Pass your safety test.

Come prepared for dirt, water, and cold.

Take lots of observations.

Bring a mug...

...there may just be a surprise afterwards!



Ecological Sampling

