



Biodiversity Counting



In order to protect and preserve our environment around us, we need to know how healthy it is and what is in it. Biodiversity is a great way to test this! Knowing how biodiverse an ecosystem allows us to see how many species are present, which species are present and if they're meant to be there or not. Knowing that helps us identify problems in an ecosystem and do something to stop them.

The easiest way to find how biodiverse an ecosystem is, is to calculate the biodiversity index. Most of the time, we want high levels of biodiversity in an ecosystem as long as most of the species there are native. Calculating the index requires lots of looking and listening and some simple division.

Instruction

1. Download the [tally sheet](#) from the website and grab a pen, it's important to learn and use the Aboriginal names for species because the traditional custodians of the environment are an important part of why we have beautiful and diverse landscapes to explore.
2. Pick an ecosystem to test! It can be your backyard, the school oval, a bushwalk nearby or any place that you can easily see and hear wildlife. Remember, this is also a great sensory exercise to get your brain running so pick somewhere that you're interested in.

3. Start by stopping and closing your eyes – what can you hear? Maybe birds calling, or bee's buzzing by. Fill in your sheet with what you can hear. Remember to do this a few times on your walk.

4. Look around, what do you see? Can you see grass? Trees? Ants? Birds? Dogs? Fill in your sheet with what you can see. Enjoy your time outside having a walk around!

HOT TIP: if you can't identify something, take a photo or note down what it looks/sounds like! You should be able to identify it online or use an ID app like iNaturalist.

6. Come back home or to your classroom and grab a calculator (it's easy, I promise). To calculate the biodiversity index, we need to divide the species evenness by species richness. Species richness is how many different species you saw, and evenness is how many individuals of those species you saw. For example, if you saw 10 different species and 88 individuals – then your biodiversity index would be $10 \div 88 = 0.11$.

7. This should give you a number between 0 and 1. Using this index, numbers closer to 0 indicate a low level of biodiversity while numbers closer to 1 indicate a high level of biodiversity. For the example above, 0.11 is very low so that ecosystem needs some work!

8. Have a think about the value, it is not static. How many species were native and how many were invasive? Were you looking at an area like an oval where there was purposefully not much wildlife there? It is important to consider context when working in environmental science.

9. Now you know how biodiverse that area is! Can you think of ways to manage that ecosystem?

Extra experiment

If you want to keep a memento of your fieldwork and what you've seen and recorded. There are two ways to preserve the plant specimens that you collected.

Hanging

You will need: some twine or string, patience and somewhere to hang them in a low-light, dry place. This one is easy. Tie the branch or twigs upside down (i.e. by the stem) from somewhere high up and leave for ~1 month. By then, they'll be dry and you can use them to identify what they are or as decorations! They will stay like that once they are dry for many years.

Pressing

You will need: newspaper and two heavy, flat objects (like books or bricks), a place to keep them dry and where they won't be disturbed and some more patience.

1. Unfold the newspaper on top of one of your flat objects (let's say a big book) and place your specimens down on the paper with enough room for them to be pressed flat.

2. Fold the newspaper across them (i.e. there should be one layer of newspaper on the bottom and one on top of the specimen)

3. Place the other book on top and press down gently. For this to work well, the books must be heavy enough to keep the specimens flat and under pressure without you pressing down on it after.

4. Leave for ~1 month. Gently pull the top book off and peel the top layer of newspaper back. You should have some pressed and dried specimens! If they still look a bit fresh, leave them for another week or so until they are dry.

For both these methods, when they are fully dry there will be no green left in the stems and the leaves and flowers will be a bit fragile so be careful.

Now you have a specimen to identify for a biodiversity index, a decoration and a memento of your dive into environmental science!