

HOW DO WE COUNT BIODIVERSITY?

OBJECTIVES	• Introduce the concept of biodiversity. • Understand the network of relationships that exists within an environment. • Activate knowledge through hands-on practice.
THEME	<i>Biodiversity and its levels</i>
WHERE?	School garden, courtyard, parks, meadows
HOW LONG?	3 hours
TARGET	<i>11-13 years</i>
WHAT DO I NEED?	• A glass jar or a plastic bottle • Flexible PVC tubes, about 5-6 mm in diameter • Tape; if you can find Parafilm M sealing film, it works better • Screwdriver or any metal point • Sterile gauze • Notebook for drawings and notes • Pen, pencil and colouring pencils

HOW TO DO IT

For lower secondary school students, you can also add an activity linked to insect observation, to complete the work with considerations concerning the animal kingdom as well.

Take the lid of a jar and make 2 holes with the tip of a screwdriver. Alternatively, if you have a plastic bottle with a lid that is too small for two holes, you can make the holes on opposite sides of the bottle, one on the cap side and one on the bottom. The holes must be the same size as the diameter of the plastic tubes. Pass one tube through one hole and a slightly longer tube through the other. Seal the space between the tubes and the hole in the lid well with tape or sealing film, so that no air can pass through. The shorter tube will be used as a straw, and the longer one as the aspirator. Place a small piece of gauze over the end from which you suck.

Go outdoors, to a meadow, field or garden, and observe the different insects living on plants and flowers. Whenever you see a different insect, suck through the shorter tube and bring the longer one close to the insect, so that it ends up in your jar. When you think you have collected a representative sample of the local

insect fauna, start making observations with the students: how many types of insects are there, and where did you catch them? Take notes and record where the different insects were found, what they look like, and whether there are other individuals nearby.

Use this opportunity to introduce the different levels of biodiversity - species, genetic and ecosystem diversity - also making comparisons with intraspecific diversity in humans.

A further level of investigation, with older students, can be to calculate a species richness index. You can find a simple explanation and some examples on the page Species richness (S).

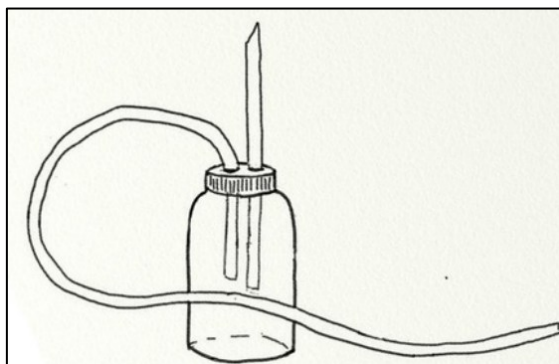
USEFUL TIP

As soon as the observation is finished, release the insects immediately, ideally putting them back where they were found. You can take photographs before capturing them, to have a representation of them in their living environment, and then take a photograph using the macro function so they can be observed in detail later, without needing to keep them in the jar for long. You can also decide to make posters with the students' photographs and drawings, comparing observations made in different environments.

WHAT SCIENCE SAYS

The aspirator bottle, also known as a pooter, is actually used by entomologists to capture small insects. It is often also useful for aquarists and reptiles and amphibian keepers to collect food for their animals.

Species richness is defined as the number of species present in a community. It is an important parameter for analyzing biodiversity. Mathematical indices exist to quantify it; the most widely used and considered most accurate is Margalef's species richness index (1958), based on the ratio between the number of species and the total number of individuals.



Aspirator bottle