



Plant species richness

Imagine walking through a beautiful natural meadow with flowers and plants of every colour of the rainbow around you. This area has high plant species richness or lots of different types of plants. Other areas have low species richness, or only one or two different type of plants.



Having many kinds of plants is super important for nature. One of the reasons why is that different plants give food and homes to lots of animals, birds, and insects. Some animals eat seeds, some eat leaves, and some sip nectar, so having many plant species makes sure everyone has something to eat. More plant types = more life! Lots of different plants also keeps nature strong and healthy, because if one plant species gets sick or disappears, others can still keep the environment working. This makes nature more resilient (strong against change). Different plants help clean the air, hold the soil in place, and soak up water, keeping rivers and streams clean. More plant species means more colours, shapes, and smells, making parks, gardens, and forests extra beautiful. Plant species richness is like having a big, colourful, and healthy team working together to care for the planet!



An important question is why some areas have lots of different types of plants while other locations have very few different types of plants? This can occur for a number of reasons. Some plants love lots of sun, while others like shade. A mix of sunny and shady spots lets more types of plants grow. Similarly, wet places (like ponds or marshes) have different plants than dry places (like sand dunes or rocky hills). Some soils are rich and full of nutrients, and others are sandy or rocky. Different plants need different soil types to grow well. Warm places can grow plants that cold places can't, so temperature matters! In windy or stormy places, only tough, strong plants survive. In calm places, more delicate plants can grow. If people or animals disturb an area a lot (like mowing or walking over it), fewer plants may survive. Wild, undisturbed places often have more kinds of plants. Last but not least, some plants need help from insects, birds, or animals to spread seeds or pollen. Where these helpers are busy, more plants can thrive.



To measure plant species richness you can use something called a quadrat. This is a square (often 20 cm, 50 cm, or 1 m on each side) that is randomly placed in a natural environment, usually by throwing it in a direction from a central point. You can make your own quadrat by tying together sticks of the same size to make a square, or you can buy metal quadrats. Either type of quadrats can be used to count the number (or even area) of a specific type of species – for example how many daisies are in each quadrat? But a quadrat can also be used to work out the species richness, by counting the total number of different species in each different quadrat throw and adding these up. This can answer questions like why there are more types of plants in some areas compared with others?



Here are some useful links:

- <https://www.thenational.academy/teachers/programmes/science-secondary-ks3/units/biodiversity/lessons/ecological-sampling-using-a-quadrat>
- <https://www.saps.org.uk/teaching-resources/resources/260/questions-about-quadrats/#:~:text=This%20article%20describes%20how%20quadrats%20can%20be%20used,the%20information%20given%20here%20refers%20to%20fra me%20quadrats>

