

## Data Skills in Geography – GCSE Ecosystems

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Ecosystems is a unit of work found in every Key Stage Four specification. Studying this topic at GCSE gives students an opportunity to become more confident in their data handling skills and provides new and challenging ways for students to engage with the core taught material.

### Introduction

Any teaching and learning of the Ecosystems specification component involves engagement with a number of key elements that form a well-versed structure of geographical enquiry.

- An introduction to the theory of ecological systems through dynamics such as trophic levels and food webs
- An emphasis on interdependence between the different parts of an ecosystem
- A study into world biomes and their location
- A study of at least one world biome, its physical characteristics, the fauna and flora found within it and how life has adapted to the environment found there
- Threats to the chosen biome: the nature of the threat; its causes and its management (hard and sustainable)

Many of these elements are taught and learnt through connection to real world geography, giving teachers plenty of scope to also develop data handling skills through the use of real world data. The Ecosystems topic, being one that so patently bridges the human-physical geography divide, throws up numerous data-based resources that will seem familiar and contextual to students who have no previous knowledge of the subject matter. As such, having data at the centre of learning is an excellent means by which to ground the topic and make it accessible.

This series of five lessons covers some of the key elements mentioned above. Teachers who are planning this unit of work should not view these lessons as a scheme of work, but rather as five separate lessons which they can 'dip into' to build their scheme of work. In practice, teachers will see that additional consolidation of ideas may be needed as well as extra time spent exploring the details of place that make this topic so engaging to students. The ideas presented here can be used in their whole or in part to develop data skills in students, not only to build their confidence in data response examination questions but also to hone their abilities to presenting information in different ways.

The five lessons cover the following format:

Lesson	Title and focus	Data utilised	Data skills used
1	<p><b>Introducing Ecosystems</b> An introduction to the different elements of a food web and the nature of interdependence between these elements.</p>	<p>The relative energy values that flow through a food web. Recognising data through the use of Gersmehl's model.</p>	<ul style="list-style-type: none"> <li>• Ratio analyses</li> <li>• Percentages</li> </ul>
2	<p><b>The Temperate Woodland Ecosystem</b> An examination of an area of temperate woodland and its physical characteristics. Recognising the importance of a disturbance (in this case Acute Oak Decline) on the cohesiveness of the ecosystem.</p>	<p>Locational data and six figure grid references. The different tree species found in an area of temperate woodland. Relative fauna species numbers.</p>	<ul style="list-style-type: none"> <li>• Distance and ratio scales</li> <li>• Creating / reading composite bar charts</li> <li>• Lines of extrapolation</li> </ul>
3	<p><b>The Tropical Rainforest Ecosystem</b> An exploration of the physical characteristics of a tropical rainforest and how these characteristics are linked.</p>	<p>A variety of data sources on climate, species diversity, growth/decline and structure.</p>	<ul style="list-style-type: none"> <li>• Reading and interpreting a wide variety of data, presented in unusual ways</li> <li>• Interpretation of statistical analysis results in relation to null hypotheses</li> </ul>
4	<p><b>Comparing Forest Ecosystems</b> An examination of the similarities and differences between a temperate woodland ecosystem and a tropical rainforest ecosystem.</p>	<p>Climate graphs. Species numbers in each location.</p>	<ul style="list-style-type: none"> <li>• Comparing means, modes and medians</li> <li>• Carrying out a statistical test (Simpson's Diversity Index)</li> </ul>
5	<p><b>The Future Tropical Rainforest</b> Development of an appreciation of the rate of deforestation in a tropical rainforest and the wider variables that are associated with deforestation.</p>	<p>Deforestation data for different countries. Spatial data for selected Brazilian states.</p>	<ul style="list-style-type: none"> <li>• Conversions and rates of change</li> <li>• Spatial data conversions to GIS based data</li> <li>• Data presentation critiques</li> <li>• Comparing the use of different forms of data trying to show the same thing.</li> </ul>

## Data Sources

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