Comparing Forest Ecosystems

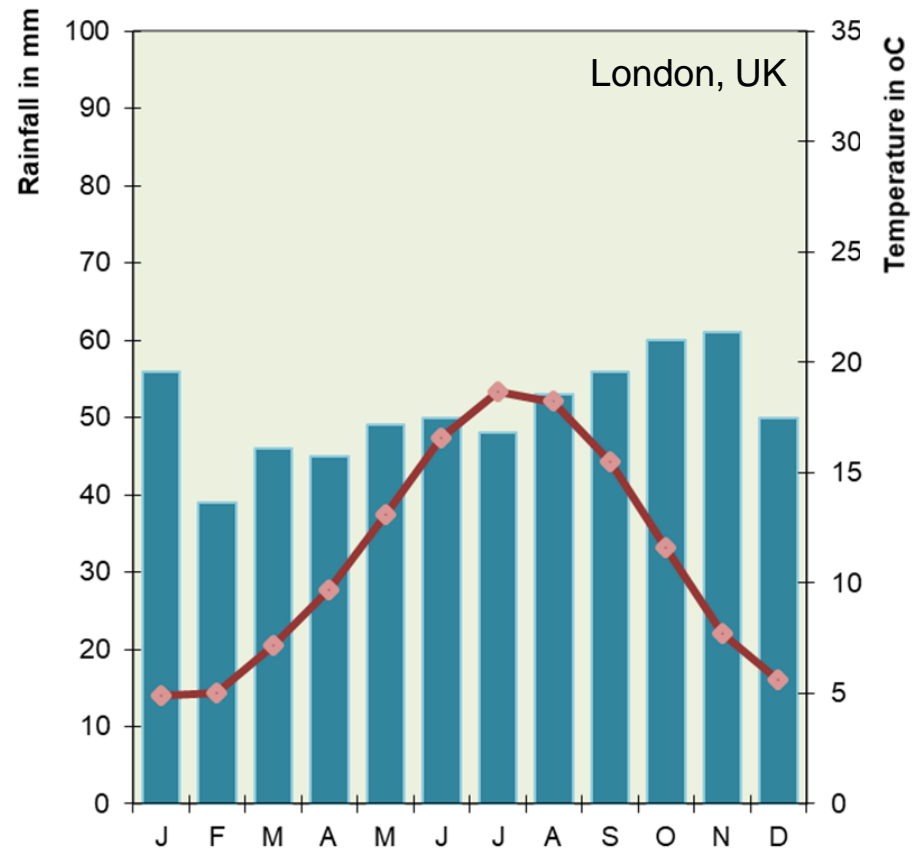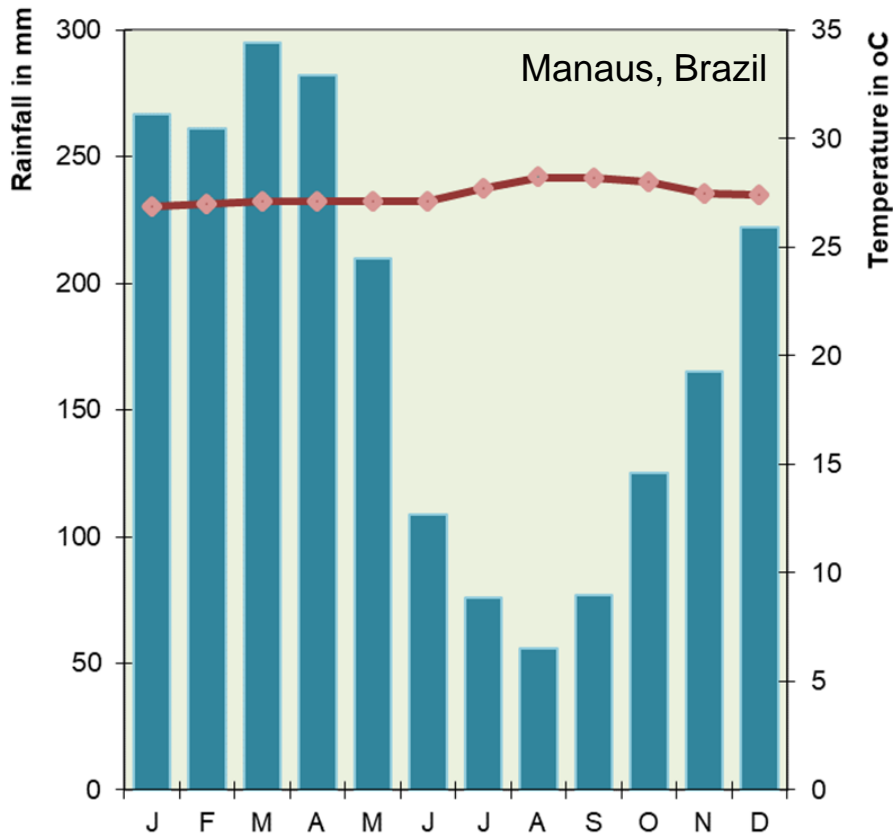# Comparing Forest Ecosystems

Objectives

To undertake a statistical analysis related to species abundance

To understand what the results of a statistical analysis mean for biodiversity

To be able to plan a method for measuring species abundance in the field

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Describe how a tropical climate is different to a temperate climate

Manaus, Brazil

London, UK

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What would we define each of these terms?

Mean:

Mode:

Median:

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Mean: the sum of all the values in the data set divided by the number of values within the data set

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Mean: the sum of all the values in the data set divided by the number of values within the data set

Mode: the value that occurs most frequently within a dataset

Median: the middle value when the data set is put in value order

Choose either precipitation or temperature.

Work out the mean, median and mode for each of the two locations.

Are there any notable differences between the figures?

Which of the three methods do you favour?

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Step One: Write a Hypothesis

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How much greater will biodiversity be in one ecosystem than the other?

Write your hypothesis as a single statement.

Step Two: Work out the Simpson's Diversity Index for an area of temperate woodland

The **Simpson's Diversity Index** is used to calculate the degree to which an area is considered diverse compared to another area. It relates the number of individuals of a kind to the total number of individuals in an area.

In this case, the two areas are the two habitats we are studying.

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Field maple	807		
Alder	6		
Hazel	1856		
Hawthorn	82		
Blackthorn	40		
White willow	101		
Wayfaring tree	78		
Guelder Rose	84		
Oak	1036		
Dogwood	29		
Total (N)		Total	

A tree survey was conducted in a set area of temperate woodland.

The following numbers of trees were recorded

Nuffield Foundation

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Write this number in the table.

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Write these answers in the first empty column.

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These answers should then be squared.

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Comparing Forest Ecosystems

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Taking the sum of the squared answers away from 1 gives you a final value for the Simpson's Diversity Index (**D**).

D = 1 – 0.309

D should always be a value between 0 and 1. The higher the value the more diverse the habitat.

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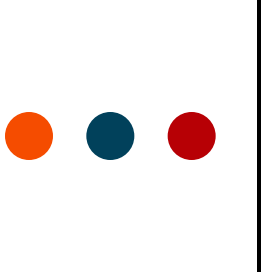
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Step Three: Compare the values for the Simpson's Diversity Index

Temperate woodland: D = 0.691

Tropical rainforest: D = 0.901

What does this tell you about the relative diversity of each habitat?

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Step Four: Draw a conclusion based on your hypothesis

Look back at your predictive hypothesis – were you correct?

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Sampling Equipment

Point Frame Quadrat

Binoculars

Ranging Pole

Measuring Tape

Open Quadrat

Closed Quadrat

Clipboard

iPad

Magnifier

Calipers
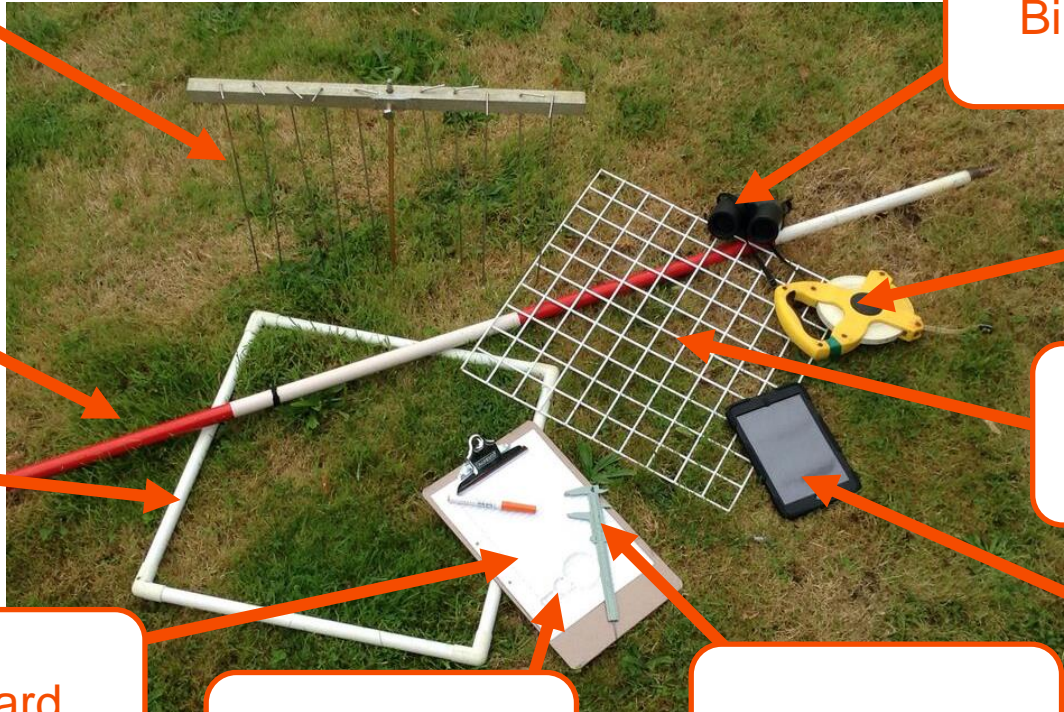
Simpson's Diversity Index

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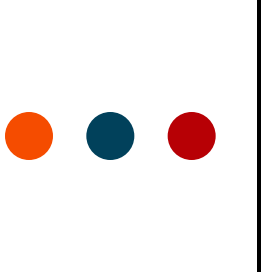
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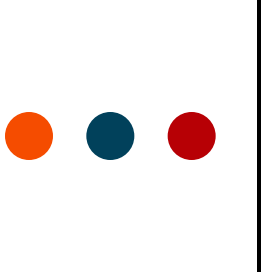Calculate the total number of trees found in the temperate woodland area. This is given the letter **N**.

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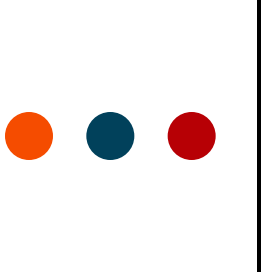
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