The Temperate Woodland Ecosystem
The Temperate Woodland Ecosystem

Objectives

To gain an appreciation of a real-world ecological system

To create a new form of data presentation

To be able to extrapolate data to suit new geographical scenarios
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Where is Parkhurst Forest?
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Where is Parkhurst Forest?
Describe the site and situation of Parkhurst Forest

What key points could be included in location description?
1. Name the main road that runs along the southern most edge of Parkhurst Forest
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A3054
1. Name the main road that runs along the southern most edge of Parkhurst Forest

2. Give the four-figure grid reference for the large clearing, found within Parkhurst Forest

A3054
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1. Name the main road that runs along the southern most edge of Parkhurst Forest: A3054

2. Give the four-figure grid reference for the large clearing, found within Parkhurst Forest: 4791
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3. Give the six-figure grid reference for Signal House, found within Parkhurst Forest.

4. How many metres above sea level is Signal House?

478905

83m
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3.1km
1.3km
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Works / Industrial Site

156°
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An Introduction to Parkhurst Forest

Parkhurst Forest is an area of mixed temperate woodland on the Isle of Wight.

The forest is one of the oldest in the UK, with records showing its use as a royal hunting forest in medieval times. The forest is now managed by the Forestry Commission.
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The 395 hectare site, which includes 3 hectares of meadow in the centre of the forest, is unusually wild given its proximity to the centre of Newport, the county town of the Isle of Wight.

The forest contains a large Napoleonic oak plantation and several significant areas of pine trees, home to a large proportion of the Island’s 3,500 red squirrel population. Parkhurst Forest also provides a habitat for nationally rare species of butterfly and lichen.
The forest is an important part of the tourism portfolio of the Island, and is well used by islanders and visitors.

Vandalism, fires and fly-tipping do occur, but are relatively infrequent given the size and popularity of the forest.
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What is discrete data?

Discrete data is that which can only be measured using a specific numerical value.

What is continuous data?

Continuous data can (in theory) take any value and continue to an infinite number.
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Discrete or Continuous?

Age
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Discrete or Continuous?

Age

Continuous
The Temperate Woodland Ecosystem

Discrete or Continuous?

Number of something
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Discrete or Continuous?

Number of something

Discrete
The Temperate Woodland Ecosystem

Discrete or Continuous?

Temperature
The Temperate Woodland Ecosystem

Discrete or Continuous?

Temperature

Continuous
The Temperate Woodland Ecosystem

Discrete or Continuous?

Velocity
The Temperate Woodland Ecosystem

Discrete or Continuous?

Velocity

Continuous
The Temperate Woodland Ecosystem

Discrete or Continuous?

Percentage of something
The Temperate Woodland Ecosystem

Discrete or Continuous?

Percentage of something

Discrete
The Temperate Woodland Ecosystem

Discrete or Continuous?

Distance
The Temperate Woodland Ecosystem

Discrete or Continuous?

Distance

Continuous
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When using discrete data avoid:

- Line graphs
- Histograms

Otherwise most other common forms of data presentation can be used.
### The Temperate Woodland Ecosystem

#### Species found in a temperate woodland

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### The Temperate Woodland Ecosystem

#### Species found in a temperate woodland

#### What type of data is this?

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### The Temperate Woodland Ecosystem

**Species found in a temperate woodland**

**What type of data is this?**

**How might you present this data?**

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You could present the data in bar charts:

Species abundance

- [Diagram showing species abundance for 1980 and 2015]
  - 1980: Species A, B, C, D, E, F
  - 2015: Species A, B, C, D, E, F

*This project was funded by the Nuffield Foundation, but the views expressed are those of the authors and not necessarily those of the Foundation.*
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You could present the data in bar charts:

![Species abundance chart]

What problems can you see with this method?
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You could present the data in pie charts:

Species abundance in 1980

Species abundance in 2015
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You could present the data in pie charts:

Species abundance in 1980

Species abundance in 2015

What problems can you see with this method?
The Temperate Woodland Ecosystem

You could present the data in a comparative bar chart:

Species Abundance

<table>
<thead>
<tr>
<th>Species</th>
<th>1980</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2800</td>
<td>1500</td>
</tr>
<tr>
<td>B</td>
<td>1400</td>
<td>2000</td>
</tr>
<tr>
<td>C</td>
<td>1100</td>
<td>1000</td>
</tr>
<tr>
<td>D</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>E</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>F</td>
<td>50</td>
<td>50</td>
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</table>
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You could present the data in a comparative bar chart:

What problems can you see with this method?
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You could present the data in a composite bar chart:
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You could present the data in a composite bar chart:

What problems can you see with this method?

This project was funded by the Nuffield Foundation, but the views expressed are those of the authors and not necessarily those of the Foundation.
Parkhurst Forest is undergoing a conservation plan known as the ‘Parkhurst Forest Design Plan’ (PFDP). It aims to bring more biodiversity into the woodland and retain its attraction for native red squirrels.

As part of the PFDP, a species and ground cover survey was conducted in 2005. It is hoped that in 2037, when the PFDP concludes, the species and ground cover will be very different.
# The Temperate Woodland Ecosystem

<table>
<thead>
<tr>
<th>Species</th>
<th>% cover (2005)</th>
<th>% cover (2037)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
<td>32</td>
<td>36</td>
</tr>
<tr>
<td>Hazel</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Beech</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Scots and Corsican Pine</td>
<td>32</td>
<td>7</td>
</tr>
<tr>
<td>Other broadleaf species</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>Other conifer species</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>Grassland</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Open space</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>
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Species composition in Parkhurst Forest
Before and after implementing the PFDP

% cover (2005)

% cover (2037)

- Oak
- Hazel
- Beech
- Scots and Corsican Pine
- Other broadleaf species
- Other conifer species
- Grassland
- Open space

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Acute Oak Decline

Acute Oak Decline is the general term given to a bacterial infection that affects thousands of trees across Southern England.

The bacteria infects the area directly under the bark of the tree, causing cracks to appear and stem fluid to ooze out.

Oak ‘weeping’ through bacterial infection
Source: Ken-ichi Ueda CC BY-NC 2.0
A rise in the numbers of Oak Jewel Beetles, that lay their eggs under the bark of the trees is thought to have increased the number of affected trees, possibly due to the beetle becoming a means for the bacteria to spread between trees.

Acute Oak Decline causes the tree to become starved of nutrients and once infected the tree sees a rapid decline, often resulting in death.

Defra is currently undertaking a £1.1 million research project into Acute Oak Decline.

**Oak Jewel Beetle**

Source: Nigel Jones CC BY-NC-ND 2.0
What is extrapolation?

To extrapolate is to estimate an extension of the existing data based on the pattern that data is currently displaying.

This is often represented by a dotted line for something that will happen in the future.
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How would you extrapolate this data?

Number of investigated incidences of acute oak decline by Forestry Commission
How would you extrapolate this data?

Number of investigated incidences of acute oak decline by Forestry Commission

Trend line
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If Acute Oak Decline was detected in this woodland what would happen to each species?

Think about
- Food webs and how species interact with each other
- The shape of the line of the you draw (does it have to be straight?)
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Species in a woodland after Acute Oak Decline

Acute Oak Decline detected

- Oak
- Oak Jewel Beetle
- Hedgehog
- Squirrel
- Grasses
- Field Mouse
- Falcon

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Location of Parkhurst Forest
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Where is Parkhurst Forest?
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Where is Parkhurst Forest?
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Where is Parkhurst Forest?
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Describe the site and situation of Parkhurst Forest

What key points could be included in location description?
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A3054
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4791
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4. How many metres above sea level is Signal House?

47890583m
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156°
Introduction to Parkhurst Forest
An Introduction to Parkhurst Forest

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Source: Chloe Searl
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The Temperate Woodland Ecosystem

You could present the data in bar charts:

Species abundance

- A
- B
- C
- D
- E
- F

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You could present the data in bar charts:

What problems can you see with this method?
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You could present the data in pie charts:

Species abundance in 1980

Species abundance in 2015
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You could present the data in pie charts:

Species abundance in 1980

Species abundance in 2015

What problems can you see with this method?
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You could present the data in a comparative bar chart:

Species Abundance

- A
- B
- C
- D
- E
- F

1980  2015
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You could present the data in a comparative bar chart:

![Species Abundance Chart]

What problems can you see with this method?
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