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
The Temperate Woodland Ecosystem

Where is Parkhurst Forest?
The Temperate Woodland Ecosystem

Parkhurst Forest is found on the Isle of Wight
Parkhurst Forest is found near to the centre of the Isle of Wight, equidistant from Cowes and Newport, to the west of the River Medina.
The Temperate Woodland Ecosystem

Describe the site and situation of Parkhurst Forest

What key points could be included in location description?
Describe the site and situation of Parkhurst Forest

What key points could be included in location description?

Use real places: Country ➔ County ➔ Town
Describe the site and situation of Parkhurst Forest

What key points could be included in location description?

Use real places: "Country ➔ County ➔ Town"

Use directions: "North  East  South  West"
Describe the site and situation of Parkhurst Forest

What key points could be included in location description?

Use real places: Country → County → Town

Use directions: North  East  South  West

Use mapped features: Rivers  Main roads
1. Name the main road that runs along the southern most edge of Parkhurst Forest

<table>
<thead>
<tr>
<th>Road Name</th>
<th>Grid Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitehouse Rd</td>
<td>A3054</td>
</tr>
<tr>
<td>Noke Common Rd</td>
<td>A3020</td>
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1. Name the main road that runs along the southern most edge of Parkhurst Forest
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2. Give the four-figure grid reference for the large clearing, found within Parkhurst Forest

   A3054

   4791  4892
   9147  9248
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The Temperate Woodland Ecosystem

3. Give the six-figure grid reference for Signal House, found within Parkhurst Forest.

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

83m
3. Give the six-figure grid reference for Signal House, found within Parkhurst Forest

<table>
<thead>
<tr>
<th>Reference</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>482920</td>
<td>478905</td>
</tr>
<tr>
<td>928485</td>
<td>912470</td>
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478905

83
The Temperate Woodland Ecosystem

5. What is the straight-line distance from the most northerly point in Parkhurst Forest to its most southerly point?

6. What is the shortest distance possible between Parkhurst Forest and the River Medina?

3.1km
1.3km
5. What is the straight-line distance from the most northerly point in Parkhurst Forest to its most southerly point?

- 8.9km
- 5.1km
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The Temperate Woodland Ecosystem

7. What is found in grid square 4789 that may have an impact on the ecology in Parkhurst Forest?

8. If you were to walk from the top of Holme Hill to Camp Hill Prison, what bearing would you have taken?
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<tr>
<td>114°</td>
</tr>
<tr>
<td>24°</td>
</tr>
<tr>
<td>156°</td>
</tr>
<tr>
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7. What is found in grid square 4789 that may have an impact on the ecology in Parkhurst Forest?

8. If you were to walk from the top of Holme Hill to Camp Hill Prison, what bearing would you have taken?
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.
The Temperate Woodland Ecosystem

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.

Source: Chloe Searl
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
The Temperate Woodland Ecosystem

Discrete or Continuous?

Age

Continuous
The Temperate Woodland Ecosystem

Discrete or Continuous?

Number of something
The Temperate Woodland Ecosystem

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.

This project was funded by the Nuffield Foundation, but the views expressed are those of the authors and not necessarily those of the Foundation.
## The Temperate Woodland Ecosystem

### Species found in a temperate woodland

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<tbody>
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The Temperate Woodland Ecosystem

Species found in a temperate woodland

Is this discrete data (each species stands alone) or continuous data (Species A continues on from Species B etc)?

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The Temperate Woodland Ecosystem

Species found in a temperate woodland

How might you present this discrete data?

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<td>57</td>
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</tbody>
</table>
You could present the data in bar charts:

Species abundance

1980
2015

A  B  C  D  E  F
You could present the data in bar charts:

What problems can you see with this method?

Think about how easy it is to compare the data between the two years.
The Temperate Woodland Ecosystem

You could present the data in pie charts:

Species abundance in 1980

Species abundance in 2015
The Temperate Woodland Ecosystem

You could present the data in pie charts:

Species abundance in 1980

Species abundance in 2015

What problems can you see with this method?

Think about how easy it is to read the data for small numbers of a species.
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You could present the data in a comparative bar chart:

Species Abundance

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

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

Species Abundance

What problems can you see with this method?

Think about the difference between the highest value and the lowest
The Temperate Woodland Ecosystem

You could present the data in a composite bar chart:
The Temperate Woodland Ecosystem

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What problems can you see with this method?

Think about the ability to know how many there are of each species.
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>
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 is a problem from which some oak trees suffer. Trees can become infected by bacteria that can cause them to stop growing or die. It affects thousands of trees across Southern England.

The bacteria infects the area directly under the bark of the tree. This causes cracks to appear in the bark and for essential fluids to come out. This, in time, causes the tree to be starved of nutrients.
Oak Jewel Beetles lay their eggs under the bark of oak trees. Their numbers have been increasing over the last thirty years. Scientists think that the beetle may be the reason why bacterial infections are spreading through oak trees as the beetle go from tree to tree.

Defra (the Department for the Environment, Farming and Rural Affairs) is currently undertaking a £1.1 million research project into Acute Oak Decline.
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
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 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
The Temperate Woodland Ecosystem

Where is Parkhurst Forest?
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Use mapped features: Rivers  Main roads
Woodland Map Skills
The Temperate Woodland Ecosystem
1. Name the main road that runs along the southern most edge of Parkhurst Forest

Whitehouse Rd

Noke Common Rd
1. Name the main road that runs along the southern most edge of Parkhurst Forest
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2. Give the four-figure grid reference for the large clearing, found within Parkhurst Forest

A3054

4791 4892

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The Temperate Woodland Ecosystem

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4. How many metres above sea level is Signal House?
478905m
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- 482920
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   - 75
   - 80
   - 83
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5. What is the straight-line distance from the most northerly point in Parkhurst Forest to its most southerly point?

6. What is the shortest distance possible between Parkhurst Forest and the River Medina?

3.1km

1.3km
5. What is the straight-line distance from the most northerly point in Parkhurst Forest to its most southerly point?

<table>
<thead>
<tr>
<th>Distance</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.9km</td>
<td>5.1km</td>
<td></td>
</tr>
<tr>
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The Temperate Woodland Ecosystem

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Works / Industrial Site

114° 24°

156° 336°
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Woodland Species Data
The Temperate Woodland Ecosystem

Species found in a temperate woodland

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<th>Number of species 2015</th>
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**Species found in a temperate woodland**

**How might you present this discrete data?**

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The Temperate Woodland Ecosystem

You could present the data in bar charts:

Species abundance

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You could present the data in bar charts:

What problems can you see with this method?

Think about how easy it is to compare the data between the two years.
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?

Think about how easy it is to read the data for small numbers of a species

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You could present the data in a comparative bar chart:

![Species Abundance Chart]

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

What problems can you see with this method?

Think about the difference between the highest value and the lowest.
The Temperate Woodland Ecosystem

You could present the data in a composite bar chart:
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