

Woodland Ecology

Suitable for KS3 students, March to November

This programme is specially designed for KS3 students. It encourages them to investigate the inter-relationships between plants and animals in a woodland ecosystem – including food chains and webs (energy transfer), pyramid of numbers and biomass.



Key Concepts

Habitat, community, ecosystem, food chains and webs, feeding relationships, adaptations, energy transfer, pyramid of numbers, pyramid of biomass

Learning Outcomes

By the end of the programme, students should be able to:

- Use a range of vocabulary to describe woodland ecology, including 'habitat', 'community', 'ecosystem'
- Explain how plants and animals interact with their environment and with each other, and that all feeding relationships within a habitat are interconnected
- Describe food chains and webs using the terms produce, consumer, herbivore, carnivore, omnivore, detritivore
- Represent the feeding relationships in an ecosystem as a pyramid of numbers
- Understand that energy is lost at each stage of a food chain through respiration, excretion, movement etc.

Before you come

What evidence could you look for to tell you which animals live at Westonbirt? How could you record your observations?

Programme Outline

Learning Objectives	Activity
<ul style="list-style-type: none"> • To assess the student's knowledge and use of vocabulary 	<p>Ecology of a Woodland A PowerPoint talk that introduces the woodland as an ecosystem, feeding relationships, energy flow, food chains and food webs.</p>
<ul style="list-style-type: none"> • To observe and collect evidence for different organisms within the woodland ecosystem 	<p>Collecting evidence Based on your 'Before you come' discussions - students discuss the key evidence they aim to collect for different species of producers, primary and secondary consumers, before embarking on a walk to record their observations</p>

<ul style="list-style-type: none"> To build a pyramid of numbers and suggest how this is different to a pyramid of biomass 	<p>Pyramid of numbers Using the students' observations of producers, primary and secondary consumers, build a pyramid of numbers that collect the class data.</p>
<ul style="list-style-type: none"> To create a food web, considering the feeding relationships To examine the inter-dependence of life within an ecosystem 	<p>Food webs Each student represents a plant or animal in the woodland ecosystem and create a food web to connect all species. Natural and man-made impacts on the food web will then be explored.</p>
<ul style="list-style-type: none"> To understand that energy is lost at each level of a food chain 	<p>Energy flow game Exploring the transfer of energy from producer to top predator in a food chain energy relay that might get you wet!</p>

National Curriculum links

Science

Nutrition and digestion

- Plants make carbohydrates in their leaves by photosynthesis

Photosynthesis

- The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store

Relationships in an ecosystem

- The interdependence of organisms in an ecosystem, including food webs
- How organisms affect, and are affected by, their environment, including the accumulation of toxic materials