Tree of Life

Key Stage 3 Science
Teachers' notes

This unit of work is based on ***QCA Science Unit 8D 'Ecological Relationships'*** as is the unit 'Are all woods the same?', also from the Key Stage 3 part of this pack.

Learning Objectives Covered by this Work

- Record the organisms which comprise the living community in a habitat, working safely and sensitively with living things.
- Understand the importance of sampling, including the use of quadrats to estimate populations.
- Know that food webs are made up of food chains in which energy flows from the producer to the final organisms in the chain.
- Identify patterns in data including the use of a pyramid to describe numbers of food plants, herbivores and carnivores.

Before the Visit

Review vocabulary related to food chains and webs, establishing that these are ways of describing feeding relationships.

Brainstorm the plants and animals that might be associated with one woodland tree. Ask pupils to suggest how they might determine the population size of these. Explain why it is often necessary to use sampling methods to obtain biological data and consider methods of sampling, including the use of quadrats.

In the Woodland

Select one tree per group. All groups could study the same species of tree (in which case choose a tree that supports a range of wildlife such as Oak) or different groups could compare different species of tree.

Collect information on the flora and fauna associated with the tree in the four stages described below. These are designed to minimize the effect of trampling and other disturbance on the data collected. Collect numerical data rather than just information on presence or absence.

1. From a viewpoint a short way from the tree, observe the tree canopy for roughly 10 minutes to record birds and other inhabitants.
2. Record the ground flora and fauna at points around the tree using metre quadrats. Use paintbrushes to search for invertebrates and to collect these into pots. Alternatively, collect the leaf litter in a bucket and examine in the classroom before returning it to the woodland.
3. Use hand lenses to closely examine the trunk and base of the tree, recording information on mosses, invertebrates, etc.
4. Hold a white tray or sheet underneath a low hanging branch and shake the branch for 10 seconds. Collect the invertebrates into pots using paintbrushes or pooters.

Record indirect evidence showing what animals eat e.g. food remains, bird droppings and owl pellets, woodlice under decaying wood, a fly entangled in a spider's web.

Follow-up Work

Use secondary sources to find information about the diet of the animals found. Enter the information obtained into a database. Use this information to construct food chains and identify producers, herbivores and carnivores. Using animals that occur in more than one food chain, join the food chains to make a food web.

Analyse the data on the numbers of animals and plants of different kinds associated with the tree, counting up the numbers of producers, herbivores and carnivores and representing the data as a pyramid. Consider the value of this model in considering the interdependence of living things.

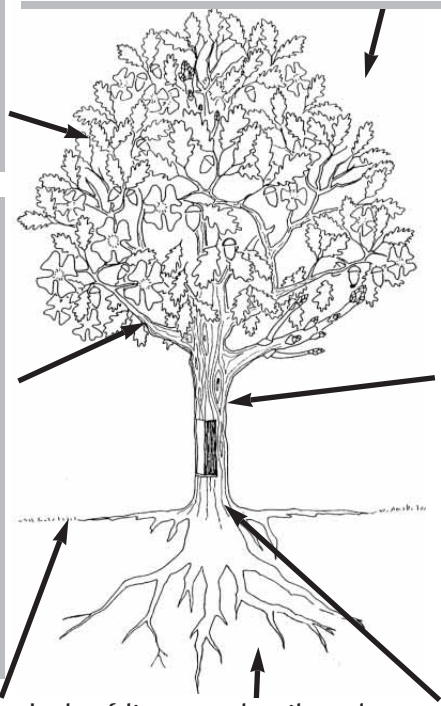
Tree of Life

Use this sheet to record the plants and animals found associated with the different parts of your tree.

Key Stage 3 Science
Pupil sheet

On leaves in the canopy

In the air around the tree canopy



On the trunk

On branches in the canopy

On the ground under the tree

In leaf litter and soil under the tree

On the base of the tree and on exposed roots