



Exploring oak woodland

Following a food chain

Prof. David Streeter:

Woods are typical ecosystems, a combination of biological communities occupying a physical environment. However in many ways woods are difficult ecosystems to study because they are more complex than most. The size that they occupy is large, from the soil surface to the top of the tree canopy, and this space is occupied by trees, shrubs, herbaceous vegetation and the ground layer, producing a huge variety of habitats, generating an enormous diversity of organisms.

When trying to understand something as complex as the inter-relationships between the different species in an ecosystem like a wood, it's helpful to focus on a single species in order to find out how it manages to maintain itself and survive as part of the community.

Narration:

Many oak woods contain breeding pairs of sparrowhawks. They're the commonest woodland birds of prey. Providing food for a nest full of sparrowhawk chicks is a full time job.

Prof. David Streeter:

Many woodland species breed in the spring and food supplies are crucial throughout the breeding period, and they determine the success or failure of the next generation.

Prof. Chris Perrins:

When the male's feeding the brood, it's quite noticeable if they've got their timing right they pretty well seem to specialise on tits. The trouble is, the male tends to pluck them and pull their head off before they're brought in, and we don't have a good field guide for plucked and headless birds. You're dependant really on identifying them from the legs.

Narration:

The tits must find enough food to raise their young.

Prof. Chris Perrins:

We can easily fit up a camera behind the nest that's designed to take a shot each time the tit comes in with a caterpillar in its beak.

You have to realise that the tits have these very large broods and if they're to raise 10 or so young, they've got to be able to find food very easily, and the parents actually bring in 7 or 800 meals a day, 7 or 800 caterpillars during a day, and they can't waste time if they're to do that.

Caption

The tits' main source of food is the winter moth caterpillar.

Narration:

Winter moth caterpillars have to find their own supply of food.

Oak leaves form the final link in our food chain.

How do oak trees get the energy they need for growth and for making leaves?

Like all green plants oak trees use carbon dioxide and water to make vital organic compounds. This process is called photosynthesis. Photosynthesis takes place inside the oak leaves in tiny green structures called chloroplasts, which capture light energy from the

sun. What happens next is a complex chain of reactions that can be summarised fairly simply - water and carbon dioxide are converted using the sun's energy into simple sugars called carbohydrates. The oxygen released in the reaction diffuses from the leaves into the surrounding air for use by other organisms.

Prof. David Streeter:

Individual food chains tell only part of the story. Woods contain many species of animals and plants, each with their own particular food chains. And considering the wood as a whole reveals many important ecological patterns and ideas.