



Environment: habitat and conservation

Following the Food Web in Wicken Fen

Voice Over

The sedge field habitat is made up of many different species. The saw-sedge predominates but other plants also thrive. These include marsh bedstraw and bindweed. Invertebrate species found here include snails and beetles.

Adrian Calston, Property Manager

Wicken is so rich in biodiversity today because it has such a range of habitats from the scrub to the sedge fields, the reeds and all these ditches that run across, so there are a lot of different habitats and they can all support different species.

Voice Over

This can be clearly seen by comparing the species of two neighbouring fen habitats: a fen meadow, and woodland. The meadow is filled with grass and wild flower species. There's the marsh pea, for instance and thistles. These plants are home to a wide variety of invertebrate species.

Adrian Calston, Property Manager

Got a variety of very, very small, little flies in here, several different varieties of spider, that little, tiny one running across is a money spider, there's one generically known as a garden spider there and there's a caterpillar, two different species there and one or two hoverflies, and a lacewing.

Voice Over

The woodland habitat beside the meadow includes tree and shrub species like hawthorn. This habitat is suitable for a different group of invertebrates.

Adrian Calston, Property Manager

Well we're now in the area of scrub about twenty yards from the meadow we've just come from and in here there are different species and as you can see, they're very, very small. There's a different species of spider there, another one there, another one there, another one there, five or six different species. What we can see here is that we've got quite a few different species from the ones that we found in the meadow and it shows that with a lot of species, particularly insects, they're very dependent on the specific type of habitat. So we've got two different habitats really quite close together, containing different species and as a result of that we can see that a site which has got a variety of different habitats is going to have a much higher biodiversity than a site with just a single habitat.

Voice Over

Biodiversity doesn't simply depend on the range of habitats; it's also influenced by the way species interact with one another. This is the Lode, the main water channel running through Wicken Fen. One way its plants and animals interact is through the food web, each species is food for other species. The more species there are to eat, the more there will be eating them. The food web underpins biodiversity because it means many different organisms can co-exist. At the base of a food web are plants. The slow-flowing, clear waters of the Lode offer the perfect growing conditions for submerged aquatic plants. Plants use energy from the sun to create new tissue through photosynthesis.

Joanna Freeland, Open University

When there is plant tissue available, then there is food for herbivores, which are organisms that eat plants. When plants die they provide food for the detritivores, which are small organisms off micro-organisms that eat dead and decaying material and of course when the

herbivores die, they in turn provide more food for the detritivores and herbivores also provide food for carnivores, which are animals and occasionally plants, that feed on animal tissue.

Voice Over

In the Lode waters, herbivores like water snails nibble the aquatic vegetation. Small carnivorous fish, including roach and minnows, are prey for larger, freshwater carnivores like pike. While some of these species spend their entire lives underwater, others may move between habitats at different stages of their development and so become part of different food webs. Dragonflies and damselflies, for instance, spend much of their life underwater as larvae, and emerge from the water when they mature. In the process they're part of two food webs – the aquatic and the terrestrial. Rory McKenzie-Dodds is from the Dragonfly Project and regularly visits the Fen to observe the twenty species of dragonfly and damselfly found here.

Rory McKenzie-Dodds, Dragonfly Project

(To boatman) Can we go nearer this bank on the port side?

Dragonflies are particularly interesting from the point of view of food webs. Underwater dragonflies will be eating midge larvae and mosquito larvae. At this larval stage they tend to get eaten by insectivorous fish.

Voice Over

Underwater the larvae are carnivorous. This one is pursuing a water snail. But at the same time they're food for other carnivores, in this case a carnivorous insect - the water boatman is feeding on a damselfly larva. Within the aquatic food web the larvae are both predator and prey.

Rory McKenzie-Dodds, Dragonfly Project

Probably the most dangerous time is the moment when they actually climb out of the water and then they start to pump their wings out, and really they can't move at that stage and they're ideal meals for, particularly, birds; blackbirds make a great habit of munching them, so do wagtails. In the adult stage they continue to be carnivorous; they eat midges and gnats and mosquitoes, butterflies, bees, very often each other, that's what they eat and they're eaten in turn by birds. Hobbies, for example, make a particular speciality of catching dragonflies.

Voice Over

Now part of the terrestrial food web adult damselflies and dragonflies are also prey for a diversity of carnivores, including spiders, wasps, frogs and small mammals. This example demonstrates how complex food webs support many species within a habitat. So, the range of habitats, the diversity of species and the complicated way in which parts of a food web interact, are all factors in determining biodiversity.