Herts and Middlesex THE wildlife TRUSTS

Wildlife Watch

Pond Food Pyramid

Background information

Food chains exist throughout nature and are vital to the survival of all species. If one part of a food chain is adversely affected, the consequences for the other species in the chain can be huge.

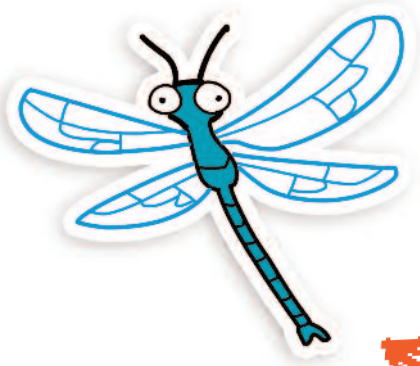
A well known example of how interfering with a food chain can be devastating is that of the insecticide DDT. This was once widely used to eradicate insects from crops. However, the insects that ingested the DDT were then eaten by small birds which were then eaten by birds of prey such as peregrine falcons. As more and more DDT accumulated in the birds of prey it stopped their eggshells forming properly. The eggshells were so thin that they were easily crushed by the parent birds, resulting in a rapid population decline.

Thankfully DDT was eventually banned in the UK in the 1980s and bird of prey populations began to recover as the toxic chemicals in the food chain disappeared.

What you will need

1. A space indoors or outdoors.
2. The class or large group.
3. Camera (optional).
4. Black card discs (optional).
5. Sticky labels to use as name badges for each of the species.


Otter



Activity objectives

This activity aims to get children thinking about food chains, the importance of the very small creatures right at the bottom and what happens when a pollutant is introduced.

Now turn over...

and play the game!

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Pond Food Pyramid

How to play

1. Divide the group into the following sub-groups and give them each a sticky label on which to write the name of their species (use these numbers as a guide):
   - 10 x water plants (producers)
   - 6 x tadpoles (herbivores/prey)
   - 3 x trout (carnivores/prey/predators)
   - 1 x otter (the tallest member of the group!) (carnivore/top predator)
2. Arrange the groups as follows:
   - Water plants sit on the ground in a line
   - Tadpoles crouch behind them with their hands on the water plants' shoulders
   - Trout stand behind the tadpoles with their hands on the tadpoles' shoulders
   - The otter stands behind the trout with their hands on the trout's shoulders
3. Take a photo of the group to take back to the classroom and display.
4. Explain why this is called a food chain. Identify key terms for KS1 – carnivore, herbivore, omnivore and KS2 – producers, predators and prey.

Information for Teachers

National Curriculum Links – Science

Y1 POS Identify and name a variety of common animals that are carnivores, herbivores and omnivores.

Y2 POS Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.

Y3 POS Identify that animals cannot make their own food, they get nutrition from what they eat.

Y4 POS Recognise that environments can change and this can sometimes pose dangers to living things. Construct and interpret a variety of food chains, identifying producers, predators and prey.

Extensions of the game

1. Ask which of the creatures depend on the water plants for survival. Answer: All of them – tadpoles, trout and otter as they are all connected!
2. Ask which of the creatures rely on the otter for food. Answer: None – the otter is at the top of the food chain!
3. Explain that a food chain needs a greater abundance of smaller creatures/plants lower down the chain to support fewer larger species (predators) towards the top.
4. Discuss the need for a variety of food items in a food chain. What happens when the tadpoles grow into frogs and leave the pond? If there wasn't a diversity of other food items neither the trout or otter would survive.

   ** Explain the need for both diversity and abundance of species within a food chain to support all species.
5. Pretend to spray the water plants with herbicide and give each plant a black disc.
6. Get the plants to pass these back to the tadpoles, then get the tadpoles to pass these back to the trout and the trout to pass them back to the otter. The otter should end up with all the black discs.
7. Discuss how the pollutant (the herbicide) has been concentrated up the food chain. Sometimes it may not have an effect on those species lower down (they might not feel the effects or live long enough) but when accumulated in the bodies of predators at the top of the food chain the effects can be far greater.
8. Use the example of DDT to illustrate how this can affect top predators.

■ **Activity sheets** These activity sheets have been produced by Herts & Middlesex Wildlife Trust (Registered in England: 816710; Registered Charity: 239863) with funding from the City Bridge Trust and Heritage Lottery Fund. ■ **Photography** by Darin Smith. ■ **Design** by Wildcat Design (wildcat1@ntlworld.com).