Objectives
- To learn about prehistoric plants.
- To know a *living fossil*.

Resources
Media resource 'Horsetail fern' on the CD-ROM; examples of petrified wood; plant or animal fossils; some fern leaves or if unavailable leaves from trees or plants with an interesting shape; plastic trays or food containers; sand; plaster of Paris; string

Speaking scientifically
fossil, angiosperm, petrified, horsetails, ginkgo, cycad, magnolia, moss, fern, spores

Lesson 3: Prehistoric plants

Introduction

Show the class any samples of fossils that you have so that they are familiar with what fossils look like. The table below shows the relative ages of different species of plants:

Millions of years ago	Plant life on land
543 to 248	The first plants appeared including mosses, horsetails and ferns
206 to 114 (Jurassic)	First seed-bearing plants such as conifers, cypress and ginkgo trees and cycads
144 to 65	Flowering plants existed including magnolias and palms

Explain that while no prehistoric animals have survived in their original form, several species of plant remain virtually unchanged such as horsetail ferns and conifers such as the monkey puzzle tree. Show the children the photograph 'Horsetail fern' on the CD-ROM. Explain that these species reproduce through the dispersal of spores and do not have seeds.

Whole-class work

1. Explain how scientists know about the appearance and evolution of plant life by looking at fossils.

2. Talk about how plant fossils are formed when plant matter (such as stems, leaves, roots, spores, seeds, or fruits) are protected from decomposing. They may become covered with sediment such as clay, mud, sand, or volcanic ash.

3. Tell the class that they are now going to make their own fossilised leaves.

Paired work

4. Tell the children to put plenty of sand in the container and make some flat shallow hollows in it using a small block of wood. Tell them to be careful not to expose the bottom of the container.

5. Next they should lay a leaf in each hollow so that it is flat. Add the plaster of Paris to about 2 litres of water, to make a smooth paste that will still flow. Tell them to pour the plaster of Paris over each hollow and smooth the top.

6. Make a loop with the piece of string and set into one end of the plaster at the top end of the leaf and leave it to dry for at least three hours. The *fossils* can then be picked out using the string and the leaf can be removed from its surface.

Differentiation
- Support children by looking for the veins on their leaves and explain how their model simulates the process of fossilisation.
- Challenge children to find out more about prehistoric plants. Ask them if any are familiar and which ones still survive today.

Science in the wider world

Coal which has provided fuel across the world is a fossil formed from the remains of plants from prehistoric times. It is of course a fossilised fuel so today alternatives are sought to avoid air pollution

Review

Show the whole class how the details of the leaves imprinted on their models are similar to real fossils of plant life and explain that a similar process happens under fossilisation as leaves are embedded between layers of sand and silt. Children may wish to paint their fossils or leave them white. Create a mobile to show the class collection of *fossils*.