

Grow your own mushrooms

Plant edible mushrooms in the classroom, there are some weird and wonderful varieties available.

Contact your local garden centre for a mushroom growing kit or search on the web under "mushroom growing kit"

Spore Prints

Using an edible mushroom from the supermarket, cut off the stalk and put the 'cap' on a piece of white paper, and cover the 'cap' with a glass. The following day, lift off the glass and 'cap', carefully – you should see the "spore print" of the mushroom.

Glossary

DECOMPOSE – to rot, usually as the result of fungi and bacteria

FUNGUS – an organism that does not have leaves and lives as a helpful partner or unhelpful parasite with living organisms or on dead the remains of dead organisms.

LICHEN – A fungus that lives with a simple plant (alga), found on rocks, soil or tree trunks.

ORGANISMS – any living structure capable of growth and reproduction

PENICILLIN – an antibiotic originally obtained from the fungus *Penicillium*

SPORES – one of the tiny reproductive bodies that are capable of developing into new individuals

Biodiversity Links

- Photocopy the cards on the back of the All About Fungi poster
- Cut out and colour in the cards
- Put the following headings on a sheet of paper:

Mosses Lichens

Fungi Ferns

Flowering plants

Group the drawings under the right headings



Scottish Natural Heritage
All of nature for all of Scotland

Biodiversity

What can we do to help?

Fungi are part of Scotland's biodiversity, (which means the variety of life, and includes plants, bacteria and animals, as well as fungi, and the places in which they live). We can help to protect and look after Scotland's biodiversity.

- Plant a tree or a wildlife garden
- Reduce and recycle your rubbish
- Join or start a group that looks after your local areas for wildlife

Science Experiment

Question: Do fungi have the same growing needs as plants?

Discuss fair testing then plant cress seeds into 4 trays. Place in the following places and conditions

1. in the dark with no water
2. in the dark with regular watering
3. in the light with no water
4. in the light with regular watering

Use a mushroom growing kit to test the growing needs of mushrooms.

What do mushrooms need to grow? Do they have the same needs as plants?



For further information and images

www.naturegrid.org.uk/biodiversity/crypfungi.html

www.factmonster.com

www.fungus.org.uk

www.fungi4schools.org

www.snh.org.uk/speciesactionframework

www.snh.org.uk/scottish/species/fungi/fungicode.asp

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www.educationalresourcepartnership.co.uk

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There is a poster to go with this factsheet and other posters and factsheets in the 'All About' series. Download the poster from www.snh.org.uk/pdfs/education/poster/p-fungi.pdf or contact SNH, Battleby, Redgorton, Perth, PH1 3EW



All about Fungi



Good Rotters!

Fungi are responsible for a lot of the rotting or **decomposing** that happens in the world. They are some of nature's most important re-cyclers.

What is a fungus?

Fungi (plural of fungus) are not in the plant or animal kingdom. They are in a kingdom of their own!

Fungi are living organisms which come in a wide variety of shapes and sizes. They are mostly made of thread-like tubes, called hyphae, that are usually too small to see. These threads grow into a branching network, called a mycelium.

Fungi do not have flowers or make seeds. They have mushrooms or toadstools, sometimes called fruiting bodies. These grow from the mycelium, and make and spread spores. The spores of fungi are like the seeds of plants.



Fungi - with fruiting body

1. Cap of fruiting body
2. Wedge of cap showing gills (a) and spores (b)
3. Magnified underside of cap showing gills (a) and spores (b)
4. Spores, highly magnified, beginning to grow
5. Spores become hyphae (usually too small to see) and form mycelium (c)

Delicious or Deadly?

Some fungi are delicious to eat like **chanterelles**.

Others like the **DEATH CAP** can be mistaken for an edible fungus and cause horrible damage to a human's liver and kidney before they even feel unwell, by then it is usually too late!



Chanterelles

Never eat any fungus unless it has been identified by an expert.

That smell – it's so good!

Truffles are fruiting bodies of fungi which form underground. The truffle attracts mammals by its amazing smell. The truffle is dug up and eaten and the **spores** of the fungus get carried away and planted somewhere new in the animal's dung.

Stinkhorns also smell, they stink of rotting meat, YUK! But why? Just like the truffles the smell is a bait to lure in an animal to disperse the **spores**. Stinkhorns attract carrion beetles and flies. The spores are covered in a sticky mucus and they get stuck onto the insects which land on the mushroom. Eventually they dry and fall off but by then they have been spread far and wide.

Lichens

– are a fungus and plant ‘team’.

The **fungus** provides the ‘home’ - a protected place for the plant to live.

The **plant**, which is usually a tiny simple type of plant called alga, uses the sun’s energy to make food and shares the food with the fungus.

The **alga** lives sandwiched between the layers of the fungus.

Lichens can grow crust-like on rocks at a rate of as little as 0.1 mm per year!

Or they can be leafy or beard-like growing on the ground or on trees.



Monster Mushroom

Possibly the **oldest, largest** and **heaviest** living thing on Earth is a fungus. The soil in a forest in Oregon USA is full of the tiny connected tubes of a single Honey Fungus.

The fungus is spread through the soil for over 5 km! Honey fungus gradually kills a tree’s roots. Foresters were starting to wonder why so many trees all in one place were dying.

The fungus is estimated to be at least 2,400 years old! The same species is also found in Scotland.

Helping plants grow

You may think that plants take food from the soil through their roots – this is not quite true. Most plant roots are full of, and surrounded by many fungi that give our plants, the food they need to grow. However, the plants provide the supplies of sugar for their own growth. This type of relationship that is good for the plant and the fungus is called a **mycorrhiza**.



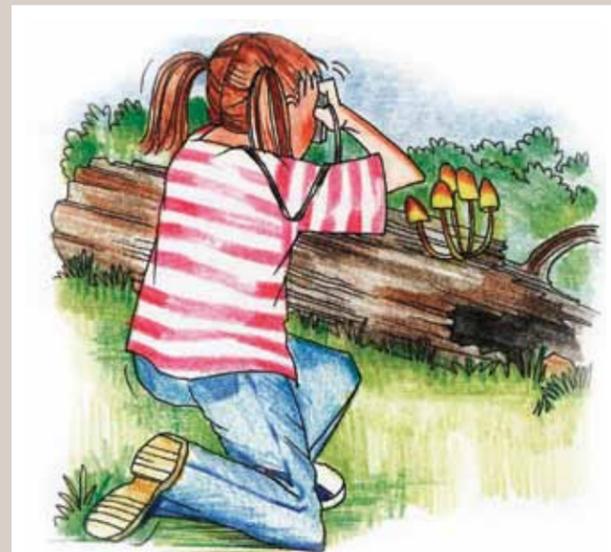
Mouldy bread - Hero fungus

PENICILLIN was discovered in 1928 by Alexander Fleming. **Penicillin** is a chemical made by a fungus. The fungus grows as a greenish mould on stale bread. Many horrible diseases caused by bacteria – such as gangrene and tuberculosis are now cured thanks to **penicillin**.

Disaster Fungus

About one **million** Irish people died between 1845-1850 and many more families left Ireland to seek a new life in America.

This terrible tragedy in Irish history was caused by the **potato blight fungus**. This fungus is a parasite, that damages potatoes, and year after year caused the potato crop to rot and the people starved.



Find your fungus

See if you can find a **toadstool** or **fungus** growing in the school grounds.

Take time lapse photographs at daily intervals on your chosen mushroom or toadstool.

Print out the photos, lay them on top of each other and flick through to show a ‘moving’ picture of your fungus growing.

Make a quiz

Look through the factsheet and write a set of quiz questions you could ask the rest of the class. Put the answers on a separate piece of paper.



Art Work

Have a look at books or on the ‘net’ for pictures of fungi and lichens. Choose several pictures which you like.

1. Paint an abstract picture using the features of the fungus or lichen, or,
2. Make a detailed pencil and ink drawing of your chosen fungus or lichen

Ask an Expert

Ask a local expert or countryside ranger to take the class for a walk to look for lichens, fungi, moss and ferns.

The children could take photographs or make drawings and note down

- What the organism looked like
- What it was growing on
- Whether it was growing in a shady or sunny place
- Whether it was growing on the north side or the south side of a tree, wall or stone
- Whether it liked to be wet, damp or dry

Take some hand lens with you to see the details of lichens and mosses close up.

Ask the expert before touching any of the fungi.



Hazel Gloves (above) is rare fungus found on Hazel trees in ancient woodlands that have been undisturbed. Its name comes from its glove-like lobes. It is an important part of Scotland’s biodiversity.

Writing Activity

Try writing a poem about fungi

FABULOUS FUNGI!

If you go down in the woods today

You’re in for a big surprise

For if you have a good look around

In the trees and over the ground

There’s a parade of fungi for our delight

What a fantastic, wonderful sight!

But be careful, do not pick

Get it wrong and you could be sick!

An expert person is who we need

Before we pick them and have a feed

Best to take photos and watch them grow

Just let them give us a wonderful show!

Red ones, yellow ones, brown ones and white

Yes they are beautiful, oh what a sight!

Fungal Facts

1. Because fungi do not need sunlight to grow (unlike plants) they can grow in the dark
2. Picking the fruiting bodies does not damage the fungus (its like picking apples from a tree). However disturbing the ground or trees can destroy the fungus
3. Ploughing up traditional grazing land or cutting down woodland causes lots of rare fungi to be lost
4. Ancient native woodlands have a much greater diversity of weird and wonderful fungi than felled and re-planted commercial woodlands
5. There are about 6x more species of fungi in Britain than there are species of flowering plants