

Please Miss: what's happened to Kingdom Fungi?

People interested in nature probably expect that any educational presentation of “biology” will include a balanced description of bacterial, animal, plant and fungal biology. After all, leave out any of these components and the story of life on Earth is incomplete. But when the children walk through the doors into school what they are taught depends on the developers of the school curriculum. In the United Kingdom, unfortunately, the developers of the National Curriculum don't seem to know much about fungi. Indeed, they seem to be totally ignorant about this Kingdom of organisms. As a result, children in the UK, from primary level onwards are taught about bacteria, animals, and plants. No fungi. In fact, in England alone, more than a million children each year complete their statutory National Curriculum (NC) with no knowledge of Kingdom Fungi (Moore *et al.*, 2005).

This is an astonishing omission because we are surrounded by, and dependent on, fungi every hour of every day of our lives. Yet the word ‘fungus’ does not appear in the 87-page NC 1999 Programme of Study for Science, which is the statutory instrument that defines the curriculum for Key Stages 1-4 (ages 5 to 16), and the same applies to the revised 2006 curriculum.

The fact that fungi are not plants, not animals, and not bacteria, is not even mentioned in current GCSE specifications. Instead, the National Curriculum persists with comparisons between animals with plants, and by so doing fails to show the pupils that fungi have their own unique cell biology, their own unique developmental biology, their own unique life style, and a crucial place in every ecosystem and in every food web on this planet.

Despite the NC, though, with just a little bit of thought, fungi can be used for teaching many areas of the current curriculum specifications and in cross-curricular activities. Fungi are not just mushrooms, yeast and moulds:

- Fungi digest the grass eaten by cows (and all other herbivores);
- Fungi make plant roots work (more than 95% of all terrestrial plants depend on mycorrhizal fungi);
- We use fungal enzymes to start our cheese-making, clarify fruit juices, to distress denim for ‘stone washed’ jeans, and as fabric conditioners in the weekly wash;
- 21st century ‘wonder drugs’ from fungi include cyclosporin (used to suppress the immune response in transplant patients), the statins (very widely used to control cholesterol levels), and even today's most widely used agricultural fungicides, the strobilurins.

The British Mycological Society has recently published a range of classroom tested teaching resources, including:

- class sheets dealing with cells and cell biology, which ensure proper representation of both yeast and filamentous fungus;
- a series of five ready-made KS4 lessons (that include class sheets for pupil and teacher) comprising an introductory *Welcome to the World of Fungi*, *Reproduction and Conservation*, *Favourite or Nastiest Fungus*, *Fungi and Industry* and *Fungi and Disease*;
- a series of class sheets describing 15 different ‘*What's your favourite fungus?*’ stories from which the pupils extract important points, a pack of playing cards that mirror the class sheets and can be used to play a variety of games (and all the time the players are holding cards that each carry a different ‘fungal fact’), and a ‘name-game’ starter exercise.

The Key Stage 4 resources have been printed as a package that is available for distribution (free) from the author, and all work-sheets and classroom materials (ranging in suitability from primary to post-16) can be downloaded (free) from the British Mycological Society website at <http://www.fungi4schools.org/>.

David Moore, Faculty of Life Sciences, 1.800 Stopford Building, The University of Manchester, Manchester M13 9PT.

Reference:

Moore, D., Fryer, K., Quinn, C., Roberts, S. & Townley, R. (2005). How much are your children taught about fungi in school? *Mycologist* **19**: 152-158.

634 words

David Moore

From: Jill Sutcliffe [Jill.Sutcliffe@English-Nature.Org.UK]
Sent: 25 September 2006 10:32
To: david.moore@manchester.ac.uk
Subject: Fungi education article

Dear David,

I'd like to take up your kind offer made at the BMS Recording groups meeting of providing an article on fungi education. We will be producing a magazine as a follow up to Flora English Nature for the new organisation Natural England.

1 page and photos comes in at c 5-600 words so I leave it to you as to how much space refining the article you showed me might need. It would be helpful if you could let me know if this is still possible - I realise you could well be up to 1000 other things and to let me have the article if it is possible by mid October. Many thanks.

Trust you had a good break over the summer and that all is well.

Best wishes, Jill

Dr Jill Sutcliffe
Plants and Fungi unit manager
English Nature
Tel: 01733 455254

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David Moore

From: David Moore [david.moore@manchester.ac.uk]
Sent: 04 October 2006 09:56
To: Jill Sutcliffe
Subject: RE: Fungi education article

Hi Jill

Yes, I'll do my best for you, though the first two weeks of October are heavy with teaching (two full-day practical classes so far this week, and another tomorrow). It will be a slog but I should be able to put a few hundred words together.

All best wishes

David

David Moore, Faculty of Life Sciences, 1.800 Stopford Building, The University of Manchester, Manchester M13 9PT, UK. Tel: 0161 275 3903

Visit the best websites on the Internet:

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* <http://www.world-of-fungi.org/>
*
* <http://www.britmycolsoc.org.uk/>
*
* <http://www.fungi4schools.org/>
*
* ...and The Children's University of Manchester:
*
* <http://www.childrensuniversity.manchester.ac.uk/>

-----Original Message-----

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David Moore

From: David Moore [david.moore@manchester.ac.uk]
Sent: 12 October 2006 17:13
To: Jill Sutcliffe
Subject: Fungi education article

Dear Jill

Attached herewith is my draft of the article, plus a few potential illustrations. The text is just about 640 words.

Let me know if it suits your purposes.

All best wishes

David

Dr David Moore, Faculty of Life Sciences, 1.800 Stopford Building, The University of Manchester, Manchester M13 9PT, UK. Tel: 0161 275 3903.

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<http://www.childrensuniversity.manchester.ac.uk/>



Favourite_Fungus_Card_game.jpg...



Mycelium01.jpg (2 MB)



Mycelium02.jpg (3 MB)



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