

## Exploring biodiversity

### Introduction

In this activity students use the Natural History Museum's website 'Exploring biodiversity' <http://internet.nhm.ac.uk/eb/spprich.shtml> to provide background on what is meant by biodiversity, how it is measured and how species are classified.

### The activity

Students will be able to use the Exploring biodiversity website individually or in pairs to carry out the activities suggested, and then answer the summary questions at the end of this activity.

### Suggested answers to questions

4. Now use the Exploring biodiversity website and your textbook to answer:
  - (a) What is biodiversity?  
*Using the range of definitions in the glossary on this website, a good definition will refer to biodiversity at the levels of genetic variation within species, variation between species, variation between ecosystems and the habitats within ecosystems.*
  - (b) How is it measured?  
*Measures include species richness (number of different species in an area) and genetic diversity (the size of genetic differences between individual organisms in an area).*
  - (c) Why is it important, when measuring biodiversity, that scientists across the world agree on the classification of organisms?  
*The number and diversity of species in an area is important for measuring biodiversity, and these measurements can only be made and compared across different areas if scientists agree on classification groups.*
  - (d) Give three reasons why humans should try to maintain biodiversity.  
*In the section of the website called 'benefits of biodiversity', the categories are food and drink, medicines, industrial materials, ecological services and Leisure, cultural and aesthetic*

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#### How Science Works

**Ag** Data can be presented and analysed in a variety of formats including graphs with linear and logarithmic scales.

**Ai** Identifying and classifying living things is fundamental to understanding their variety. Scientists make, preserve and study collections of specimens as a valuable source of information which can help to answer important questions. The same set of objects can always be classified in different ways; the classification used will depend on the purpose of classifying, and is often based on underlying theoretical ideas about the objects.

**Eg** The desire to be first to a new discovery or breakthrough is a powerful motivation for scientists, and can lead to competition. Much scientific work, however, nowadays involves collaboration, in large interdisciplinary teams, often from several countries. This is particularly common where the work requires expensive equipment or the collection and processing of very large amounts of data.

#### Science explanations

**Pa** Biodiversity describes the whole variety of life on Earth. It includes the differences between species of plants and animals, but also their genetic variation within species, and the variety of ecosystems of which they are part.

**Pb** Classifying living things helps to identify relationships between and within species, and to decide how best to protect the individual species that are part of the world's biodiversity.

**Pc** New DNA technologies are changing the scientific approach to classification.



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### The Activity

1. Carry out the online survey at <http://internt.nhm.ac.uk/eb/thinkthru.shtml>

Discuss the survey's results and differing opinions in your class. It would be useful to return to this survey at the end of the topic to see if you have changed your mind on any questions.

2. One measure of biodiversity is species richness. Carry out the online activity at <http://internt.nhm.ac.uk/eb/spprich.shtml>
3. Measures of biodiversity rely on being able to classify species. Use the introduction to cladistics at <http://internt.nhm.ac.uk/eb/sortitout1.shtml>

Compare these cladograms with the evolutionary relationships shown on page 177 in the textbook.

4. Now use the Exploring biodiversity website and your textbook to answer:
  - (a) What is biodiversity?
  - (b) How is it measured?
  - (c) Why is it important when measuring biodiversity, that scientists across the world agree on the classification of organisms?
  - (d) Give three reasons why humans should try to maintain biodiversity.