

## Focus On....

# Biodiversity and Conservation

This resource guide aims to provide useful, detailed, high quality sources of information on biodiversity and conservation for students in Higher and Further Education. It is not a definitive list of Web resources on the subject, but a collection of interesting examples of what is available. More resources can be accessed from the Intute: biological sciences gateway at <http://www.intute.ac.uk/biologicalsciences/>

This Focus On... guide is located at:

<http://www.intute.ac.uk/supportdocs/focuson/biodiversity.pdf>

**Date of issue**

**March 2008 (revised March 2010)**

**Author**

**Carol Collins, Service Officer, Intute: Health  
and Life Sciences**

Copyright for this publication belongs to The Intute Consortium. This material may be **freely** distributed and copied for **educational purposes** only, provided that appropriate acknowledgement is given to Intute as the copyright holder and original publisher.

# Focus on Biodiversity and Conservation

Introduction.....	3
The concept of biodiversity and its definition .....	4
Research into biodiversity.....	4
Recording biodiversity.....	4
Identification/type specimens/taxonomy .....	4
Museums/herbaria/learned societies: historical records ..	5
Software for recording and managing data .....	5
Fieldwork/training .....	6
Repositories of records .....	6
Networks to share information .....	7
Raising awareness and funds for conservation .....	8
Carrying out practical conservation .....	8
Living collections (zoos, botanic gardens, seedbanks, breeding-programmes) .....	8
Conservation within a geographic area .....	9
Habitat preservation.....	9
Taxonomic groups/species preservation .....	10
Legislation/ agreements .....	10
Implementation by policy makers.....	11

---oOo---

## Introduction

In a world where we are losing species year on year, many of which we have perhaps not even recognised, it is essential to understand the existing biodiversity of the earth in order to conserve it.

To document what exists at the moment scientists have developed methods for studying species in the field, for identifying them, and for counting them. Only once a wild population is identified and numbers estimated is there any possibility of demonstrating whether that species is increasing, stable or decreasing. Only by understanding the environment in which a declining species lives is it possible to decide on appropriate action to reverse the decline. Whilst it is usually scientists who are learning about biodiversity and the factors affecting it, it is rarely they who make the decisions which determine whether it will increase or decrease, so it is important that they present their data in a form which demonstrates to policy makers just how and why biodiversity should be preserved. We have tried to organise this guide to give you a taste of the myriad online resources about the whole process from understanding biodiversity to implementing conservation, both at the local and at the global levels.

The types of resource that immediately spring to mind would perhaps include the websites of university departments doing research into biodiversity and government bodies trying to implement conservation measures, but there are many others. Museums, botanic gardens, zoos, software manufacturers, amateur enthusiasts, and local societies all produce relevant websites, and Web 2.0 technology is now providing the means for much more networking between organisations as well as allowing amateur enthusiasts to contribute directly to databases and discussions. A fascinating example of this mix of professional and amateur expertise is the Encyclopedia of Life (EOL) <http://www.eol.org/>, launched in May 2007, which will eventually provide for each known species a webpage in two parts: a controlled scientific view by an expert along with a blog-like section to which anyone can contribute.

To give this guide some structure we have presented examples of resources under a series of headings but of course many, if not most, of them could equally well appear elsewhere. The local wildlife trusts, for example, often use their websites to raise awareness of biodiversity and to educate and involve the public, but most also receive species records and undertake practical conservation by managing reserves.

## The concept of biodiversity and its definition

### **Global Environment Outlook 4: Biodiversity**

[http://www.unep.org/geo/geo4/report/05\\_Biodiversity.pdf](http://www.unep.org/geo/geo4/report/05_Biodiversity.pdf)

Chapter 5 of the UN Environment Programme publication GEO4 (2007) reviews the state of the world's biodiversity and sets out the reasons why policies need to change to prevent further loss.

### **NERC: Biodiversity**

<http://www.nerc.ac.uk/research/issues/biodiversity>

The Natural Environment Research Council is responsible for Government research into biodiversity in the UK and this section of the website gives a definition of biodiversity as well as an overview of research.

## Research into biodiversity

<http://www.hku.hk/ecology/>

Like the websites of many university departments, this gives an overview of the courses and research projects carried out, as well as detailing the specific research interests and publications of staff members.

### **Conservation International: Center for Applied Biodiversity Science**

<http://science.conservation.org/portal/server.pt>

The hub of scientific research within Conservation International, this Center's website gives access to its publications and transcripts of online discussions.

### **CEH: Centre for Ecology & Hydrology**

<http://www.ceh.ac.uk/>

This is the part of NERC responsible for research into the land and freshwater environments of the UK and the "Our Science" section of the website includes "Biodiversity" as one of the three Science Programmes.

### **Biodiversity and Conservation**

<http://www.springerlink.com/content/100125/?p=90a2b7c398cc4291b49ad4901bfed342>

One of several academic journals publishing papers on biodiversity.

## Recording biodiversity

### **Identification/type specimens/taxonomy**

#### **Type Specimen Register/US National Herbarium**

<http://persoon.si.edu/types/>

This site allows online searching of the botanical type specimens held in the Smithsonian National Museum of Natural History.

### **Zoological Museum Amsterdam: Bird Type Specimens Online**

<http://ip30.eti.uva.nl/zma3d/>

This site provides 3D images of the 151 type specimens, and specimens of 453 threatened or extinct species of birds, as well as information on the degree of threat and a list of references for each species.

## **Museums/herbaria/learned societies: historical records**

### **Biodiversity Heritage Library**

<http://www.biodiversitylibrary.org/>

Ten major natural history museums have joined forces to digitise the published literature of biodiversity held in their respective collections and make it freely available.

### **Linnean Society**

<http://www.linnean.org/>

The Linnean Society holds important 18<sup>th</sup> century animal and plant collections as well as manuscripts and letters and is gradually increasing online access to them.

### **American Museum of Natural History: Center for Biodiversity and Conservation**

<http://research.amnh.org/biodiversity/>

This site details research projects to record and conserve biodiversity in various parts of the world as well as giving information about related activities in the Museum itself.

### **Oxford Plant Systematics: Understanding plant diversity**

<http://herbaria.plants.ox.ac.uk/>

This site gives information about the University Herbaria and online access to the specimen database.

### **Natural History Museum: Biodiversity**

<http://www.nhm.ac.uk/nature-online/biodiversity/index.html>

This part of the Natural History Museum (London) website is aimed at a non-specialist audience and tries to show how the collections in the Museum can help in understanding and conserving biodiversity today.

## **Software for recording and managing data**

### **Recorder 6**

<http://www.recordersoftware.org/>

Recorder is a widely used tool for collection and collation of biological records and can be extended as a tool to maintain museum collections.

### **Integrated Habitat System**

<http://ihs.somerc.co.uk/>

Software which integrates habitat categories, GIS data capture etc., developed by Somerset Environmental Records Centre and others.

### **Biodiversity and WORLDMAP**

<http://www.nhm.ac.uk/research-curation/projects/worldmap/>

A demonstration of software to explore geographical patterns in biodiversity, rarity, and conservation priorities.

### **ETI BioInformatics**

<http://www.eti.uva.nl/>

An NGO providing ICT services and solutions to the scientific community.

### **Biodiversity Information Standards (TDWG)**

<http://www.tdwg.org/>

This group focuses on the development and publication of standards for the exchange of biological/biodiversity data.

## **Fieldwork/training**

### **Earthwatch**

<http://www.earthwatch.org/europe>

An international charity, Earthwatch arranges for volunteers to learn about biodiversity through working with conservation projects world-wide.

### **Field Studies Council**

<http://www.field-studies-council.org/>

An educational charity, the FSC website details courses on all aspects of fieldwork including recording biodiversity, as well as published identification keys for UK flora and fauna.

### **BTCV: practical conservation online**

<http://handbooks.btcv.org.uk/handbooks/index/>

The British Trust for Conservation Volunteers website provides full-text online access to its handbooks on practical tasks such as hedging.

## **Repositories of records**

### **Biological Records Centre**

<http://www.brc.ac.uk/>

BRC is the national custodian of data on the distribution of wildlife in the British Isles and its website details recording schemes for various taxonomic groups, as well as giving links to Local Biological Records Centres around the country.

### **Bees, Wasps and Ants Recording Society**

<http://www.bwars.com/>

One example of the many societies dedicated to studying a particular taxonomic group, this Society's website provides advice on how to record bees, wasps and ants in Britain and Ireland, and to submit records electronically.

### **British Trust for Ornithology**

<http://www.bto.org/>

An independent scientific research trust, the BTO specialises in running wild bird surveys using large numbers of volunteers. The website offers facilities for online submission of records as well as giving some analysis of past results.

## **Networks to share information**

### **GBIF Global Biodiversity Information Facility**

<http://www.gbif.org/>

GBIF aims to make primary biodiversity data available throughout the world.

### **IUCN Conservation Commons**

<http://conservationcommons.net/>

A co-operative effort to improve open access to and unrestricted use of knowledge relating to the conservation of biodiversity.

### **BioNET : the global network for taxonomy**

<http://www.bionet-intl.org/opencms/opencms/index1.jsp>

BioNET is an international initiative dedicated to promoting taxonomy, and its importance for the conservation of biodiversity, especially in the biodiversity rich but economically poorer countries of the world.

### **Belize biodiversity information system**

<http://fwie.fw.vt.edu/WCS/index.htm>

An example of a site attempting to cover biodiversity of an individual country.

### **Ecological Monitoring and Assessment Network (Canada)**

<http://www.eman-rese.ca/eman/>

A co-operative partnership of organisations and individuals involved in ecological monitoring in Canada.

### **ALTER-Net (European Research Network)**

<http://www.alter-net.info/>

A five-year project of the European Union aiming to integrate biodiversity research, monitoring, and communication capacity between 24 institutes from 17 European countries.

### **National Biodiversity Network**

<http://www.nbn.org.uk/>

The National Biodiversity Network provides a gateway to records of various taxonomic groups throughout the UK.

### **Biological Conservation Newsletter**

<http://botany.si.edu/pubs/bcn/>

This monthly publication from the Smithsonian Institution includes an extensive searchable bibliography of current literature.

## Raising awareness and funds for conservation

### **EDGE: evolutionarily distinct and globally endangered**

<http://www.edgeofexistence.org/>

The Zoological Society of London's programme to identify, highlight, and protect those threatened species which represent a significant amount of unique evolutionary history.

### **World Wide Fund for Nature WWF**

<http://www.wwf.org/>

An enormous and complex site highlighting conservation issues throughout the world.

### **The Wildlife Trusts**

<http://www.wildlifetrusts.org/>

A voluntary organisation including nearly 50 local wildlife trusts throughout the UK most of which cover a county and have individual websites.

## Carrying out practical conservation

### **Fauna and Flora International**

<http://www.fauna-flora.org/>

Details projects to protect biodiversity throughout the world.

### **Nottinghamshire Wildlife Trust**

<http://www.wildlifetrust.org.uk/nottinghamshire/>

One of the local Trusts in the UK which manages reserves for wildlife.

### **RSPB**

<http://www.rspb.org.uk/>

An example of a body working for the conservation of a specific taxonomic group; in this case birds.

## Living collections (zoos, botanic gardens, seedbanks, breeding-programmes)

### **Bristol Zoological Gardens**

<http://www.bristolzoo.org.uk/>

Some useful information on particular species, though buried amongst information for visitors, fundraising etc.

### **Frankfurt Zoological Society annual report**

<http://www.zgf.de/?type=Gesch%C3%A4ftsbericht&id=70&language=en>

These annual reports detail conservation projects in various areas of the world.

### **Millennium Seed Bank Project, Royal Botanic Gardens, Kew**

<http://www.kew.org/msbp/index.html>

A project to bank 10% of the world's wild plant species by 2010.

## Conservation within a geographic area

### **African Conservation Foundation**

<http://www.africanconservation.org/>

A portal offering access to projects, organisations, and conservation news in Africa

### **Madagascar Wildlife Conservation**

<http://www.mwc-info.net/en/>

A small, local organisation promoting conservation projects in Madagascar.

### **Chicago Wilderness**

<http://www.chicagowilderness.org/>

A good example of partnership working to understand and protect a specific area.

### **ALPARC: Alpine Protected Areas**

<http://www.alparc.org/>

This network aims to pool expertise throughout Alpine protected areas, in relation to developing tourism, forestry, and agriculture whilst maintaining biodiversity.

## Habitat preservation

### **Management of wetlands for wildlife**

<http://www.sac.ac.uk/mainrep/pdfs/tn519wetlandswildlife.pdf>

A technical note published in 2002 by the Scottish Agricultural College.

### **National Coalition for Marine Conservation**

<http://www.savethefish.org/>

Based in Virginia, USA, this coalition works to preserve ocean fish through protecting the marine habitat and preventing over-fishing.

### **Wildlife Habitat Council**

<http://www.wildlifehc.org/>

A co-operative effort between business and conservation, the Council helps large landowners to manage unused land for the benefit of wildlife.

### **Mangrove Action Project**

<http://www.mangroveactionproject.org/>

Through a global network, this project is dedicated to reversing the degradation and loss of mangrove forest ecosystems worldwide.

### **Wetlands: New South Wales Dept Environment & Climate Change**

<http://www.environment.nsw.gov.au/wetlands/RiversAndWetlands.htm>

Information about the conservation and management of wetlands under the NSW Wetlands Management Policy.

## Taxonomic groups/species preservation

### **IUCN: Crocodile Specialist Group**

<http://iucncsg.org/ph1/modules/Home/>

One of the specialist groups of the IUCN, this is a world-wide network of people interested in the conservation of the 23 living species of crocodilians.

### **Great Apes Survival Project (GRASP)**

[http://www.unep.org/grasp/About\\_GRASP/index.asp](http://www.unep.org/grasp/About_GRASP/index.asp)

A UNEP project to save the great apes and their habitat.

### **Rhino Resource Center**

<http://www.rhinoresourcecenter.com/>

The Center aims to assist research and conservation of rhinos worldwide by maintaining a searchable database of all relevant publications.

### **Canadian Wildlife Service: Migratory Birds Conservation Division**

<http://www.cws-scf.ec.gc.ca/mbc-com/default.asp?lang=En>

This site outlines the legislation protecting migratory birds, and details the conservation and monitoring programmes in which the Service is involved.

## Legislation/ agreements

### **Convention on Biological Diversity**

<http://www.cbd.int/>

This site sets out the history of the Convention from conception, to signature in 1992, and subsequent implementation.

### **The Darwin Declaration**

<http://www.environment.gov.au/biodiversity/abrs/publications/other/darwin/index.html>

The Australian Government has published this declaration (following on from the Convention on Biological Diversity) which recognises a taxonomic impediment to conservation in the lack of taxonomic experts.

### **Convention on Migratory Species**

<http://www.cms.int/>

An intergovernmental treaty to conserve terrestrial, marine, and avian migratory species throughout their range.

### **CITES: convention on international trade in endangered species**

<http://www.cites.org/>

An international agreement between governments to ensure that trade in specimens of wild animals does not threaten their survival.

## Implementation by policy makers

### **Natural England: Conservation**

<http://www.naturalengland.org.uk/ourwork/conservation/>

The statutory body charged with the conservation and enhancement of England's natural environment.

### **The State of the UK's Birds 2008**

[http://www.bto.org/research/pop\\_trends/state\\_uk\\_birds.htm](http://www.bto.org/research/pop_trends/state_uk_birds.htm)

A series of annual reports providing an overview of the status of wild bird populations in the UK and now used as an environmental indicator by Government.

### **Defra Wildlife and Countryside: Biodiversity**

<http://www.defra.gov.uk/environment/biodiversity/index.htm>

Defines biodiversity and links to various publications relating to the monitoring and conserving of biodiversity in the UK.

### **UK Biodiversity Action Plan**

<http://www.ukbap.org.uk/>

This is the UK's response to the Convention on Biological Diversity. It describes the UK's biological resources and provides detailed plans for the protection of species and habitats. The site also links to local BAPs for each area of the UK.

### **Wales Biodiversity Partnership**

<http://www.biodiversitywales.org.uk/>

Provides links to Biodiversity Officers and Local BAPs throughout Wales.

### **Biodiversity Scotland**

<http://www.biodiversityscotland.gov.uk/index.php>

The site of the Scottish Biodiversity Forum with links to the Scottish Biodiversity Strategy.

### **Our Chance to Turn the Tide: New Zealand's Biodiversity**

<http://www.biodiversity.govt.nz/>

The New Zealand Government site about the country's wildlife, with a link to its Biodiversity Strategy.

---oOo---

To find more information on Biodiversity and Conservation search Intute at

<http://www.intute.ac.uk/biologicalsciences/>