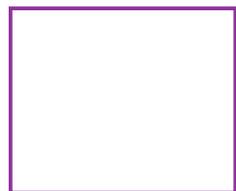


European Network for Biodiversity Information



www.enbi.info



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What is ENBI

ENBI, the European Network for Biodiversity Information, is a Thematic Network funded by the European Union for a period of three years. The Network began functioning in January 2003 with the aim of coordinating Europe's efforts in the broad field of biodiversity information, and providing an integrated contribution to the Global Biodiversity Information Facility (GBIF). Currently, the Network has sixty-six members, representing 24 countries, including national GBIF nodes, co-ordinating institutes of past and current EU projects relevant to Biodiversity Information, and other established and major research centres and private organisations involved in biodiversity information.

The need for biodiversity information

Man has for centuries taken for granted the diversity of living organisms, plant, animal and microbial, living on our planet; biodiversity which has provided man with his every need. Biological diversity is essential to maintain life on earth and has important social, scientific, educational, cultural, recreational and aesthetic values. Increasing awareness that biodiversity is being destroyed worldwide at unsustainable rates provided an important trigger for the Global Biodiversity Assessment (GBA), published in 1995 by the United Nations Environment Programme (UNEP).

1



Sources of biodiversity information

The basic information resource for the GBA and all other assessments of past and present biodiversity resides in numerous collections, large and small, distributed worldwide in museums, herbaria, research institutes and the like, but a problem that urgently needs to be addressed at the beginning of the twenty-first century is the fact that most existing biodiversity information is not dynamically accessible in digital format.

Biodiversity informatics

To be able to use biodiversity information to its full potential, for both scientific and societal applications, it will be crucial to digitise our primary biodiversity data and to make these data available in an integrated shared information infrastructure. This is a complex task and many individual organisations are already involved in attempts to solve this problem. Coordination to align these efforts and to avoid overlap and duplication is therefore a major problem to be addressed. Biodiversity informatics is evolving as a new discipline and it is also essential to organise and prepare for exciting applications when biodiversity data can be studied in combination with data from other information domains such as molecular sequences, climate and geography.

2

The Global Biodiversity Information Facility (GBIF)

A major international collaborative effort to discover, rationalise and put to use the extensive amount of biodiversity information existing on a global scale was commenced in 1996 under the auspices of the OECD and led to the establishment of the Global Biodiversity Information Facility (GBIF, www.gbif.org), which formally came into existence in March 2001. GBIF was formed with the purpose of making the world's biodiversity data freely and universally available and its business plan gives priority to the vast objective of making primary biodiversity data globally available to all. In the first instance the GBIF work programme is concerned with taxonomic data and with biological collection and specimen data, as well as promoting the common access and interoperability between these databases.



The Role of ENBI

GBIF operates through representatives of all those countries that have become members of GBIF, its national 'nodes'. Within Europe, the nodes of those countries that are members of GBIF work as representatives of their countries to deliver the aims of GBIF. But there is also a clear need for a coordinated European strategy in order to maximise the impact of Europe in GBIF. Filling this need was from the outset seen by the European Union as a major *raison d'être* for the establishment of a European Network for Biodiversity Information.

ENBI has as its general objective the development of an open network of relevant biodiversity information centres in Europe and other countries of the western European palearctic region. In particular, ENBI includes amongst its membership all European national nodes of the Global Biodiversity Information Facility (GBIF) as well as representatives from all relevant EU-funded projects. By offering state of the art information from a Europe-wide pool of technical and human resources, the Network aims to provide a complete view on European biodiversity.



ENBI will contribute to the objectives of GBIF by providing a platform for European biodiversity data, information coordination, exchange of information, priority setting and selected feasibility studies.

As Europe holds the world's richest and most important biodiversity collections, literature and other relevant data (see Table 1), and as much of this information relates to parts of the world other than Europe, the network will also provide important information to users outside Europe. The sharing of these non-European data will happen mainly through GBIF.

ENBI will be concentrating on databases at the European scale and on activities that need co-operation at a European level. ENBI also explores the potential of tools to apply the biodiversity data as such, or in combination with other categories of data. In addition, ENBI will focus on the market of end-users with special attention on processes to develop specific products and services. Other objectives are the establishment of communication platforms to inquire the needs of end-users and to disseminate biodiversity expertise to professionals and policy makers.

Table 1. Biodiversity reference collections of the world, indicating the major importance of European collections. (Source: Global Biodiversity Assessment, UNEP, 1995).

	Reference Collections			
	<i>Plant and Fungal</i>		<i>Museums and Zoological Reference Collections</i>	
	Collections	Specimens (m)	Natural History	Zoology
World Total	2946	279	1048	179
Europe	1149	149	346	95
of which EU (25) countries	1022	135	270	81
North and Central America	851	71	187	19
of which USA	645	61	156	12

ENBI is co-ordinating its activities with those of the European Community Clearing-House
 Mechanism: both organisations give top priority to the easy access to biodiversity data.

In this way, ENBI will enhance communication and co-operation between GBIF-nodes, biodiversity institutes and relevant initiatives in Europe. It will identify priorities with respect to mobilizing biodiversity information and establish provisions for joint approaches at the European scale. The network is expected to evolve into a consortium with a core set of activities that will address and co-ordinate the variety of databases, interoperability, services, dissemination and legal and financial issues at a European level.





ENBI's activities and contacts

The planned activities are grouped under four main headings.

- I. Co-ordinating activities.**
- II. Maintenance, enhancement and presentation of biodiversity databases.**
- III. Data integration, interoperability and analysis.**
- IV. User needs: Products and e-services.**



I. Co-ordinating activities

- Development of a strong network structure with identifiable centres of excellence, including the establishment of a platform for national GBIF nodes to support GBIF-related discussions and decision-making on scientific issues that would benefit from a coordinated European approach.
- Establishment of strategies for sustainability and continuity of the network activities by developing a European approach, building upon Member States initiatives.
- Identification of priorities with respect to biodiversity information, information management, and applications, that require a common approach and are more efficiently managed at the European scale.
- Dissemination of information and expertise about data content and data management methodologies as well as best practice procedures, to inform both institutional staff (including new generations of scientists), and policy makers.
- Publishing of recommendations with respect to the legal and financial implications of sharing and dissemination of biodiversity information.

Contacts

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Overall network co-ordination; co-ordination with GBIF; sustainability and continuity of European activities; general enquiries about ENBI

University of Amsterdam

Zoological Museum of Amsterdam
The Netherlands

Wouter Los (ENBI Project coordinator)

Cees Hof (ENBI Project Manager)

E-mail: enbi@science.uva.nl

ENBI Forums,

Inventory of the State of the Art

Real Jardín Botánico-Museo Nacional de Ciencias Naturales

CSIC, Madrid, Spain

Francisco Pando

Marisa Esteban

E-mail: enbiforums@ma-rjb.csic.es

Dissemination Activities; Workshops; Seminars

Mediterranean Agronomic Institute of Chania

Department of Natural Products
Chania, Greece

Christopher Johnson; cjohnson@maich.gr

Melpo Skoula; melpo@maich.gr

Intellectual property rights, copyrights and financial issues

Royal Botanic Gardens

Kew, Richmond, UK

Simon Owens; s.owens@rbgkew.org.uk

II. Maintenance, enhancement and presentation of biodiversity databases

- Development of routines and mechanisms to update, validate and ensure sustainability of European biodiversity databases that are not expected to be maintained at the national level.
- Identification of gaps in European taxonomic knowledge and information, and strategies to solve these.
- Contribution to a common biodiversity information infrastructure so that the various networks and institutions can efficiently and without duplication of effort share and re-use information.

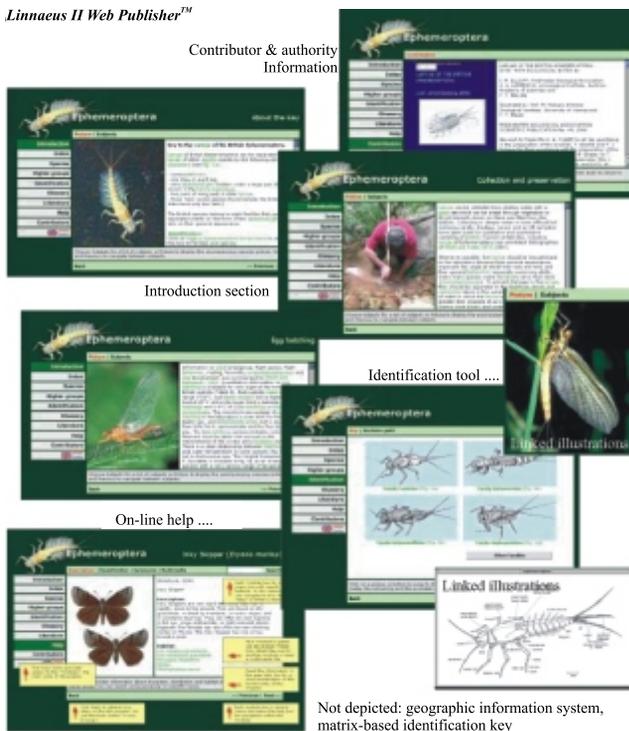


Figure 1. Illustrations from ETI's Linnaeus II Web Publisher™ software that supports the creation and publication of electronic species monographs on the Internet as a contribution to the GBIF "Species Banks" Programme. The tool includes a (multimedia) taxonomic database, computer aided identification, interactive geographic information system, literature and glossary in a hyperlinked environment. It will be available for users in 2004.

Contacts

Co-operation of pan-European checklist and 'species bank' database projects

University of Reading

Centre for Plant Diversity and Systematics
School of Plant Sciences
Reading, UK

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Yuri Roskov; y.roskov@reading.ac.uk
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Co-operation of pan-European databases on biological collections and specimens

The Natural History Museum

Department of Entomology
Cromwell Road
London, UK

Malcolm Scoble
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Designing and promoting common standards for access and operability of Observational survey data

University of Turku

Centre for Biodiversity
Turku, Finland

Juka Salo, Marja Vieno
E-mail; enbi@utu.fi

III. Data integration, interoperability and analysis

- Identification of new emerging technologies and trends to anticipate upon and to organize a critical mass of European efforts.
- Integration of standards and protocols (metadata) for taxonomic, specimen, collection, and survey data in a common interoperability structure.
- Analysis of the application of Grids in order to integrate distributed primary data into end-user oriented products.
- Inventory of biodiversity database analysing software systems (existing and in development), and the identification of common (exchangeable) approaches (especially for GIS based analyses).
- Contribution to GBIF's common biodiversity information infrastructure in collaboration with other initiatives, e.g. those of the European Environmental Agency (EEA) and current EU database projects.

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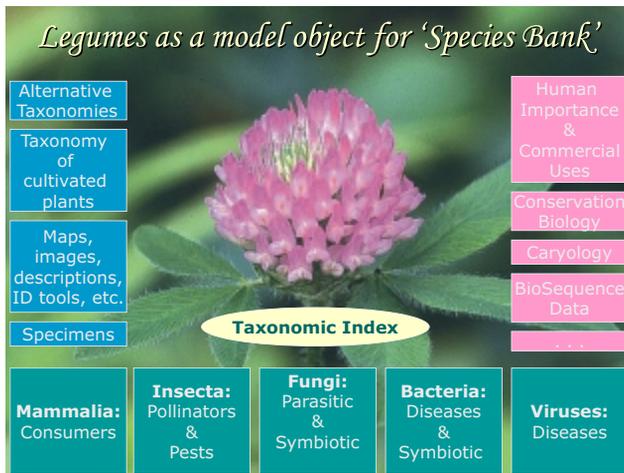


Figure 2. An example of the needs for interoperability between European databases. (Illustration kindly supplied by Dr Yuri Roscov, University of Reading, UK)



Contacts

Data management in large distributed biodiversity database systems

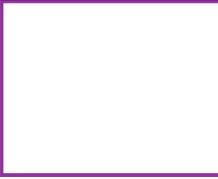
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Interoperability and common access to biodiversity information systems

ETI Biodiversity Centre

Amsterdam, The Netherlands

Peter H Schalk

Marc Brugman

E-mail: enbi@eti.uva.nl

Exploration, selection and assessment of generic analysis tools and options for data mining

Biologiezentrum des Oberösterreichischen Landesmuseums

Zobodat

Linz, Austria

Michael Malicky; m.malicky@landesmuseum-linz.ac.at



IV. User needs: Products and e-services

- Establishment of communication platforms to support the development of common procedures to meet end-user priorities with respect to high quality products and e-services.
- Establishment of the best ways of institutional co-operation throughout Europe to provide species-level and collection-based biodiversity data to end-users, with special attention for sharing biodiversity data with end-users in the countries where these data originate from.
- Development of dictionaries of biodiversity terminology in different (8) European languages, to be integrated in existing machine translation services.

Contacts *Multilingual access to European biodiversity sites*

University of Kiel

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Kiel, Germany

Rainer Froese

Bernd Ueberschaer

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Information services on European biodiversity data

Verlag für Interaktive Medien (VIM)

Gaggenau, Germany

Christian Köppel

Norbert Hirneisen

E-mail: postmaster@vim.de

Making non-European biodiversity data in European repositories globally available

University of Copenhagen

Zoological Museum

Copenhagen, Denmark

Henrik Enghoff

Isabel Calabuig

E-mail: icalabuig@zmuc.ku.dk





European biodiversity information projects represented in ENBI



At the start of the ENBI project, as well as the representatives of the European GBIF nodes, the following European Projects were represented in the membership of ENBI:

- BioCASE (Biological Collections Access System for Europe)
- CABRI (Common Access to Biological Resources and Information)
- EBRCN (European Biological Resource Centres Network)
- EPGRIS (European Plant Genetic Resources Information Infrastructure)
- ENHSIN (European Natural History Specimen Information Network)
- ERMS (European Register of Marine Species)
- EU Rioforum
- EURISCO (European PGR Search Catalogue)
- Euro+Med Plantbase
- Fauna Europaea
- MEDUSA (Conservation and Sustainable Use of Wild Plants of the Mediterranean Region)



Membership of ENBI

It is intended that ENBI should also embrace new projects that have been or will be funded since the outset of ENBI and there is provision in the structure of ENBI for organisations hosting new projects, as well as other institutions involved in biodiversity information, to become associate members of ENBI. Institutions interested in becoming associate members should in the first instance contact the ENBI project manager, Cees Hof (enbi@science.uva.nl)

Contacting ENBI

ENBI Project Manager

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ENBI web site

www.enbi.info



Key to cover illustration

	Evergreen Needleleaf Forest
	Deciduous Needleleaf Forest
	Deciduous Broadleaf Forest
	Mixed Forest
	Closed Shrublands
	Open Shrublands
	Woody Savannas
	Savannas
	Grasslands
	Permanent Wetlands
	Croplands
	Urban and Built Up
	Cropland/Natural Vegetation
	Snow and Ice
	Barren or Sparsely Vegetated
	Water



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For more information please contact:

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