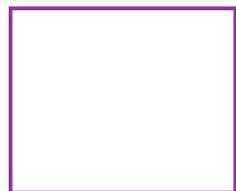


# European Network for Biodiversity Information



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This brochure was produced and printed by the Graphic Arts & Publishing Unit of the Mediterranean Agronomic Institute of Chania (MAICh), Crete, Greece

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The editor thanks all those who provided illustrations, especially Yuri Roscov (Reading), Peter Schalk (Amsterdam) and the LIFE Western Crete Project funded by EU DGXI and the Hellenic Ministry for the Environment



## ***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.

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## ***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](http://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 I.** Biodiversity reference collections of the world, indicating the major importance of European collections. (Source: Global Biodiversity Assessment, UNEP, 1995).

	<b>Reference Collections</b>			
	<i>Plant and Fungal</i>		<i>Museums and Zoological Reference Collections</i>	
	<b>Collections</b>	<b>Specimens (m)</b>	<b>Natural History</b>	<b>Zoology</b>
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.**



## 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.

### 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

Frank Bisby; [f.a.bisby@reading.ac.uk](mailto:f.a.bisby@reading.ac.uk)  
Yuri Roskov; [y.roskov@reading.ac.uk](mailto:y.roskov@reading.ac.uk)  
Pamela Harling;  
[p.j.harling@reading.ac.uk](mailto:p.j.harling@reading.ac.uk)

*Co-operation of pan-European databases on biological collections and specimens*

#### **The Natural History Museum**

Department of Entomology  
Cromwell Road  
London, UK

Malcolm Scoble  
E-mail: [enbi@science.uva.nl](mailto:enbi@science.uva.nl)

*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](mailto:enbi@utu.fi)

On-line help ....

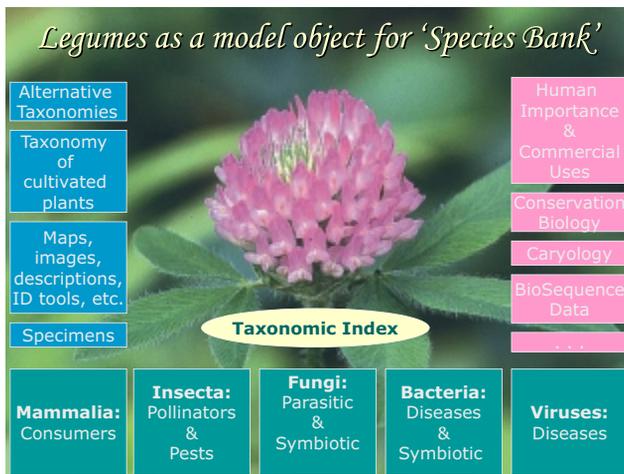
ic information system,  
matrix-based identification key

**Figure 1.** Illustrations from ETI's Linnaeus IIWeb 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.

### 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*

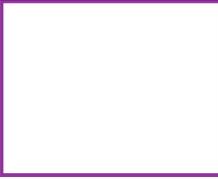
### **University of Amsterdam**

Computer Science and Informatics Institute

Amsterdam, The Netherlands

Hamideh Afsarmanesh; hamideh@science.uva.nl

Özgül Ünal; ozgul@science.uva.nl



*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**

Institut für Meereskunde  
Kiel, Germany

Rainer Froese

Bernd Ueberschaer

E-mail: [info@enbi.linguaweb.org](mailto:info@enbi.linguaweb.org)

### *Information services on European biodiversity data*

#### **Verlag für Interaktive Medien (VIM)**

Gaggenau, Germany

Christian Köppel

Norbert Hirneisen

E-mail: [postmaster@vim.de](mailto: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](mailto: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](mailto:enbi@science.uva.nl))

## ***Contacting ENBI***

### **ENBI Project Manager**

Cees H.J. Hof

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### ***ENBI web site***

[www.enbi.info](http://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



[www.enbi.info](http://www.enbi.info)

**European Network for Biodiversity Information**

**For more information please contact:**

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