Belgian Biodiversity Information Facility

BeBIF

The Belgian National Node of the worldwide biodiversity network GBIF

http://www.be.gbif.net

Biodiversity informatics

Belgian Biodiversity Information Facility

The science of organisation, sharing, dissemination and use of data, information, and knowledge on biological diversity

Total number of species about 10 million

1.7 million species have been described and named

Total number of specimens in museum collections 1-3 billion

Also hiding a large number of not yet described species

18 000 new species described each year

This rate has not improved during the past 40 years

1 000 to 10 000 species lost each year to extinction

This rate is 1000 times faster than the natural rate

GBIF: Global Biodiversity Information facility

GBIF is an international scientific co-operative project based on a multilateral agreement (MoU) between countries, economies and international organisations, dedicated to:

Establishing an interoperable, distributed network of databases containing scientific biodiversity information, in order to:

Make the world's scientific biodiversity data freely and universally available to all,

- with initial focus on species- and specimen-level data,
- with links to molecular, genetic and ecosystems levels

The Story of GBIF

1996	Planning of GBIF starts
January 1999	Working group of the MegaScience Forum of the OECD recommends establishing GBIF
March 2001	GBIF formally established
June 2001	Denmark chosen to host GBIF Secretariat
November 2001	Executive Secretary James L. Edwards moves to Copenhagen and initiates Secretariat
October 2002	First work programme approved
2004	Three-year review and necessary reorientation
2006	Initial 5 year commitment of participants over and future of GBIF will be reconsidered

GBIF WORK PROGRAMMES

- **Data Access and Database Interoperability (DADI)**
- **Electronic Catalogue of Names of Known Organisms (ECAT)**
- **Digitisation of Natural History Collections (DIGIT)**
- **Outreach and Capacity Building (OCB)**
- "Species Bank"
- Digital Biodiversity Literature Resources

GBIF VOTING PARTICIPANTS

(as on 4 April 2003)

23 Voting Participants:

Australia, **Belgium**, Canada, Costa Rica, Denmark, Finland, France, Germany, Iceland, Japan, Republic of Korea, Mexico, Netherlands, New Zealand, Nicaragua, Peru, Portugal, Slovenia, Spain, South Africa, Sweden, UK, USA

Convention on Biological Diversity is also an *ex officio* (non-voting) member of Governing Board

Associate Participants: Countries / Economies

(as on 4 April 2002)

Argentina, Austria, Bulgaria, Czech Republic, Ghana, Madagascar, Morocco, Pakistan, Poland, Slovak Republic, Switzerland, Taiwan, Tanzania, European Commission

Associate Participants: Organizations

(as on 4 April 2002)

NatureServe

All Species Foundation

ASEANET

BIONET-International

BIOSIS

CABI Bioscience

EASIANET

Expert Center for Taxonomic Identification

Inter-American Biodiversity Information Network

Integrated Taxonomic Information System

United Nations Educational Scientific and Cultural Organisation, Man and the Biosphere Programme

Ocean Biogeographic Information System

Société de Bactériologie Systématique et Vétérinaire

Species 2000

Taxonomic Databases Working Group

United Nations Environment Programme, World Conservation Monitoring Centre

The World Federation for Culture Collections

The Wildscreen Trust

PARTICIPANTS AGREE TO...

Share biodiversity data

Set up a node or nodes for sharing the data

Formulate and implement GBIF work programme for their part

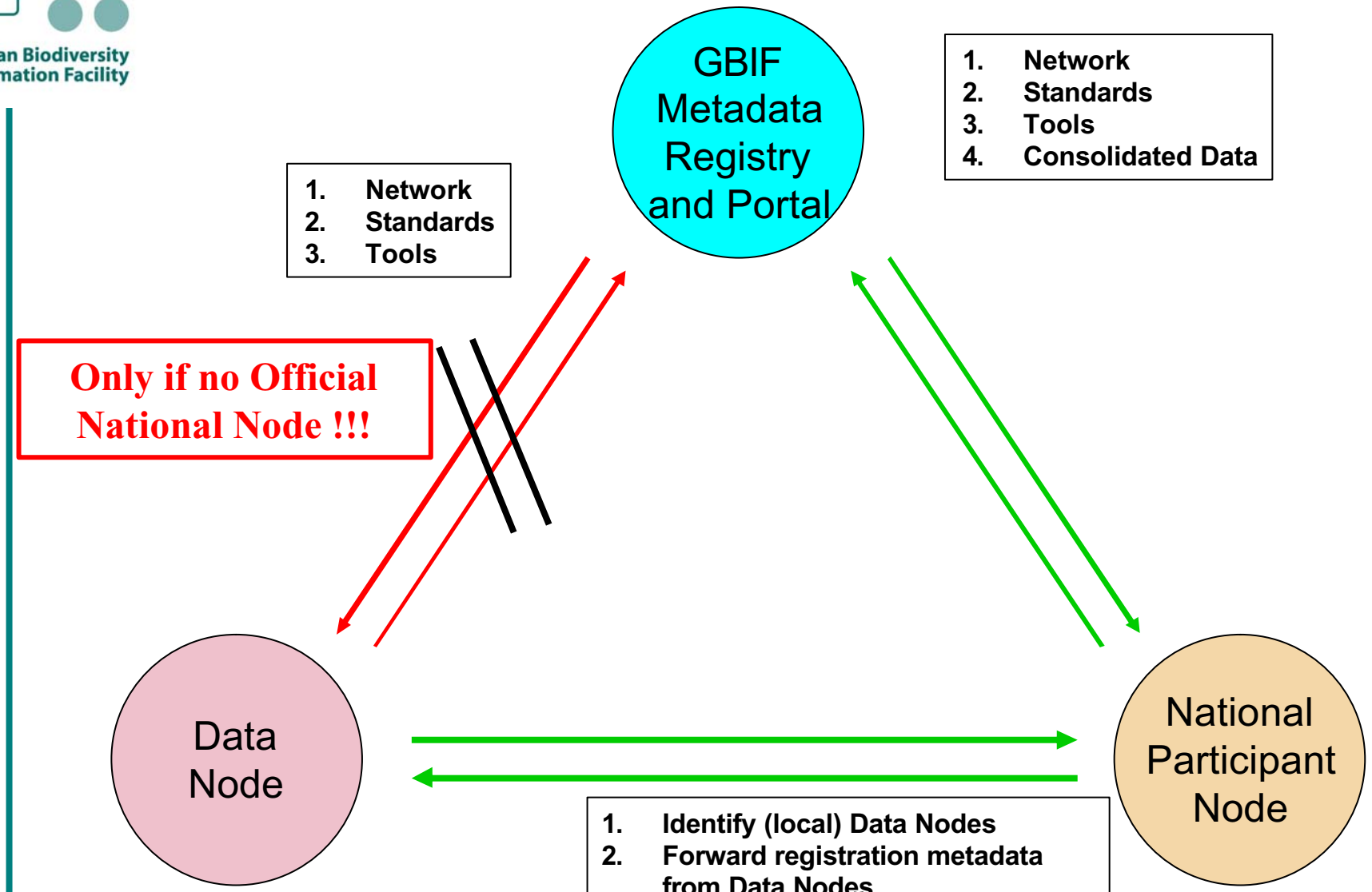
Voting Participants (countries and economies) make yearly contribution based on Gross Domestic Product

- GBIF central budget is $3M
- Associate Participants (countries, economies, international organisations) cannot vote, but otherwise participate fully in GBIF activities and decisions

Make additional investments in biodiversity information and the necessary infrastructure

- 90% of investment in GBIF happens within Participants, only 10% centrally for providing the linking mechanism

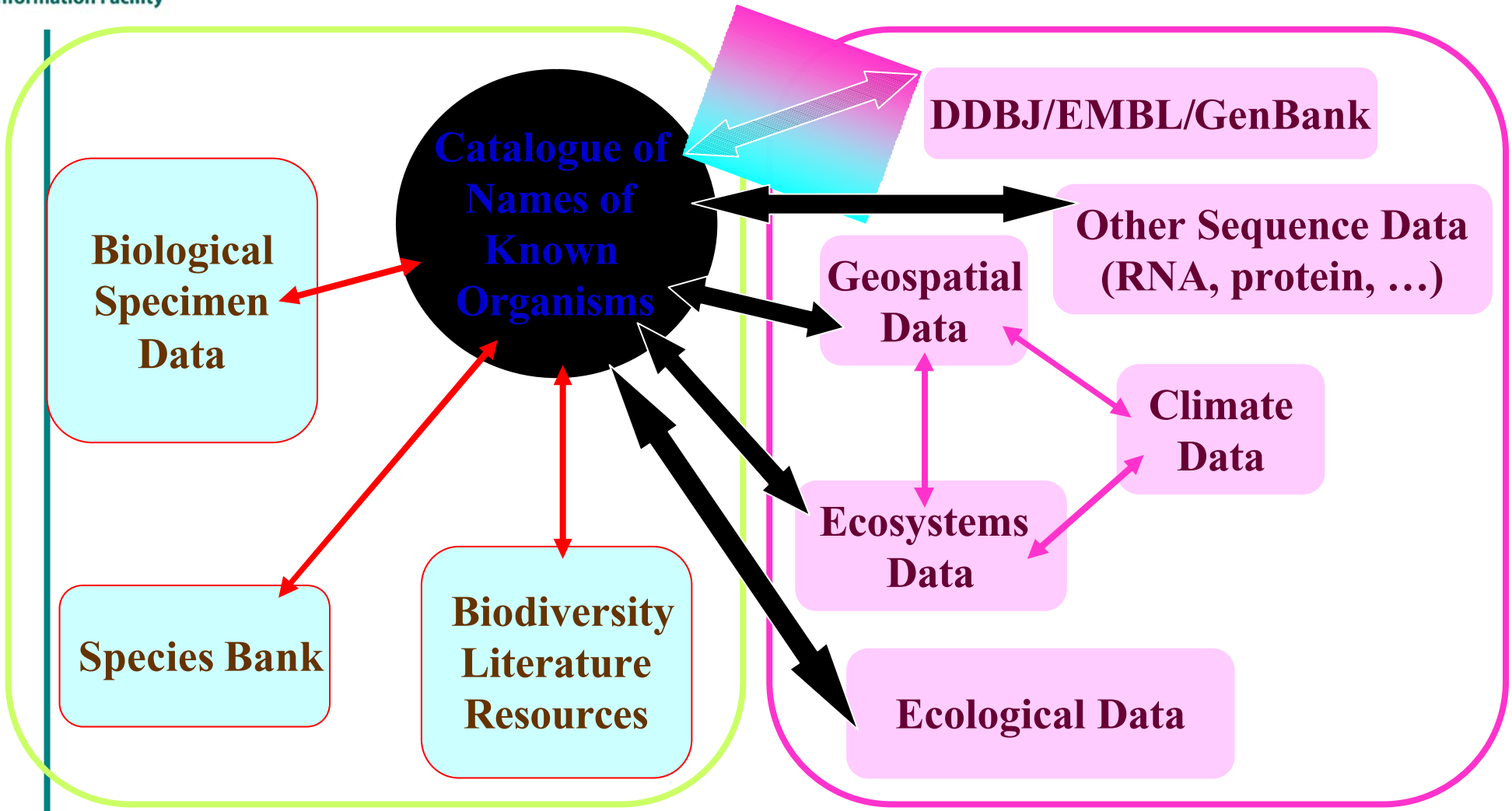
GBIF Node Responsibilities



GBIF enables synergism among existing investments

Responsibilities of GBIF

Responsibilities of other organisations



Biodiversity.be

Four partners funded by the Federal Office for Scientific, Technical and Cultural Affairs (OSTC)

The **Belgian Biodiversity Platform** (BBPF), the OSTC advisory organ on biodiversity research (analysis, development and promotion of biodiversity-related research in the scientific community).

The **Belgian Clearing-House Mechanism** (CHM), the national portal site for information exchange on all matters related to the Convention on Biological Diversity

Belnet-BIODIV, the electronic catalogue of Belgian resources in Belgium: research projects, experts, institutions, collections and databases, events, etc. Belgian BioCASE Node for metadata

BeBIF, the Belgian Node of the Global Biodiversity Information Facility. An endeavour to build the prototype of a Belgian bioinformatics infrastructure to integrate Belgian biodiversity resources within an unified environment

BeBIF: Belgian Biodiversity Information facility

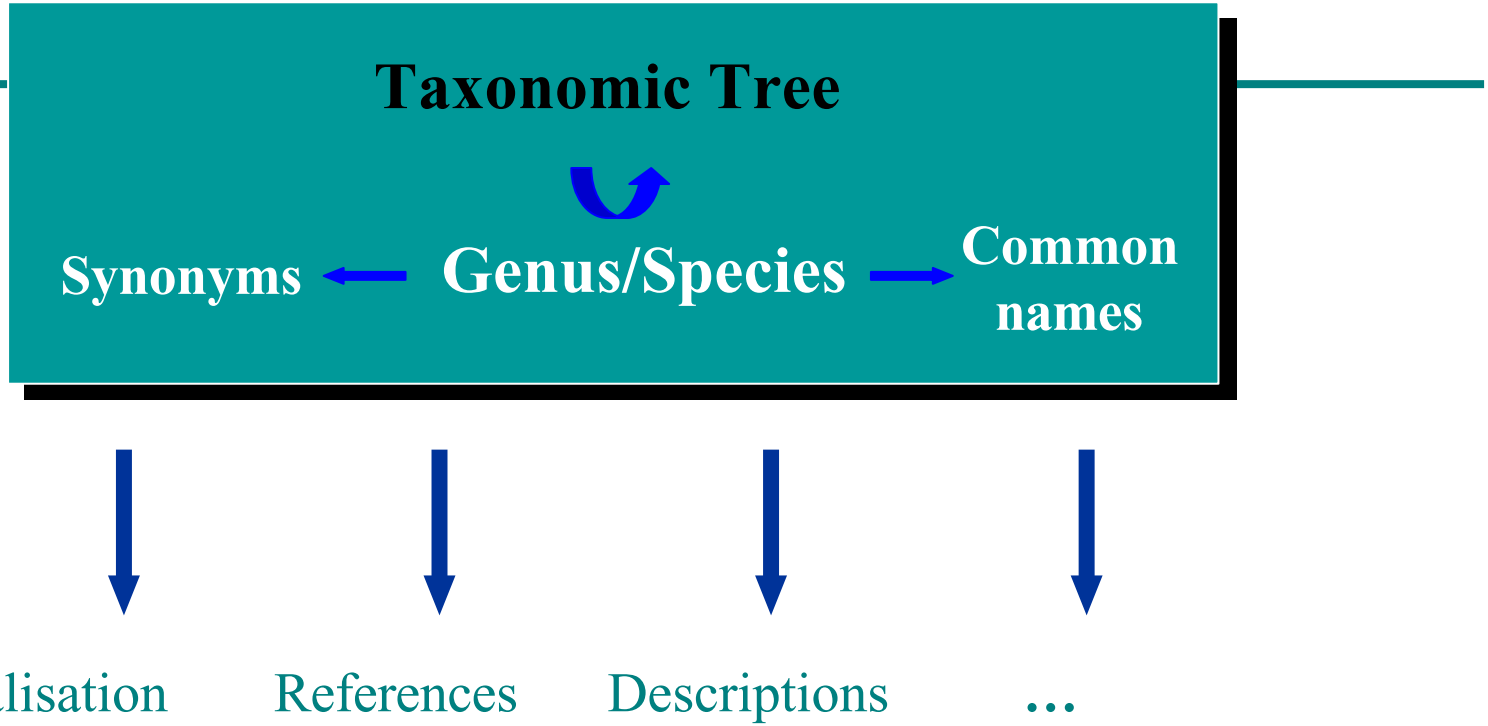
Fundings:

OSTC (Federal Office for Scientific, Technical and Cultural Affairs)

Staff:

- ✓ **Promoter (Robert Herzog)**
- ✓ **Node Manager (Patricia Mergen)**
- ✓ **Data Analyst (Didier Piette)**
- ✓ **Analyst Programmer (Johan Duflost)**

Belgian Biodiversity Information Facility



" Belgian " Biodiversity data as a contribution to the Catalog of life

Tools to detect: **Species not yet listed**

Other Synonyms

Misspellings

Royal Belgian Institute of Natural Sciences

Seven departments:

Vertebrates: Systematics and biochemical taxonomy, Data processing and documentation

Invertebrates: Malacology, Recent invertebrates

Entomology: Insects, Insects and arachnomorphes

Education and Nature: Freshwater biology, Biological evaluation, Educational and museological services

Paleontology: Micropalaeontology and Palaeobotany, Fossil invertebrates, Fossil vertebrates, Anthropology, Prehistory, Mineralogy, Petrography

Marine ecosystem management: Marine Enivronment Modelisation, Marine Ecosystem Management

Geological survey: General Geology and Mineralogy, Applied Geology and Geo-Information

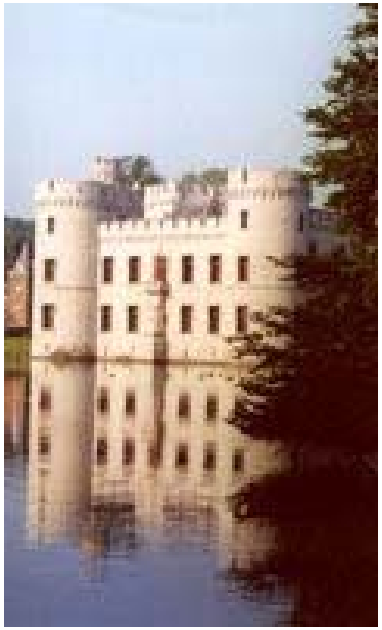
Recent invertebrates (Laboratory of Carcinology)

BIANZO (BIodiversity of three representative groups of the ANtarctic Zoobenthos)

Amphipods, Echinoids, and Nematodes, sampling sites and periods are often the same or close.

Our goal is to implement these databases in XML format on our server in order to interlink them to produce among other things a species list for common sampling sites and periods. Data will be made available through the National Participant Node portal

National Botanic Garden of Belgium



Plant systematics and related fields: Floristics, phytogeography, phylogeny, comparative morphology, pollen & spores and vegetation studies.

Geographic range: Temperate Europe (esp. Belgium) and the paleotropics (esp. Central Africa).

Plant groups: Algae, bryophytes, fungi including lichens and vascular plants. Drawing up of the global inventory of biodiversity.

To maintain the floristic inventory up to date and to follow the spread of species is a priority for nature conservation.

The Garden already works for about hundred years on the flora of Central Africa. On regular basis, new species are circumscribed and receive a name.

Collaborative project: Prototype Image Server to integrate the Martius Herbarium and the Digital Flora brasiliensis

Private Von Martius collection, general herbarium covering the world, half of it collected in Central and South America (150.000, specimens), 22.767 species treated in *Flora brasiliensis*

Data will be made available through the National Participant Node portal

Royal Museum for Central Africa

Research focuses on three elements:

- **Field research in collaboration with local partners**
- **Training and dissemination of information regarding biodiversity related topics**
- **Research on the collections of the RMCA**

The African Biodiversity Information Centre (ABIC)

Study of Cichilds in Lake Malawi

Nocturnal spiders and the biodiversity of the rainforest

Long term cooperation with national museums of Kenya (Nairobi)

Partnership agreement with the Centre national de documentation et de recherche scientifiques des Comores (CNDRS)

Valorization of the museum collections for biodiversity studies

8 million biological specimens, most important zoological collection in the world for Central Africa

Fields: Ichthyology (lacustrine and palustrine), ornithology, herpetology, archaezoology, entomology (Diptera and Lepidoptera), other invertebrates (arachnology, acarology and Diplopoda)

Data will be made available through the National Participant Node portal

Make GBIF more widely known in Africa and likely result in new memberships

Other relevant projects:

ENBI: FP5, European Network for Biodiversity Information, Cluster I (Steering and Coordination activities)

BEN: Belgian EMBnet Node to provide links to sequence related data

BELNET-BIODIV: Common agreement to fully share data and to expose the metadata in GBIF standards XML format (BioCASE)

BCCM: Collaboration with the Belgian Co-ordinated Collections of Micro-organisms to expose part of their data on our server under GBIF Standards.

FBDB (Federation of Biogeographical Databases): XML and availability on the web

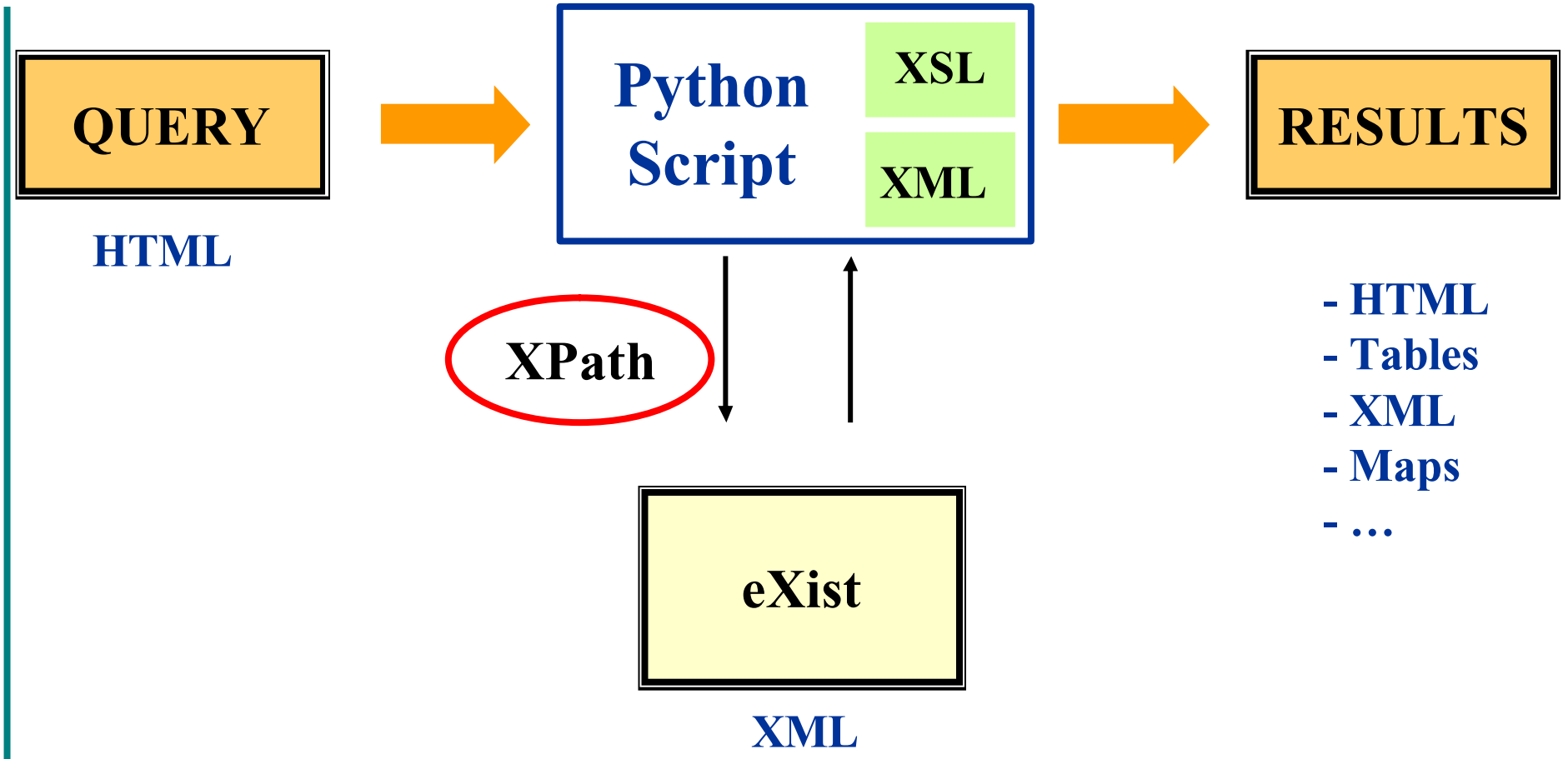
FUNDP URBO: Main partner for the proposed *GBIF Demonstration Project* about biodiversity related data of the Reservoir Lakes of Robertville and Bütgenbach

Collaborations with regional initiatives (Walloon, Flemish, Brussels)

To play its role as national gateway to expose "Belgian" biodiversity data to the worldwide GBIF network, BeBIF has developed several strategies and informatic tools, which may be shared with the other participant and data nodes

Technologies

- XML related technology (XSL, XPath, XInclude, XUpdate, XQuery …)
- Data Server
  - SRS (Sequence Retrieval System), *standby until more XML support*
  - eXist (Open Source XML database; Prof W. Meier TU-Darmstadt)
- Python (CGI)
- Administrative tool : ZOPE


QUERY
HTML
Python Script
XSL
XML
XPath
eXist
XML
RESULTS
- HTML
- Tables
- XML
- Maps
- …

First trials with eXist

The script Python

- ✓ Receives the request
- ✓ Interrogates eXist
- ✓ Parses the XML response of the loader

eXist

- ✓ Retrieves the data
- ✓ Generates the XML response

Demo

- ✓ Table format
- ✓ Number of entries
- ✓ Easy multilingual interface
- ✓ Enabling XPath queries

Advantages and drawbacks of eXist

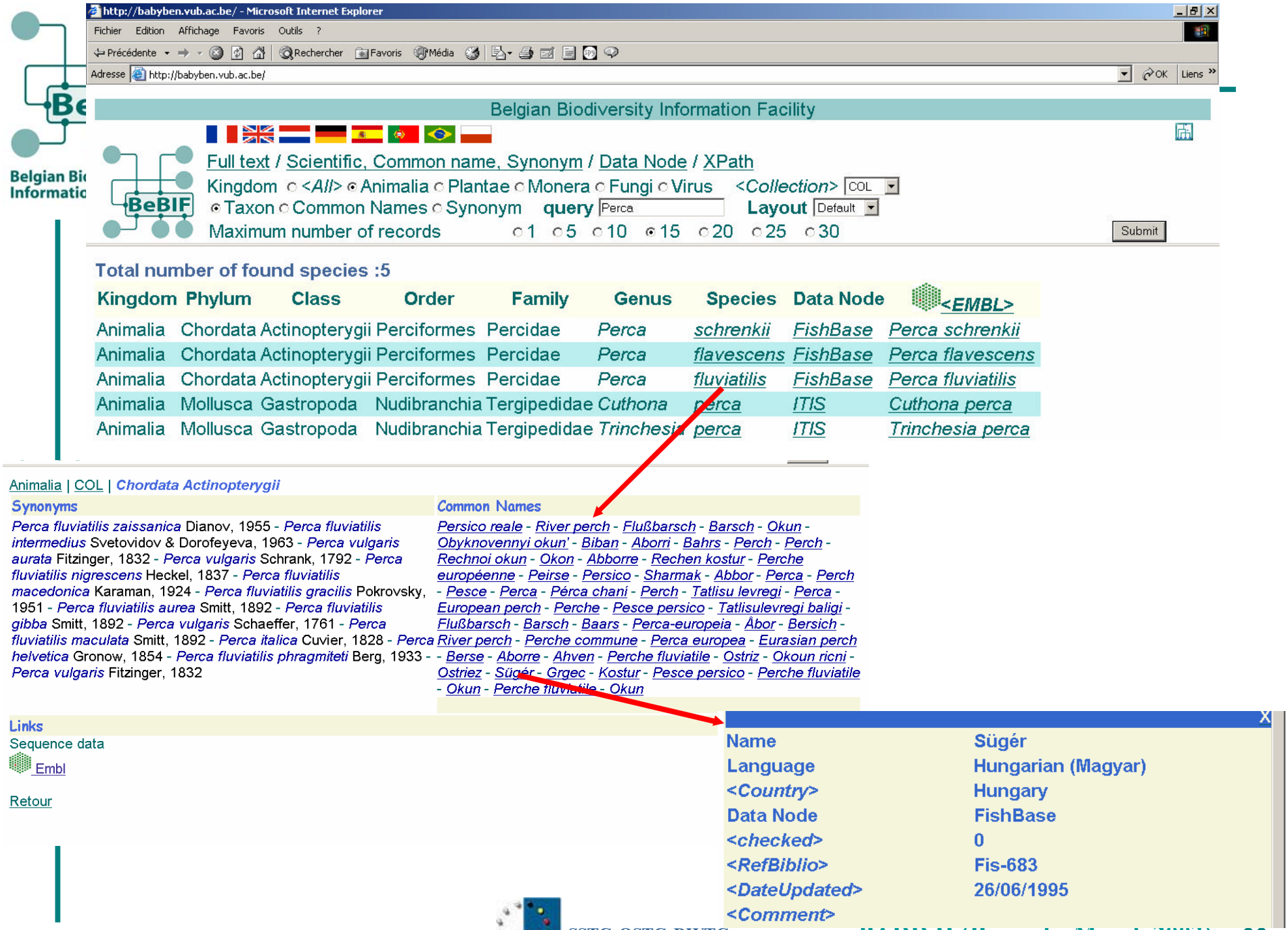
Advantages

- ✓ Simple indexing engine
- ✓ Results are obtained within seconds
- ✓ Links between data bases with Xinclude
- ✓ Open source written in Java

Drawbacks

- × Not suited for flat files
- × Not yet XUpdate
- × Version 0.9 … Version 1.0!

BeBIF collaborates with eXist conceptor (Prof. W. Meier) for enhancement


http://babyben.vub.ac.be/ - Microsoft Internet Explorer
Belgian Biodiversity Information Facility
BeBIF
Full text / Scientific, Common name, Synonym / Data Node / XPath
Kingdom <All> Animalia Plantae Monera Fungi Virus <Collection> COL
Taxon Common Names Synonym query Perca Layout Default
Maximum number of records 1 5 10 15 20 25 30
Submit
Total number of found species :5
Kingdom Phylum Class Order Family Genus Species Data Node <EMBL>
Animalia Chordata Actinopterygii Perciformes Percidae Perca schrenkii FishBase Perca schrenkii
Animalia Chordata Actinopterygii Perciformes Percidae Perca flavescens FishBase Perca flavescens
Animalia Chordata Actinopterygii Perciformes Percidae Perca fluviatilis FishBase Perca fluviatilis
Animalia Mollusca Gastropoda Nudibranchia Tergipedidae Cuthona perca ITIS Cuthona perca
Animalia Mollusca Gastropoda Nudibranchia Tergipedidae Trinchesia perca ITIS Trinchesia perca
Animalia | COL | Chordata Actinopterygii
Synonyms
Perca fluviatilis zaissanica Dianov, 1955 - Perca fluviatilis intermedius Svetovidov & Dorofeyeva, 1963 - Perca vulgaris aurata Fitzinger, 1832 - Perca vulgaris Schrank, 1792 - Perca fluviatilis nigrescens Heckel, 1837 - Perca fluviatilis macedonica Karaman, 1924 - Perca fluviatilis gracilis Pokrovsky, 1951 - Perca fluviatilis aurea Smitt, 1892 - Perca fluviatilis gibba Smitt, 1892 - Perca vulgaris Schaeffer, 1761 - Perca fluviatilis maculata Smitt, 1892 - Perca italica Cuvier, 1828 - Perca helvetica Gronow, 1854 - Perca fluviatilis phragmiteti Berg, 1933 - Perca vulgaris Fitzinger, 1832
Common Names
Persico reale - River perch - Flußbarsch - Barsch - Okun - Obyknovennyi okun' - Biban - Aborri - Bahrs - Perch - Perch - Rechnoi okun - Okon - Abborre - Rechen kostur - Perche européenne - Peirse - Persico - Sharmak - Abbor - Perca - Perch - Pesce - Perca - Pérca chaní - Perch - Tatlisu levregi - Perca - European perch - Perche - Pesce persico - Tatlisulevregi baligi - Flußbarsch - Barsch - Baars - Perca-europeia - Åbor - Bersich - River perch - Perche commune - Perca europea - Eurasian perch - Berse - Aborre - Ahven - Perche fluviatile - Ostriz - Okoun ricni - Ostriez - Sügér - Grgec - Kostur - Pesce persico - Perche fluviatile - Okun - Perche fluviatile - Okun
Links
Sequence data
Embl
Retour
Name Sügér
Language Hungarian (Magyar)
<Country> Hungary
Data Node FishBase
<checked> 0
<RefBiblio> Fis-683
<DateUpdated> 26/06/1995
<Comment>

Belgian Bi
Informatic

http://babyben.vub.ac.be/ - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

Précédente Rechercher Favoris Média

Adresse http://babyben.vub.ac.be/ OK Liens

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Full text / Scientific, Common name, Synonym / Data Node / XPath

Kingdom <All> Animalia Plantae Monera Fungi Virus <Collection> COL

Taxon Common Names Synonym query Perca Layout Default

Maximum number of records 1 5 10 15 20 25 30 Submit

Total number of found species :5

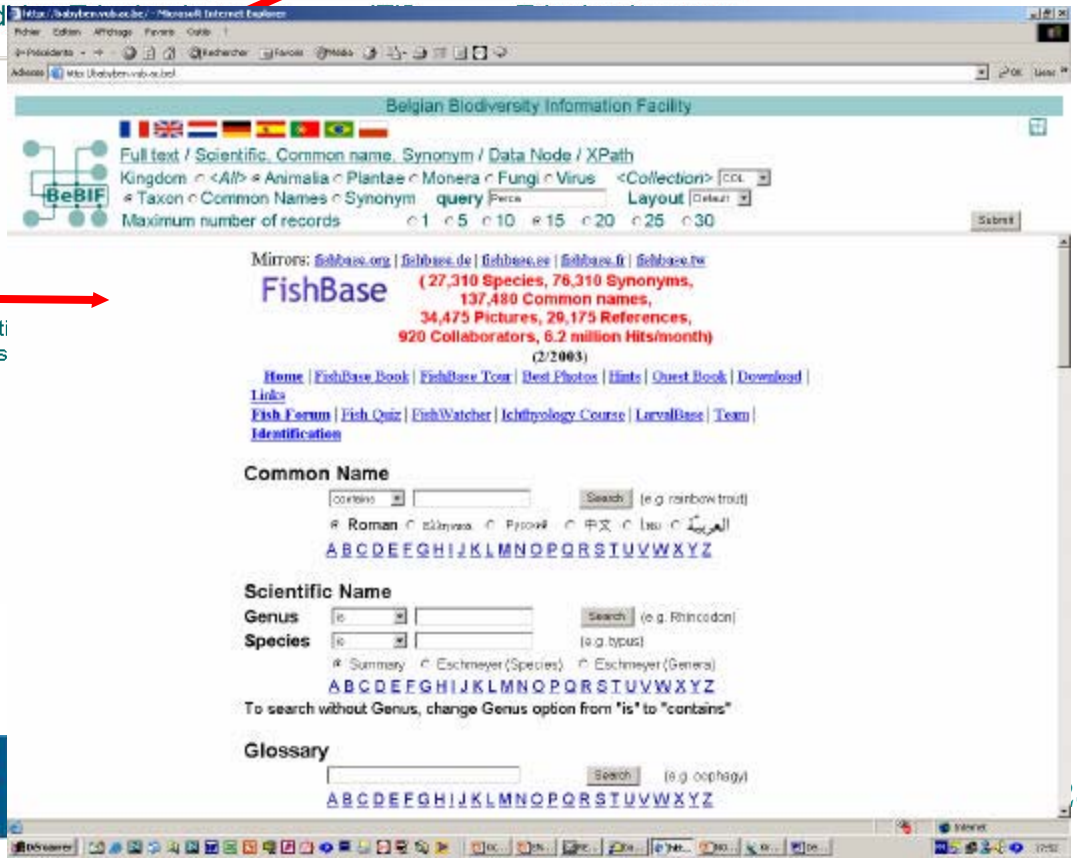
Kingdom	Phylum	Class	Order	Family	Genus	Species	Data Node	<EMBL>
Animalia	Chordata	Actinopterygii	Perciformes	Percidae	*Perca*	*schrenkii*	*FishBase*	*Perca schrenkii*
Animalia	Chordata	Actinopterygii	Perciformes	Percidae	*Perca*	*flavescens*	*FishBase*	*Perca flavescens*
Animalia	Chordata	Actinopterygii	Perciformes	Percidae	*Perca*	*fluviatilis*	*FishBase*	*Perca fluviatilis*
Animalia	Mollusca	Gastropoda	Nudibranchia	Tergipedidae	*Cuthona*	*perca*	*ITIS*	*Cuthona perca*
Animalia	Mollusca	Gastropoda	Nudibranchia	Tergiped				

Organisation : *FishBase* <Member> *COL*

<InstitutionName>	Institute of Marine Research
<AddressLine>	Duesternbrooker Weg 20, Kiel
<Zip>	24105
<Country>	Germany
<Communication>	+49-431-600-4579
<Websites>	http://www.fishbase.org
<Publications>	Kottelat, Maurice(01/12/2001). FishBase is an informati ecology, occurrence and utilization of fishes. It contains species), including pictures and onward links. (11/01)

<Contacts>

: Kottelat, Maurice
: Pezzi da Silva,José F.
: Lucena,Zilda M.S.
: Malabarba,Luiz R.
: Hensley,Dannie



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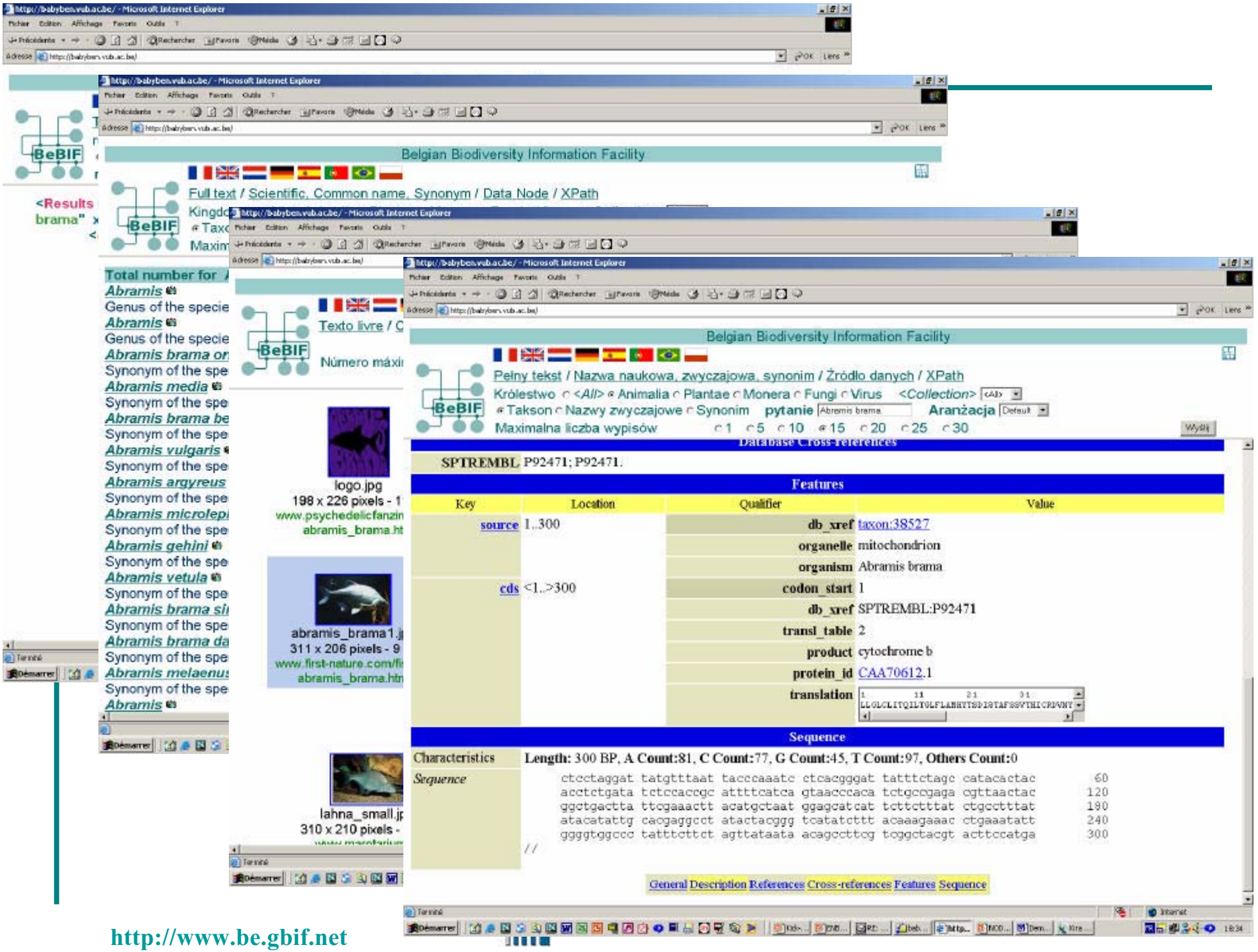

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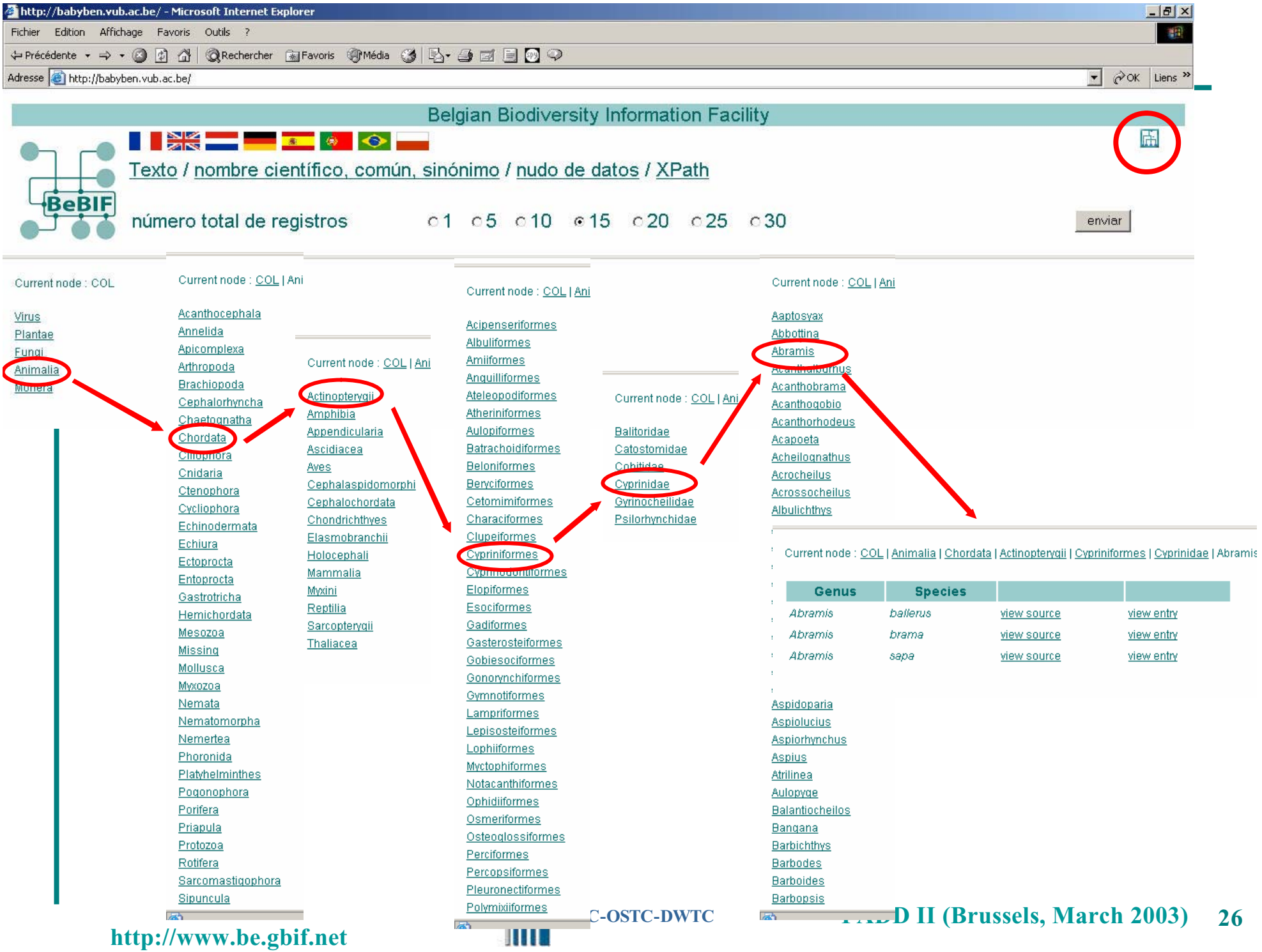
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Fichier Edition Affichage Favoris Outils ?
Précédente Rechercher Favoris Média
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OK Liens
Belgian Biodiversity Information Facility
BeBIF
Texto / nombre científico, común, sinónimo / nudo de datos / XPath
número total de registros 1 5 10 15 20 25 30
enviar
Current node : COL
Virus
Plantae
Fungi
Animalia
Monera
Current node : COL | Ani
Acanthocephala
Annelida
Apicomplexa
Arthropoda
Brachiopoda
Cephalorhyncha
Chaetognatha
Chordata
Ctenophora
Cnidaria
Ctenophora
Cycliophora
Echinodermata
Echiura
Ectoprocta
Entoprocta
Gastrotricha
Hemichordata
Mesozoa
Missing
Mollusca
Myxozoa
Nemata
Nematomorpha
Nemertea
Phoronida
Platyhelminthes
Pogonophora
Porifera
Priapula
Protozoa
Rotifera
Sarcomastigophora
Sipuncula
Current node : COL | Ani
Actinopterygii
Amphibia
Appendicularia
Ascidiacea
Aves
Cephalaspidomorphi
Cephalochordata
Chondrichthyes
Elasmobranchii
Holocephali
Mammalia
Myxini
Reptilia
Sarcopterygii
Thaliacea
Current node : COL | Ani
Acipenseriformes
Albuliformes
Amiiformes
Anguilliformes
Ateleopodiformes
Atheriniformes
Aulopiformes
Batrachoidiformes
Beloniformes
Beryciformes
Cetomimiformes
Characiformes
Clupeiformes
Cypriniformes
Cyprinodontiformes
Elopiformes
Esociformes
Gadiformes
Gasterosteiformes
Gobiesociformes
Gonorynchiformes
Gymnotiformes
Lampriformes
Lepisosteiformes
Lophiiformes
Myctophiformes
Notacanthiformes
Ophidiiformes
Osmeriformes
Osteoglossiformes
Perciformes
Percopsiformes
Pleuronectiformes
Polymixiiformes
Current node : COL | Ani
Balitoridae
Catostomidae
Cobitidae
Cyprinidae
Gyrinocheilidae
Psilorhynchidae
Current node : COL | Ani
Aaptosyax
Abbottina
Abramis
Acanthalburnus
Acanthobrama
Acanthogobio
Acanthorhodeus
Acapoeta
Acheilognathus
Acrocheilus
Acrossocheilus
Albulichthys
Current node : COL | Animalia | Chordata | Actinopterygii | Cypriniformes | Cyprinidae | Abramis
Genus
Species
Abramis ballerus view source view entry
Abramis brama view source view entry
Abramis sapa view source view entry
Aspidoparia
Aspiolucius
Aspiorhynchus
Aspius
Atrilinea
Aulopyge
Balantiocheilos
Bangana
Barbichthys
Barbodes
Barboides
Barbopsis

How to become a BeBIF data node ?

(Plan for the future)

1. Apply officially or will be contacted
2. Get official ID, logins and passwords
3. Fill in the online Metadata form
4. a) Existing data or database systems : export of the data which can be made publicly available according to GBIF standards, with the assistance of the BeBIF staff

   b) New data or starting a new database: Use of the online data entry form, customized to your data and your needs. (Data directly transformed in XML)
5. Data are directly visible online, can be queried, edited by the owner, but not yet officially validated
6. Data will be validated by an OSTC panel of scientific and IT experts
7. Official Federal Data Quality Control Label

DATA to be shared with GBIF

Data Providers and Metadata: **Fill in the Metadata online form,** ***Information about the data and respect of IRP***

Species: **Taxonomy, Scientific Names, Synonyms, Common Names,** ***Belgian contribution to the Catalog of Life***

Specimens: **Number of specimens hold, collected or observed**

Geographic location: **As precise as possible (GPS recommended), restricted access for endangered species**

Any other biodiversity related data: **Species or specimen descriptions, Identification keys, sampling site descriptions, list of publications …** ***Either transmitted to BeBIF or made publicly available on a local server managed in collaboration with the BeBIF team***

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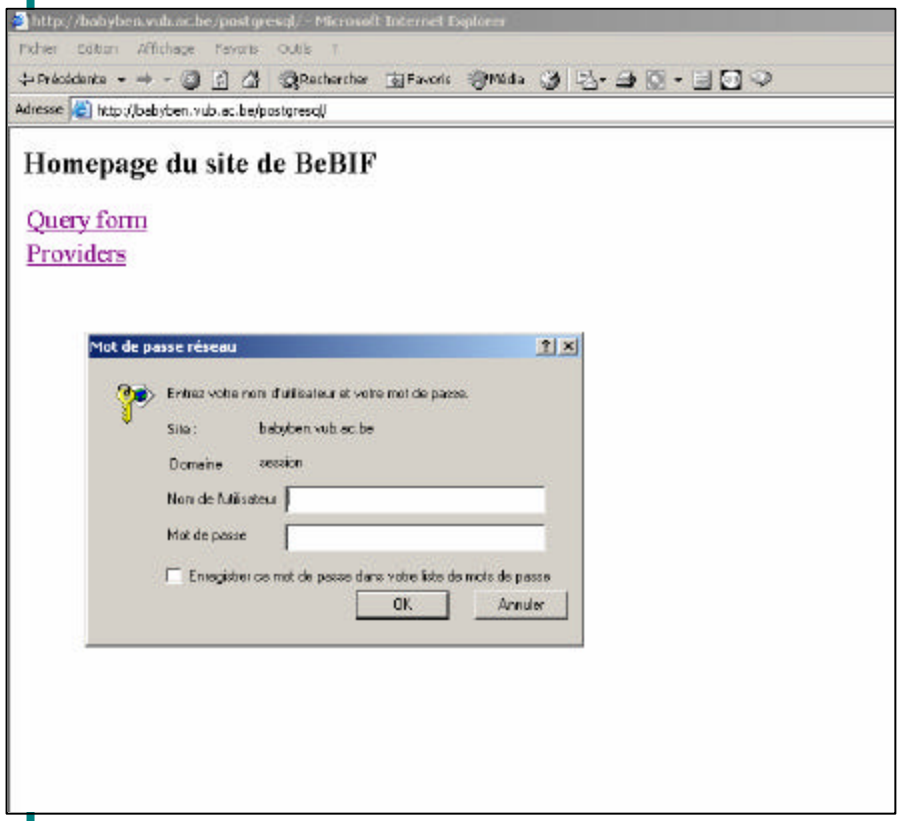

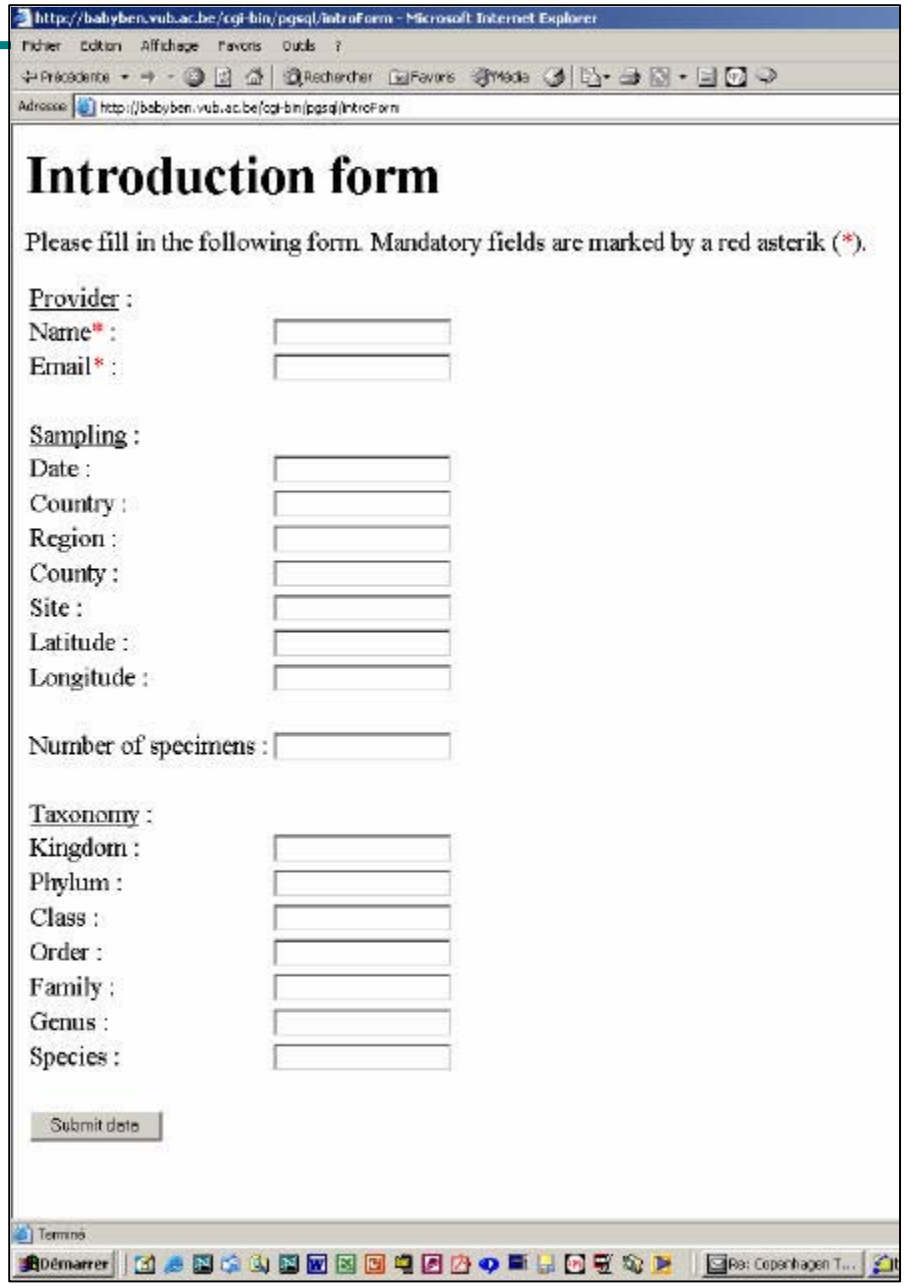

How to reach BeBIF

http://www.be.gbif.net

http://www.be.gbif.net/services/Projects

http://www.gbif.org

For any questions or feed-back …

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