

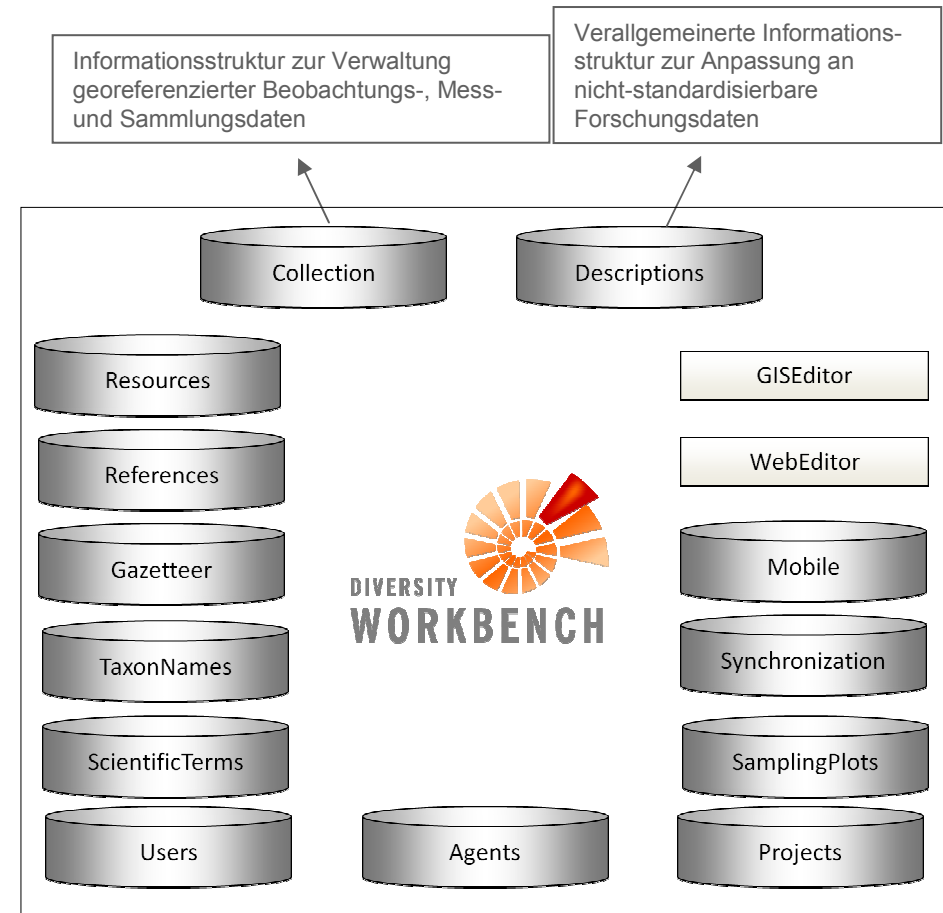
# Diversity Workbench

Systemdesign, Datenflüsse, Netzwerke und Dienste

Dagmar Triebel

# Diversity Workbench Framework

- Seit 1999 Modellierung (ER-Diagramme),  
und Implementierung
- Datenbank-Komponenten („Module“) 14
- \*Tabellen 233
- \*Datenelemente/-attribute 1.902
- \*Relationen-Tabellen 251
- Webschnittstellen/Clients 27
- \*Quellcode-Zeilen > 706.567  
(in 1.261 Quellcode-Files) (\*Stand 12.2011)
- Seit 2007 Workshops für Anwender 25
  - Teilnehmer 219
  - Institutionen 47



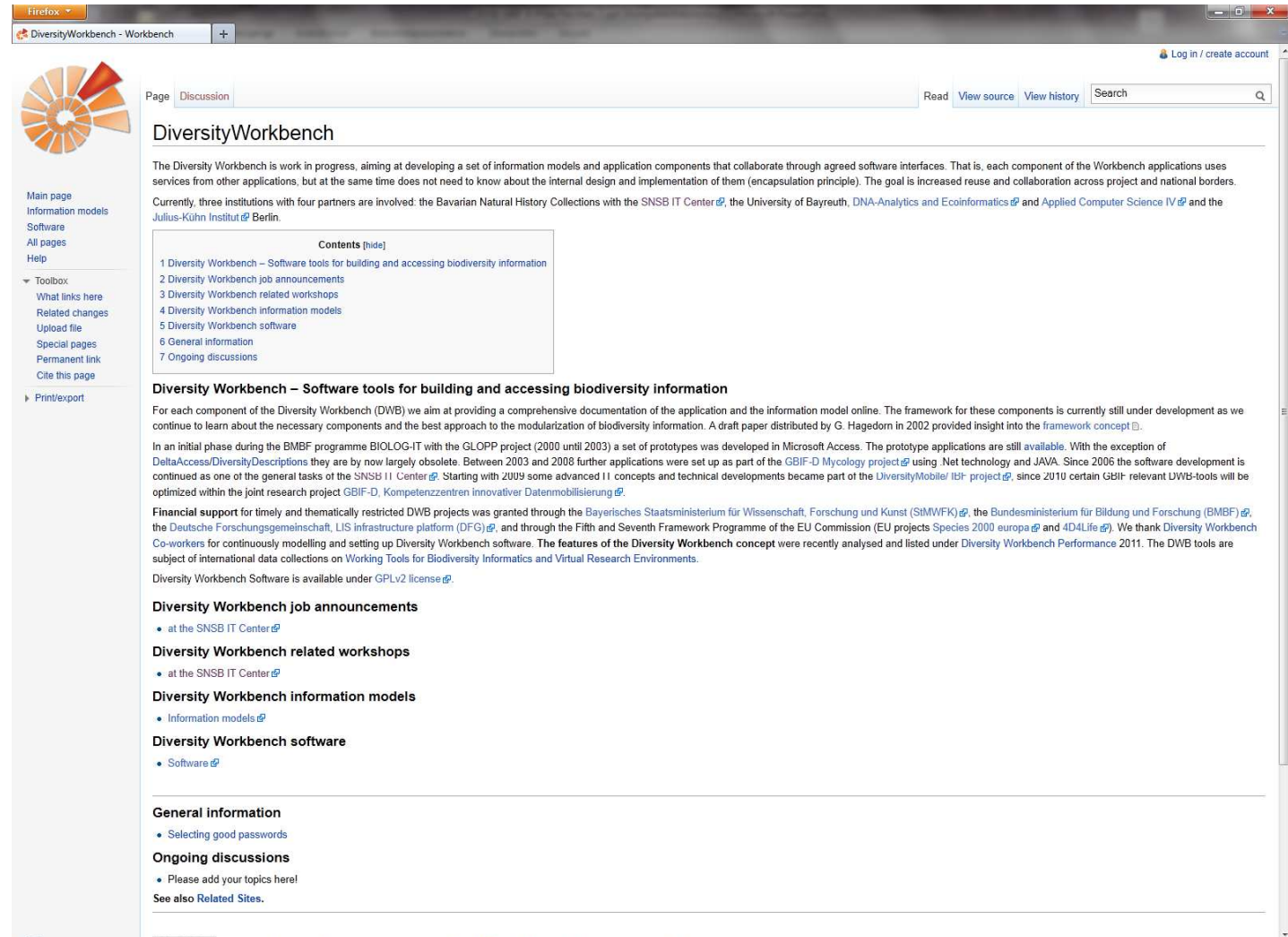
# Diversity Workbench – Work in progress

3 Institutionen  
mit  
Herausgebern

6 Entwickler

Download  
Center

Software unter  
GPL Lizenz



Firefox DiversityWorkbench - Workbench

Log in / create account

Page Discussion Read View source View history Search

## DiversityWorkbench

The Diversity Workbench is work in progress, aiming at developing a set of information models and application components that collaborate through agreed software interfaces. That is, each component of the Workbench applications uses services from other applications, but at the same time does not need to know about the internal design and implementation of them (encapsulation principle). The goal is increased reuse and collaboration across project and national borders.

Currently, three institutions with four partners are involved: the Bavarian Natural History Collections with the SNSB IT Center, the University of Bayreuth, DNA-Analytics and Ecoinformatics and Applied Computer Science IV and the Julius-Kühn Institut Berlin.

### Contents (hide)

- 1 Diversity Workbench – Software tools for building and accessing biodiversity information
- 2 Diversity Workbench job announcements
- 3 Diversity Workbench related workshops
- 4 Diversity Workbench information models
- 5 Diversity Workbench software
- 6 General information
- 7 Ongoing discussions

### Diversity Workbench – Software tools for building and accessing biodiversity information

For each component of the Diversity Workbench (DWB) we aim at providing a comprehensive documentation of the application and the information model online. The framework for these components is currently still under development as we continue to learn about the necessary components and the best approach to the modularization of biodiversity information. A draft paper distributed by G. Hagedorn in 2002 provided insight into the [framework concept](#).

In an initial phase during the BMBF programme BIOLOG-IT with the GLOPP project (2000 until 2003) a set of prototypes was developed in Microsoft Access. The prototype applications are still available. With the exception of [DeltaAccess/DiversityDescriptions](#) they are by now largely obsolete. Between 2003 and 2008 further applications were set up as part of the [GBIF-D Mycology project](#) using .Net technology and JAVA. Since 2006 the software development is continued as one of the general tasks of the [SNSB IT Center](#). Starting with 2009 some advanced IT concepts and technical developments became part of the [DiversityMobile/IBF project](#), since 2010 certain GBIF-relevant DWB-tools will be optimized within the joint research project [GBIF-D, Kompetenzzentren innovativer Datenmobilisierung](#).

**Financial support** for timely and thematically restricted DWB projects was granted through the [Bayerisches Staatsministerium für Wissenschaft, Forschung und Kunst \(StMWFK\)](#), the [Bundesministerium für Bildung und Forschung \(BMBF\)](#), the [Deutsche Forschungsgemeinschaft, LIS infrastructure platform \(DFG\)](#), and through the [Fifth and Seventh Framework Programme of the EU Commission \(EU projects Species 2000 europa and 4D4Life\)](#). We thank Diversity Workbench Co-workers for continuously modelling and setting up Diversity Workbench software. **The features of the Diversity Workbench concept** were recently analysed and listed under [Diversity Workbench Performance 2011](#). The DWB tools are subject of international data collections on [Working Tools for Biodiversity Informatics and Virtual Research Environments](#).

Diversity Workbench Software is available under [GPLv2 license](#).

### Diversity Workbench job announcements

- at the [SNSB IT Center](#)

### Diversity Workbench related workshops

- at the [SNSB IT Center](#)

### Diversity Workbench information models

- [Information models](#)

### Diversity Workbench software

- [Software](#)

### General information

- [Selecting good passwords](#)

### Ongoing discussions

- [Please add your topics here!](#)

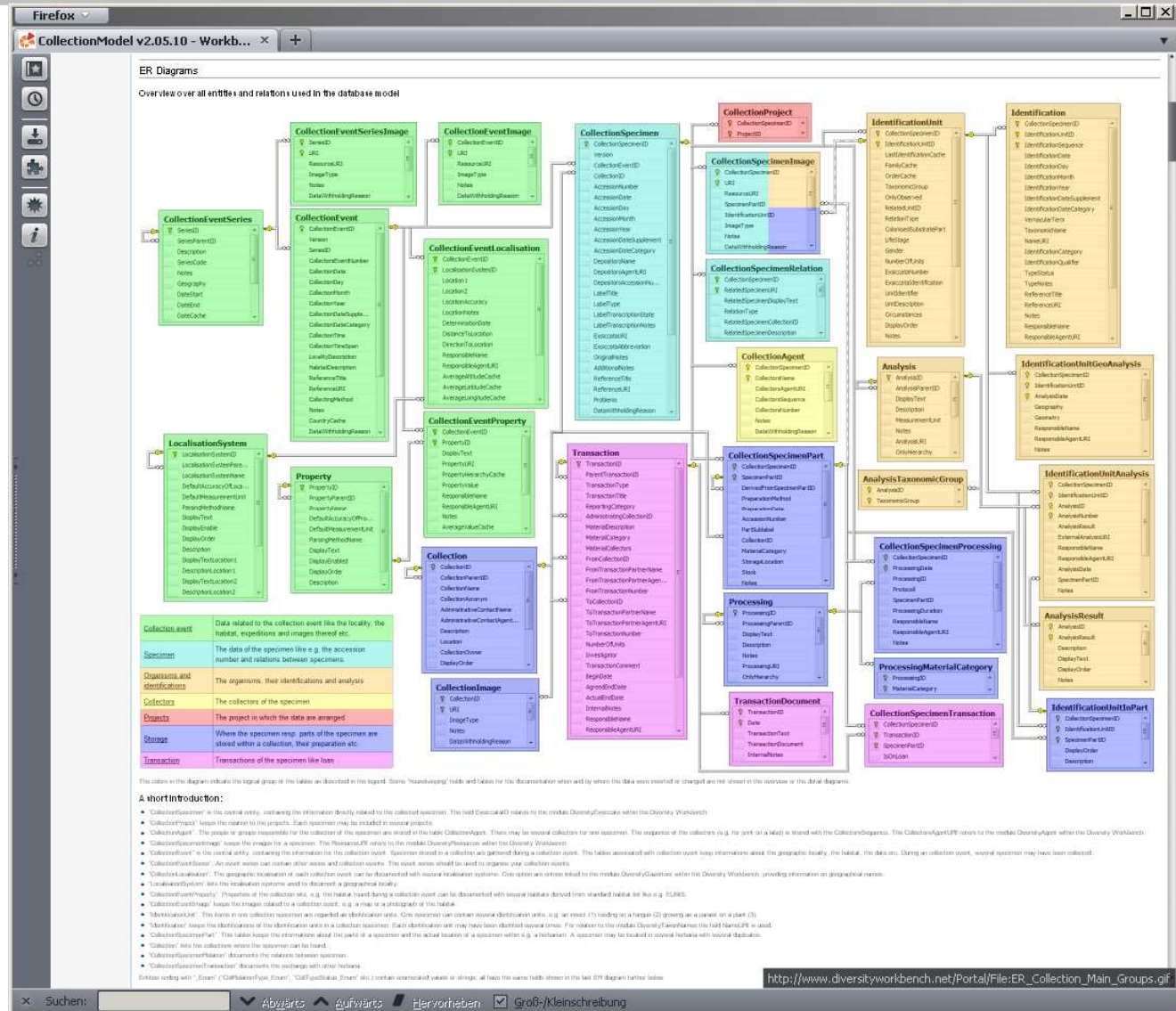
See also [Related Sites](#).

# DiversityCollection – ER Diagramm

Publikation von Informationsmodellen unter

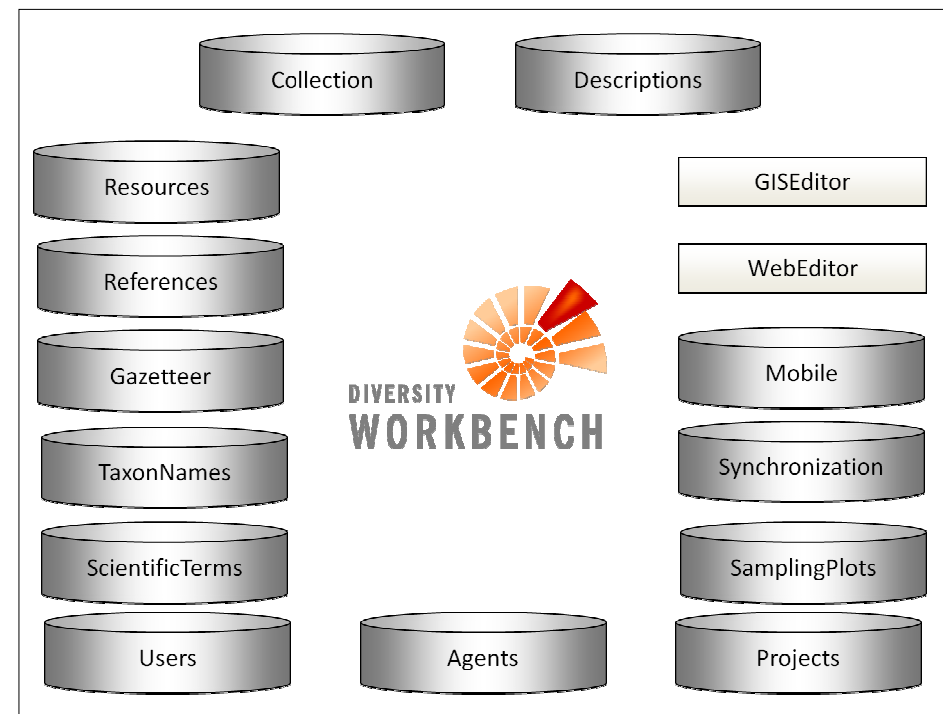
Creative Commons License

[www.diversityworkbench.net](http://www.diversityworkbench.net)



# Diversity Workbench Framework

- Business Solution geeignet für Datenzentren
- Direkte Interoperabilität aller Komponenten
- Virtuelle Forschungsumgebung
- Schwerpunkte für die Disziplinen
  - Taxonomie und Chemotaxonomie
  - Phytosoziologie
  - Molekulare Ökologie und Organismische Interaktionen
  - Ökophysiologie
  - Fernerkundung (p.p.)
- Datensätze aus allen organismischen Großgruppen .... Pflanzen, Algen, Pilze, Wirbeltiere, Insekten, andere Wirbellose, Fossilien



# DiversityWorkbench – Rich Clients

The screenshot displays the DiversityWorkbench interface with several overlapping windows:

- DiversityCollection v.3.0.3.6:** Shows specimen details for *Ceratotherium simum* (Burchell, 1817) with ID 178065. It includes a 'Select the displayed fields' list and a table of specimen records with columns for Accession number, Collection year, Country, and Locality.
- DiversityScientificTerms v.3.0.0.0:** A hierarchical tree view for the term 'Indusium', showing sub-terms like 'Indusium', 'Jura', 'Jurassic', etc., with a 'Display text' field.
- DiversityAgents v.3.0.0.3:** A profile for 'Hertel, Hannes, Prof. Dr.' (ID: 12732), including fields for Title, Given name, Postfix, and Role.
- DiversityTaxonNames, Database: DiversityTaxonNames\_Fungi v.3.0.1.5:** A detailed taxonomic record for *Biatora sylvana* Korb. (ID: 1036334), showing taxonomic name, nomenclature, taxonomic reference, and a list of synonyms.

# DWB Rich Client zum Datenmanagement von deskriptiven Daten und Messdaten

## DiversityDescriptions

- Neue Version v. 3.0 (.Net; SQL Server): Release ca. Juli 2013

Präsentation heute Nachmittag!

# Browser-embedded Diversity Web Editor

**DiversityWebEditor**

Buttons: ? **Dateneingabe** Einstellungen Login

**GBOL**  
German Barcode of Life

### Daten verwalten

Fundort anlegen:

Neu Kopieren Löschen

Sammelobjekt anlegen:

Neu Kopieren Löschen

### Daten anzeigen

Nord Suchen

Von <dd.MM.yyyy> 15

Bis <dd.MM.yyyy> 15

Max. Anzahl Treffer 100

### Fundortverzeichnis

- Svalbard, Spitsbergen, Norder
- Frankreich, dép. Ariège, Pyren
- Bayern, Oberbayern, Ammerg:
  - M-0041993
- Buche im Wald bei Brandenbei
  - W-Spitzbergen, Isfjord-Gebiet
  - Felsköpfe bei 900 m herausrag
- Österreich, Tirol, Kitzbüheler A
- Spanien: Prov. Zaragoza, Sier
- Nordtirol: Gschnitztal, Marteie
  - M-0041332
- Italienische Alpen. Val Cisono

### Daten eingeben

Ortsangaben

ok	Fundortbeschreibung	Land	Region	Datum	Sammelmethode	Breiten
<input type="checkbox"/>	Nordtirol: Gschnitztal, Marteier Tal bei Grelnitz, auf Kalk	Austria	Gschnitz, Tirol, Austria	09.03.1919		

Sammelobjekt

ok	GBOL-Nr.	Feldnummer	Sammler	Anzahl Individuen	Entwicklungsstadium	Geschlecht
<input checked="" type="checkbox"/>	M-0041332		Wettstein, F. von			

Bestimmung

ok	Taxon-Name	Familie	Taxon-Hierarchie
<input type="checkbox"/>	Dacampia hookeri (Borrer) A. Massal.	Dacampiaceae	Ascomycota   Pezizomycotina   Dothideomycetes   Dacampiaceae   Dacampia

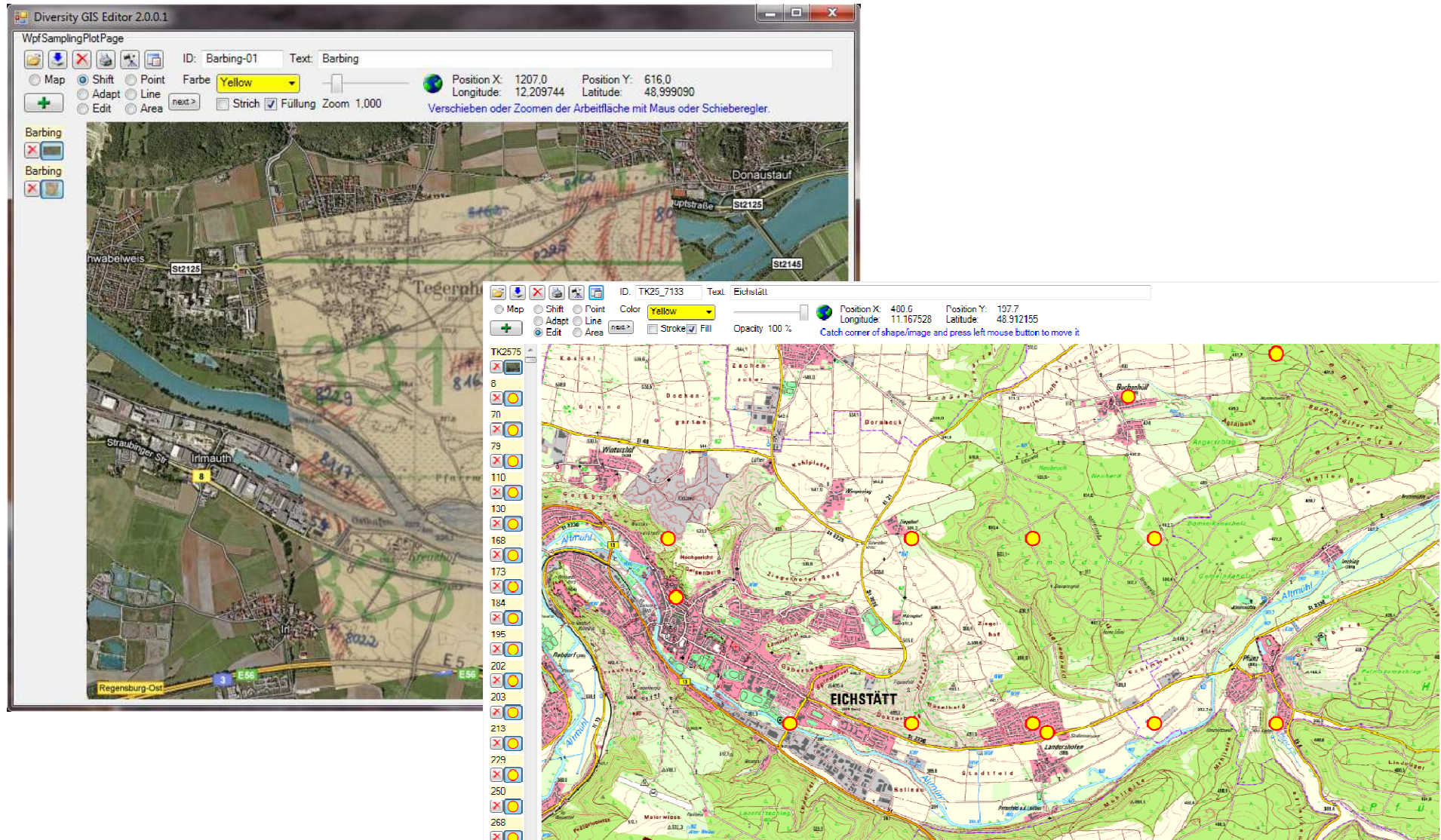
Probe

ok	Fixierungsmethode	Sammlungs-Nr.	Platte oder Box	Position in Platte	Gewebetyp	Gewebemenge
<input type="checkbox"/>			M   M-Fungi	Dacampia hookeri (Borrer) A. Massal.		

Allgemeine Bemerkungen (nur für Projektbeteiligte)



# Diversity GIS Editor



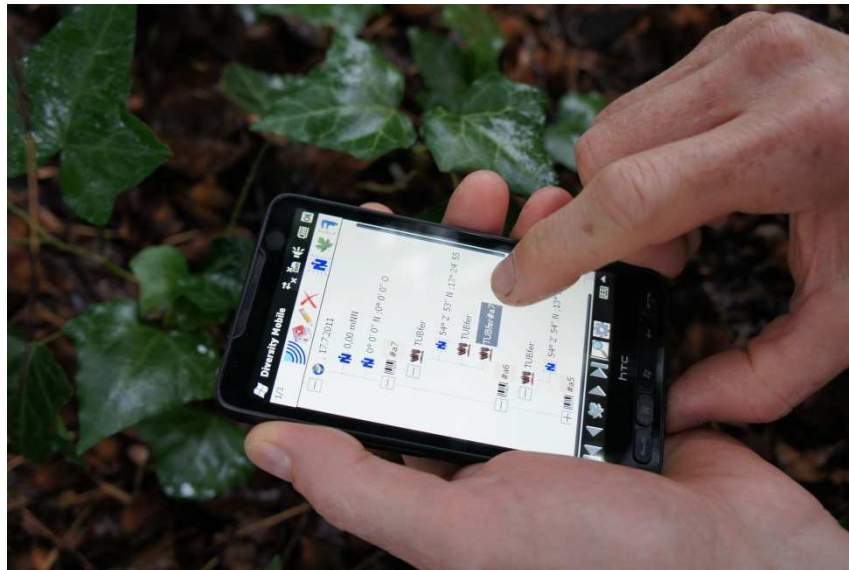
# DiversityMobile – [www.diversitymobile.net](http://www.diversitymobile.net)

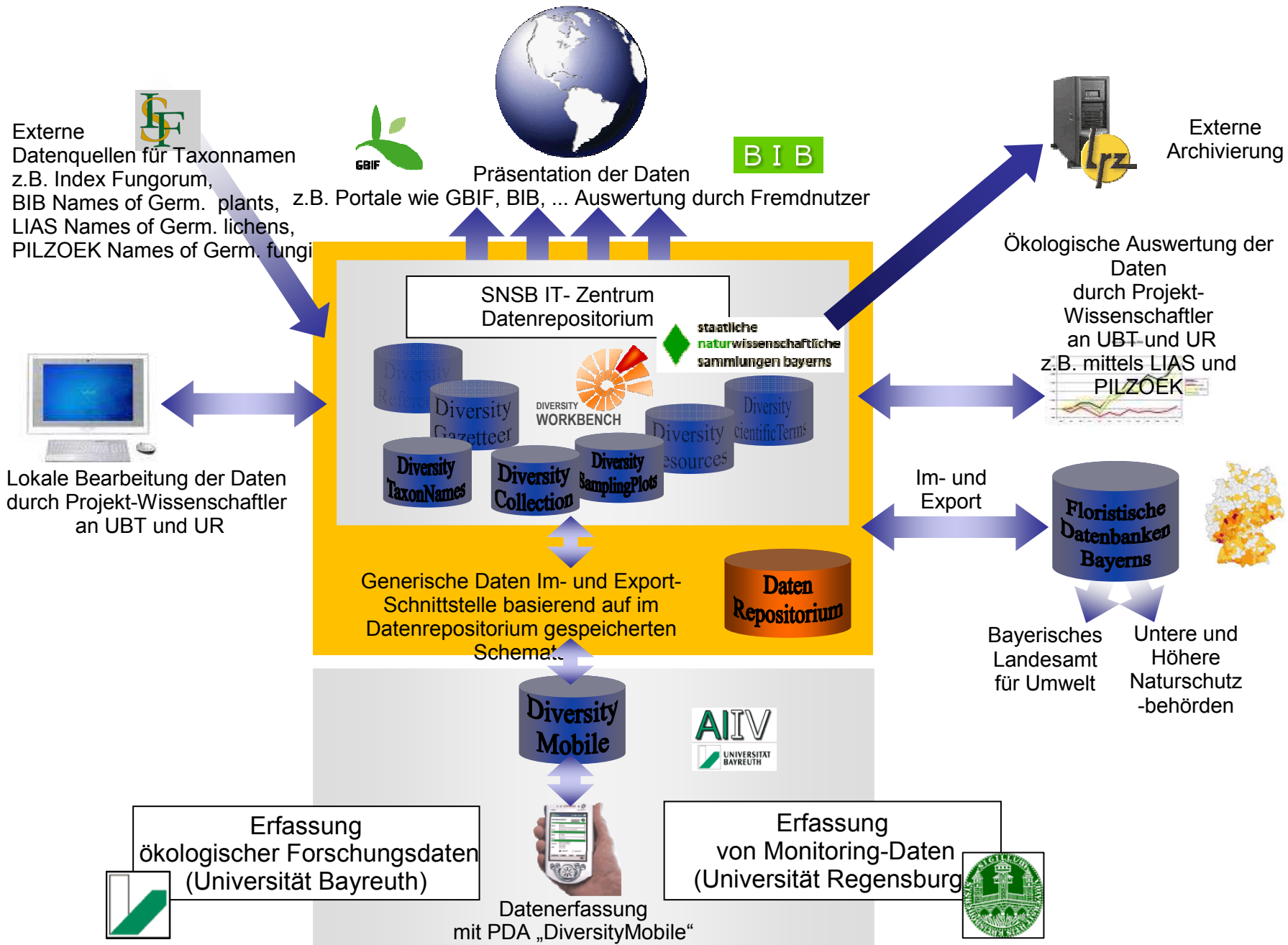
- Erfassung von **raum- und zeitbezogenen Biodiversitätsdaten** in Forschungsprojekten, z. B. Inventory- und Monitoring-Projekten
- Erfassung **ökologischer Beziehungen**, z. B. auf Langzeit-Untersuchungsflächen

Dateneingabe über Smartphones (WindowsPhone) und Tablet PC (Windows 7)

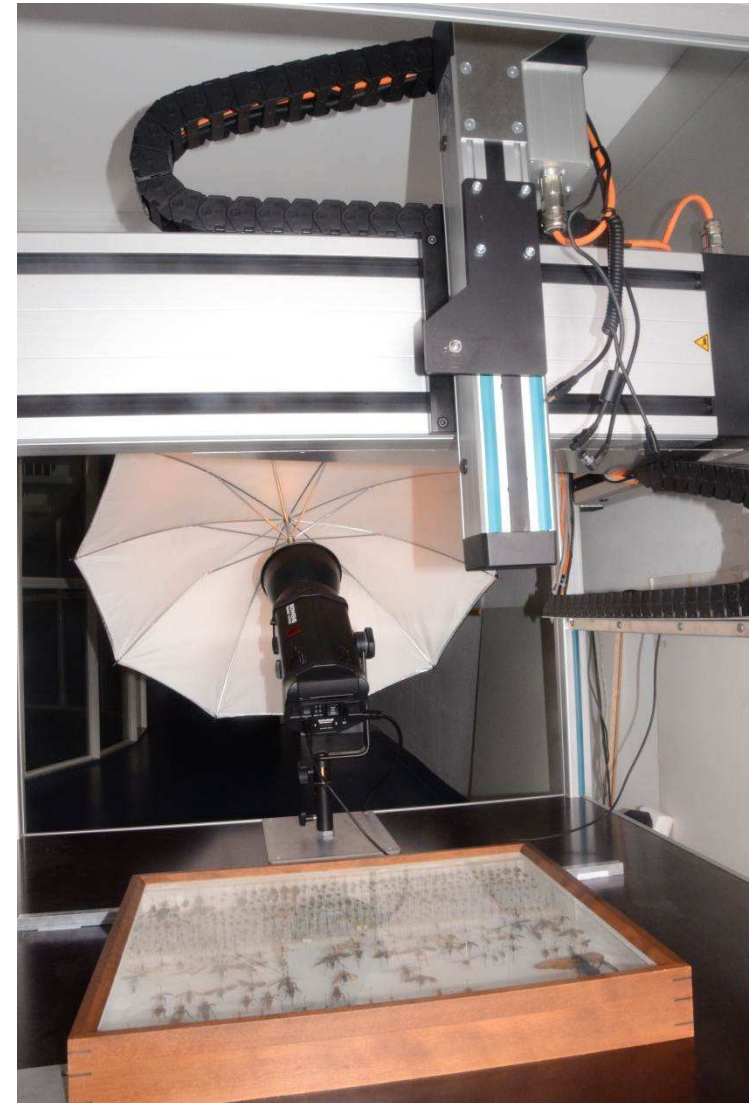
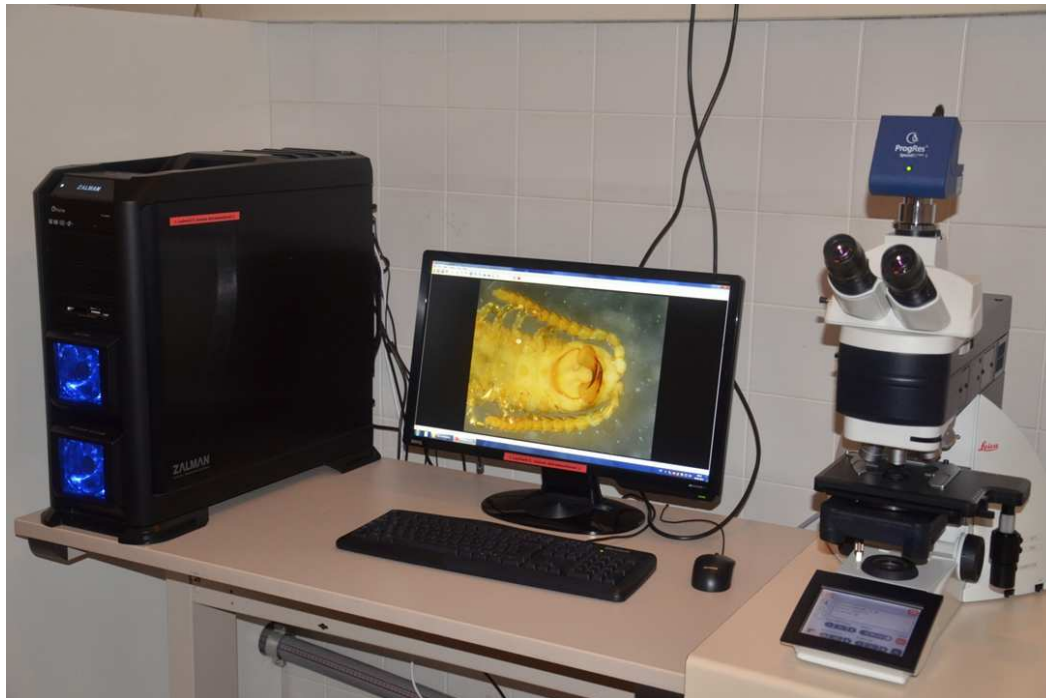


# Mobiles Datenmanagement – verschiedene Szenarien

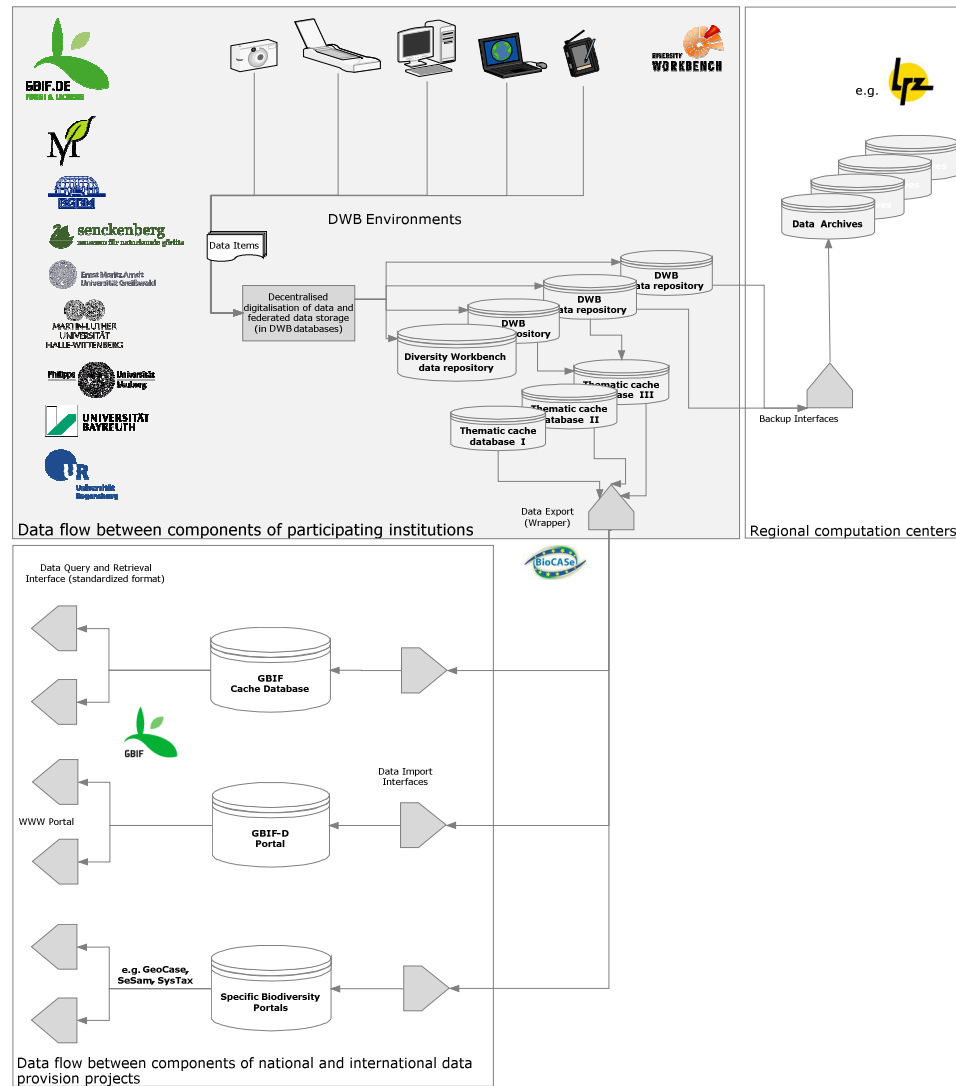




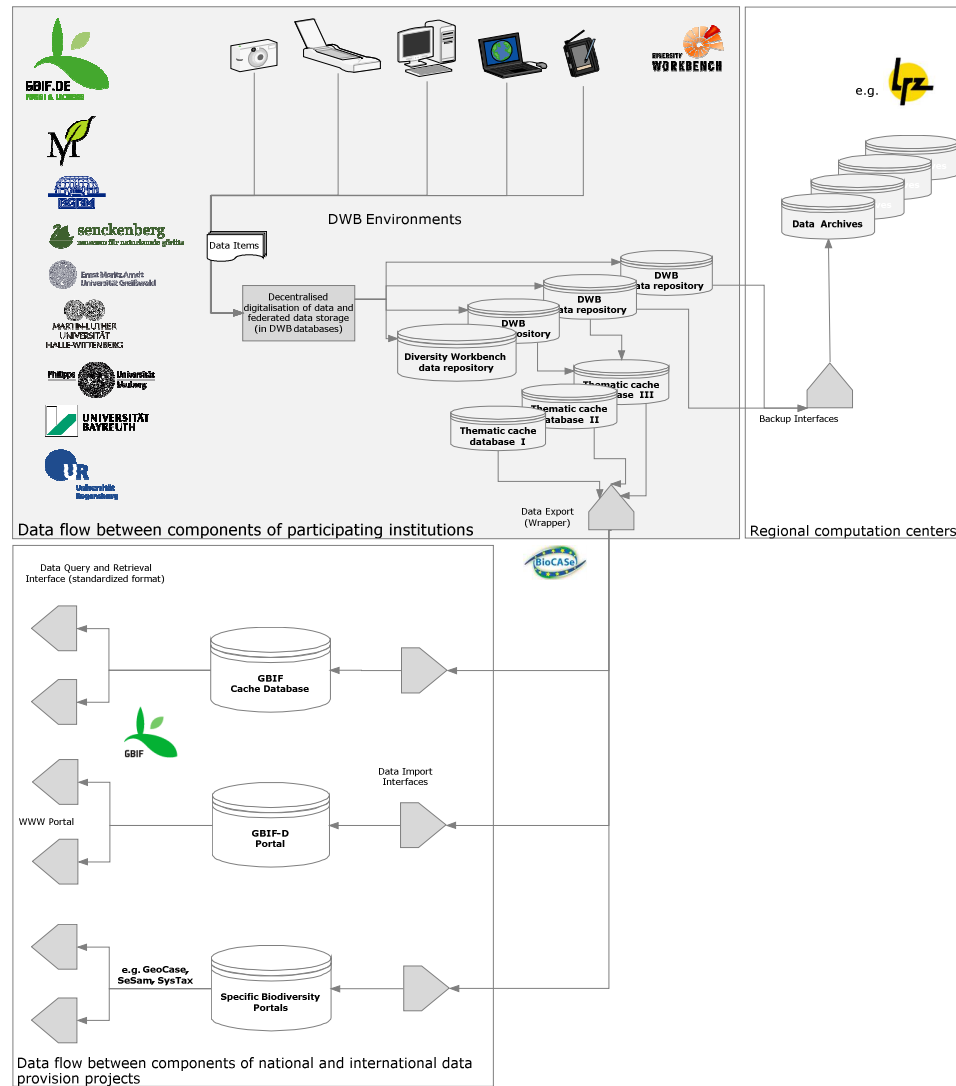
# Multimedia-Daten – Imagingstationen



# Multimedia-Daten und Textinformation in DWB – Datenfluss im Repositorium



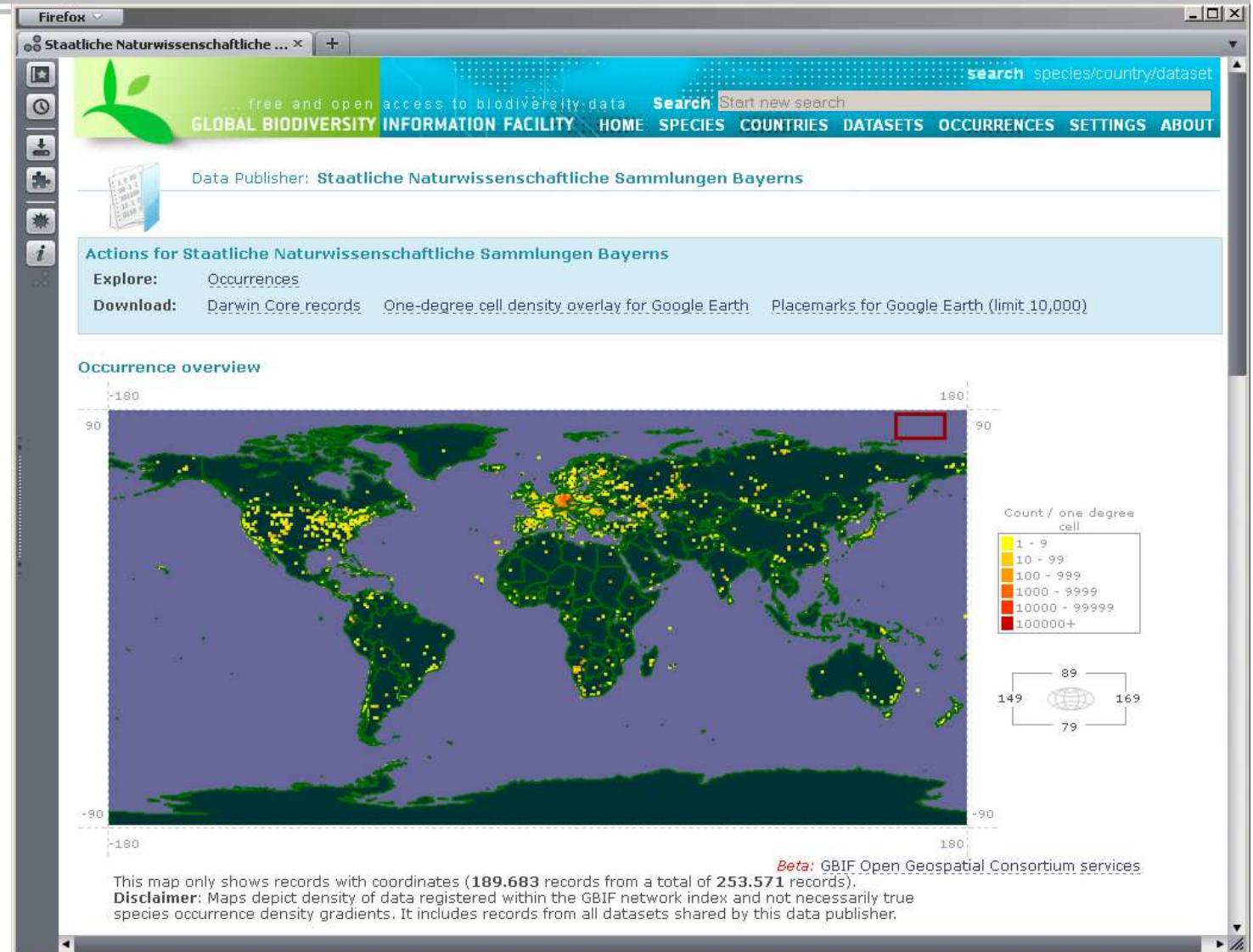
# Multimedia-Daten und Textinformation in DWB – Datenfluss zu Portalen



# DWB-Daten – GBIF Portal

total of  
**419.796**  
records

**329.694**  
records  
georef.





# DWB-Daten – Biological Collection Access Services for Europe

The screenshot displays the BioCASE Europe Portal website in a Firefox browser window. The page features a search interface with a dropdown menu for 'Ceratotherium' and a detailed view of a specimen unit.

**Search for ...**  
Taxon name: Ceratotherium  
Ceratotherium simum (4)  
Ceratotherium simum (1)

**Details**  
Units details  
Ceratotherium simum (Burchell, 1817) Source Institution: SAPM  
Unit ID: SAPM-MA-00136 / 211061 / 153754 Collection: SAPMmammaliacoll  
Unit GUID: http://id.snsb.info/Collection/178065-211061-153754  
Kind of Unit: PreservedSpecimen  
Identification(s)  
Name: Ceratotherium simum (Burchell, 1817)  
Multimedia

# DWB-Daten – Geosciences Collection Access Service for Europe

The image shows two browser windows. The left window displays the main GeoCASE website, which includes a navigation menu (Home, Data Access, Join the Network, Tutorial, About the Project) and introductory text about the ABCDEFG service. The right window shows the 'Simple ABCDEFG provider access portal', which features a search form with fields for scientific name, higher taxon, chronostratigraphic attribution, country, named area, locality, and email address. It also includes a 'Search' button and a 'Powered by: BioCASE' logo.

**GeoCASE**  
Geosciences Collection Access Service

Home Data Access Join the Network Tutorial About the Project About

ABCDEFG (Access to Biological Collection Databases Extended for Geosciences) is an > developed for use with palaeontological, mineralogical and geological digitalized collection data. It extends the ABCD-XML-Schema (Access to Biological Collection Databases) used by GBIF (Glo

The ABCDEFG-XML-Schema is used to apply a mapping to the local data source and it is supp Software is easy to install and provides a very handy user interface for database description a mediates between the local data source and the GeoCASE Portal by sending and receiving XML

ABCDEFG is proposed to the organisation of biodiversity information standards TDWG (Taxo standard for geoscientific collections. GeoCase will be adopted by GBIF as soon as possible. The schema provides a general geoscientific collections. It does not replace an individual database management software.

The BioCASE Provider Software may be obtained from [http://biocase.org/products/provider\\_snfw](http://biocase.org/products/provider_snfw)

For further information on ABCD visit <http://wiki.tdwg.org/ABCD/>.

For further information on the EFG Extension download the [ABCDEFG-XML-Schema document /efg\\_schema.pdf](#) or use the following documentation on this website.

ABCDEFG Schema Documentation:

Schema **abcdefg.xsd**

schema location: <http://www.geocase.eu/documentation/abcdefg.xsd>  
targetNamespace: <http://www.synthesys.info/ABCDEFG1.0>

Elements

<a href="#">AnalysisDateTime</a>	<a href="#">Complex types</a>
<a href="#">AnalysisReferences</a>	<a href="#">AllocthonousMaterialType</a>
<a href="#">Certainty</a>	<a href="#">AlterationType</a>
<a href="#">DatingQualifier</a>	<a href="#">AnalysisAtomisedType</a>
<a href="#">IdentificationAnalysis</a>	<a href="#">AssociatedFossilAssemblageType</a>
<a href="#">NamedGeologicalFeature</a>	<a href="#">AssociatedMineralAssemblageType</a>
<a href="#">StratigraphicMeasurementsOrFacts</a>	<a href="#">BiostratigraphicAttributionsType</a>
	<a href="#">ChronostratigraphicAttributionsType</a>
	<a href="#">EarthScienceSpecimenType</a>
	<a href="#">IdentificationAnalysisType</a>
	<a href="#">IdentifiersType</a>
	<a href="#">IsotopeStratigraphicDeterminationsType</a>
	<a href="#">LithostratigraphicAttributionsType</a>
	<a href="#">MagnetostratigraphicDeterminationsType</a>
	<a href="#">MineralogicalUnitType</a>
	<a href="#">MineralRockIdentifiedType</a>
	<a href="#">PalaeontologicalUnitType</a>
	<a href="#">RadiometricDatesType</a>
	<a href="#">RockUnitType</a>

schema location: <http://www.geocase.eu/documentation/abcdefg.xsd>  
targetNamespace: <http://www.synthesys.info/ABCDEFG1.0>

Elements

<a href="#">AnalysisDateTime</a>	<a href="#">Complex types</a>
<a href="#">AnalysisReferences</a>	<a href="#">AllocthonousMaterialType</a>
<a href="#">Certainty</a>	<a href="#">AlterationType</a>
<a href="#">DatingQualifier</a>	<a href="#">AnalysisAtomisedType</a>
<a href="#">IdentificationAnalysis</a>	<a href="#">AssociatedFossilAssemblageType</a>
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<a href="#">StratigraphicMeasurementsOrFacts</a>	<a href="#">BiostratigraphicAttributionsType</a>
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	<a href="#">IdentificationAnalysisType</a>
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	<a href="#">LithostratigraphicAttributionsType</a>
	<a href="#">MagnetostratigraphicDeterminationsType</a>
	<a href="#">MineralogicalUnitType</a>
	<a href="#">MineralRockIdentifiedType</a>
	<a href="#">PalaeontologicalUnitType</a>
	<a href="#">RadiometricDatesType</a>
	<a href="#">RockUnitType</a>

Simple ABCDEFG provider access portal

**Important Note:**  
This is a simple data portal for the [GeoCASE network](#). It uses [BioCASE](#) technology to perform a distributed query on ABCDEFG providers, using the BioCASE protocol. Since searches are performed on the original provider's databases, they might take some time and yield less results than expected, if some of the providers are offline.

**Query ABCDEFG Data Providers:**  
First, choose the type of database you want to query, you can search for either paleontological or mineralogical data. Then enter your search criteria, using \* as a wildcard. Please note that not all data has yet been translated into English for this prototype version. If you would like to receive the full response in xml format, please supply a valid email address.

**Fossils Minerals & Rocks**

Scientific name or a part of it (e.g. Archegosaurus*)	<input type="text"/>
Higher taxon name (e.g. Amphibia)	<input type="text"/>
Chronostratigraphic attribution (e.g. Permian)	<input type="text"/>
Country name (e.g. Germany)	<input type="text"/>
Named Area (e.g. Saarland)	<input type="text"/>
Locality (e.g. *Saalfeld*)	<input type="text"/>
Enter your email address for a full result response email:	<input type="text"/>
Limit max. number of results per database to	<input type="text" value="10"/>
Wait for not more than	<input type="text" value="15"/> sec. for a database to respond (consider raising this timeout level if you get insufficient results).
<input type="button" value="Search"/>	

Powered by:

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Seitenverantwortliche/Page editors: J. Holetschek, A. Hahn, M. Döring, C. DANCEA, A. GÜNTSCH  
BGBM Impressum/Imprint; Haftungsausschluss/Disclaimer

# DWB-Daten – SysTax-Portal

The screenshot shows a Firefox browser window displaying the SysTax-Portal website. The browser's address bar shows the URL "Wirbellose II Systax Abfrage | Gbi...". The website layout includes a top navigation bar with the GBIF.DE logo and the DLR logo. Below this, there are three main columns:

- Left Column:** A vertical navigation menu with sections for "GBIF-D Wirbellose II" (containing links like Home, Datenabfrage, etc.), "GBIF-Deutschland" (containing links like GBIF.DE Home, News, etc.), "GBIF International" (containing links like GBIF International Home, etc.), and "User login" with a "Username:" field.
- Center Column:** A yellow-highlighted section titled "SysTax - German GBIF portal - zoological and botanical collection data". It features a search interface with a search bar, a "search" button, and a "advanced" link. Below the search bar are several filter options: "data source" (set to "all data sources"), "restriction" (set to "zool. collections only"), "types only" (checkbox), "with images only" (checkbox), "with sound only" (checkbox), "sort order" (set to "taxon, institute"), and "display" (set to "short").
- Right Column:** A "Search" section with a "Search this site:" input field and a "Search" button. Below it is a news item titled "BMBF stärkt deutschen Beitrag zur Global Biodiversity Information Facility (GBIF)", sponsored by the Federal Ministry of Education and Research. The text describes the GBIF's role in biodiversity information and mentions that Germany is a founding member.

At the bottom of the page, there is a copyright notice: "© SysTax - Universität Ulm & Ruhr-Universität Bochum; script last modified: 16.09.2009".

# DWB-Daten in LIAS

Informationssystem  
für deskriptive und  
taxonomische  
Daten

seit 1996 online

seit 2001  
Daten in DWB  
Komponenten

> 42.500 Records  
DTN

> 9.400 Records  
DD

Firefox

LIAS

A Global Information System for Lichenized and Non-Lichenized Ascomycetes

DESCRIPTORS

- Listing
- Definitions

TAXA

- Descriptions
- Data Entry and Revision
- Images

IDENTIFICATION

- Keys on Genus Level
- Keys on Species Level

Forum About Cooperating Websites

- LIAS light
- LIAS names
- LIAS checklists
- LIAS glossary

LIAS

LIAS - A Global Information System for Lichenized and Non-Lichenized Ascomycetes

A Multi-authored, Distributed Internet Project  
Containing Information about Phylogeny and Biodiversity

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[Impressum](#) · [Disclaimer](#) · [Webmaster](#)

# DWB-Daten in Catalogue of Life



LepIndex: The Global Lepidoptera Names Index		Butterflies and moths	243,006
LHD: Lacistemataceae Holistic Database		Waits Nuni plant family	28
LIAS: A Global Information System for Lichenized and Non-Lichenized Ascomycetes <b>NEW!</b>		Lichens	5,499
MantodeaSF: Mantodea Species File		Praying mantids	2,403
MBB: Moss Bug Base		Moss bugs	32
Mites GSDs: OlogamasidBase		Ologamasid mites	446
Mites GSDs: PhytoseiidBase		Phytoseiid mites	2,186
Mites GSDs: RhodacaridBase		Rhodacarid mites	145
Mites GSDs: TenuipalpidBase		Tenuipalpid mites	887
MOST: Moss TROPICOS Database		Mosses	13,365
MOWD: Membracoidea of the World Database <b>NEW!</b>		Treehoppers and leafhoppers	15,392
Nomen.eumycetozoa.com		Slime moulds	1,034

# Dienstleistungen für GBIF Deutschland

**GBIF-DE**

**Home**

## Global Biodiversity Information Facility - Deutschland

English Version

Die internationale Initiative **Global Biodiversity Information Facility (GBIF)** hat sich zum Ziel gesetzt, wissenschaftliche Daten und Informationen zur weltweiten Artenvielfalt in digitaler Form über das Internet frei und dauerhaft verfügbar zu machen.

### Ziele und Beteiligte von GBIF-D

Deutschland gehört zu den Gründungsmitgliedern der Global Biodiversity Information Facility (GBIF). Seit Ende 2010 arbeitet **GBIF-Deutschland (GBIF-D)** im Rahmen eines BMBF-finanzierten Verbundvorhabens an der gezielten Zusammenstellung und Mobilisierung aller bundesweit geeigneten Sammlungs-, Forschungs-, Beleg- und Observationsdaten zur Umsetzung des GBIF-Leitbildes ([pdf](#)). Als Verbundpartner sind insgesamt **acht GBIF-Knoten an deutschen Forschungsanstalten** aktiv:

- BGBM Berlin-Dahlem für das Teilprojekt **Koordination**
- DSMZ Braunschweig für das Teilprojekt **Bakterien & Archaeen**
- BGBM Berlin-Dahlem für das Teilprojekt **Pflanzen, Algen & Protisten**
- BSM München für das Teilprojekt **Pilze & Flechten**
- MfN Berlin für das Teilprojekt **Insekten**
- ZSM München für das Teilprojekt **Wirbellose II**
- Senckenberg Frankfurt für das Teilprojekt **Wirbellose III**
- ZFMK Bonn für das Teilprojekt **Wirbeltiere**
- MfN Berlin für das Teilprojekt **Fossilien**

Sprecher GBIF-D: Walter Berendsohn (Wiederwahl 2009)  
Stellvertretende Sprecherin GBIF-D: Dagmar Triebel (seit 2009)  
Sprecher der IT-Kommission: Anton Güntsch

Weitere fachliche und technische Begriffe im Zusammenhang mit der GBIF-Arbeit finden Sie im [Glossar](#). Informationen für Pressevertreter sind [hier](#) hinterlegt.

**Search**

Search this site:

**BMBF stärkt deutschen Beitrag zur Global Biodiversity Information Facility (GBIF)**

SPONSORED BY THE  
Federal Ministry of Education and Research

Die Global Biodiversity Information Facility (GBIF) hat sich als weltweit führende Informationsinfrastruktur für den Bereich der organismischen Vielfalt etabliert und bewährt (<http://data.gbif.org>).

Deutschland ist eines der Gründungsmitglieder von GBIF und seit Jahren einer der größten Biodiversitätsdatenanbieter weltweit.

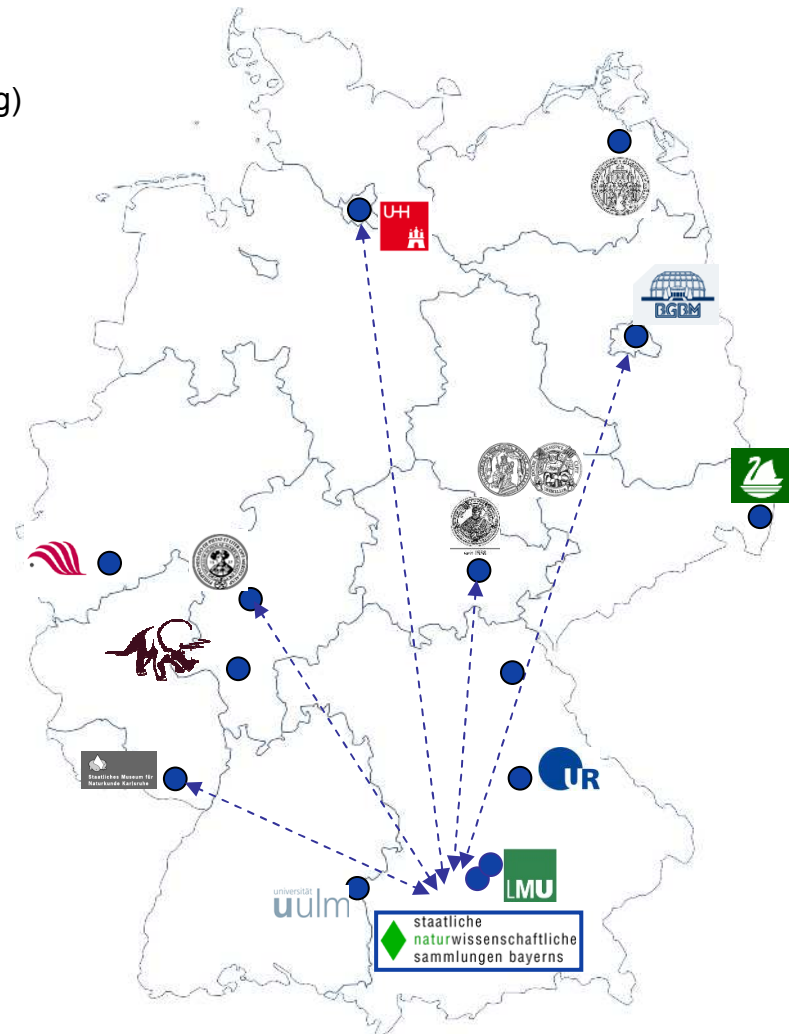
**GBIF-Publikationen demnächst im „GBIF Online Resource Centre“ zusammengefasst.**

**GBIF**

Entsprechend dem aktuellen GBIF-Arbeitsprogramm laufen

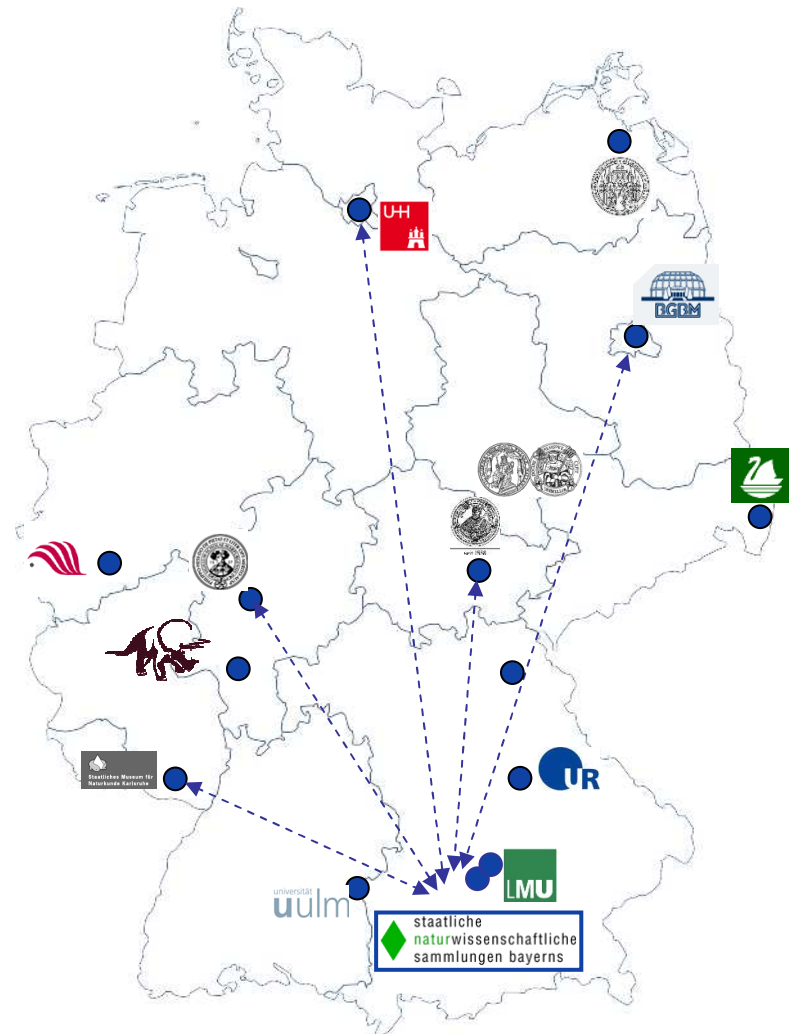
# Nationale Kooperationen

- Datenaufnahme (via DWB-VRE-Clients; aktuell ca. 120 Remote Clients)
  - Senckenberg Museum für Naturkunde Görlitz (Sammlung)
  - Universität Bayreuth (Lehre, Forschung)
  - Universität Greifswald (Forschung)
  - Universität Halle-Wittenberg (Sammlung)
  - Universität Hamburg (BIOTA-Daten)
  - Universität Jena (JMRC Sammlung)
  - Universität Marburg (Sammlung)
  - Universität München LMU (Lehre, Forschung)
  - Universität Regensburg (Bayernflora-Datenbank)
  - u. a.
- Datenbereitstellung, -publikation (Anbindung Datennetzwerke Deutschland)
  - BIB Bayern Portal
  - BiNHum-Portal (vereinbart)
  - SeSam Portal (vereinbart)
  - SysTax Portal (im Rahmen GBIF-D vereinbart)
  - GBIF-Deutschland Portal (im Rahmen GBIF-D vorgesehen)



# Nationale Kooperationen

- Datentransfer (Aufnahme von Komplettbeständen, Datenrettung)
  - Staatliches Museum für Naturkunde Karlsruhe (Biota-Applikation)
  - Universität Greifswald (MyxDB)
  - Universität Tübingen (TUB-Bilddatenbank)
  - Universität Ulm (SysTax)
  - Zoologisches Forschungsmuseum Alexander Koenig Bonn (BIODAT)
  - u. a.
- Aufbau eigener DWB-Umgebungen
  - Staatliches Museum für Naturkunde Karlsruhe
  - Staatliches Museum für Naturkunde Stuttgart
  - Zoologisches Forschungsmuseum Alexander Koenig Bonn
  - Universität Bayreuth
  - u. a.





# SNSB IT-Zentrum – Web-Präsenz

- Informationsportale 14
- Standard-Thesauri online 3
- Online Datenprojekte 30–35
- BioCase-Wrapper, publ. Daten >419.000
- Digitalisate >500.000
- Remote Zugänge (VRE) 120
- GBIF-D Knoten 3

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snsb it center

HOME ABOUT US PEOPLE SERVICES WORKSHOPS

**Services and Products**

Beside data curation tasks as mentioned under [Home](#) and [About us](#) the SNSB IT Center is running services and products in the thematic areas below.

- ▶ **Software Design and Implementation**
  - DIVERSITY WORKBENCH
  - DIVERSITY MOBILE
  - MOBILE
- ▶ **Development of Web Portals for Collections**
  - M
  - GBIF DE FUNGI & LICHERN
  - STATUSSAMMLUNG FÜR ANTHROPOLOGIE UND DALADANATOMIE MUC. **SAPM**
- ▶ **Species Information Systems**
  - DEEMY
  - LIAS
  - MELNET
  - Myxomycota Germany
- ▶ **Portals with General Biodiversity Information**
  - THE MYCOLOGY .NET
  - MYCO PHYLOGENY
  - THE PHYCOLOGY .NET
- ▶ **Literature Catalogues and Bibliographies**
  - DALI
  - IndExs
  - Index Maps
  - MyxLit
- ▶ **Services for Internet Platforms**
  - Catalogue of Life
  - GBIF
  - IAL
  - STOR

staatliche naturwissenschaftliche sammlungen bayerns

# Diversity Workbench – Workshop heute



Infos unter <http://www.snsb.info/Workshops.html>