



Diversity Workbench (DWB)

Einführung

Dagmar Triebel



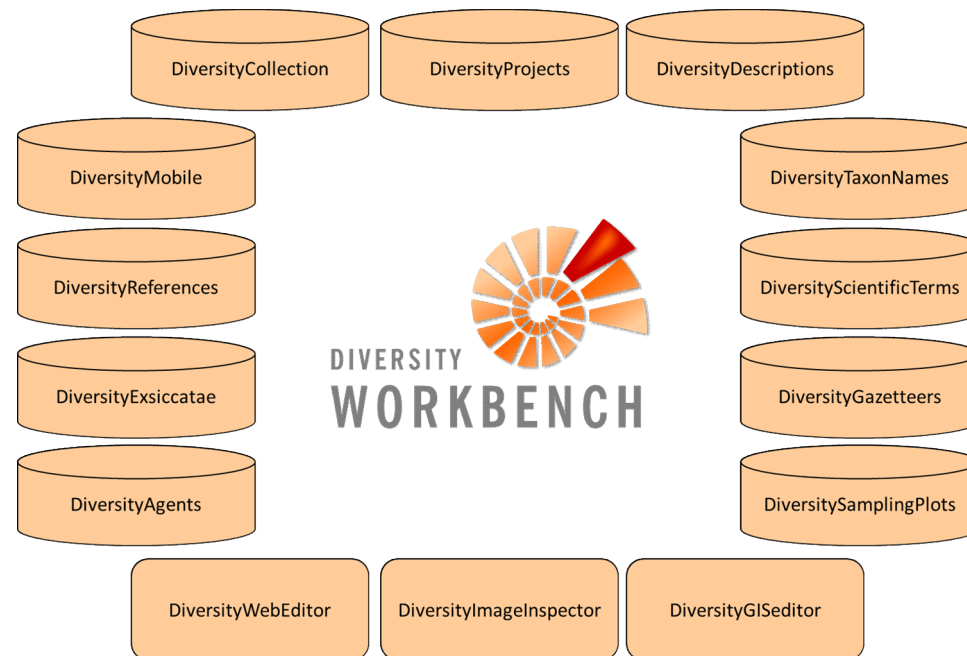
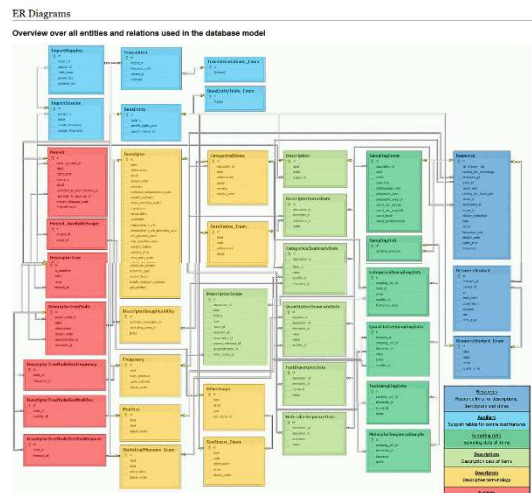
DWB – ein Set von Software Tools

- 11 SQL relationale Datenbanken zum Datenmanagement von Forschungs- und Sammlungsdaten
- Software-Implementierung vor allem an den SNSB
- Konzeptentwicklung/ Modellierung in Kooperationen mit anderen Teams

DiversityDescriptions Information Model (version 3.0.15, 11 July 2016)

| | |
|--------------------|--|
| Authors | G. Hagestein, A. Plank, A. Lin, G. Hainböck & D. Thierer 2016 |
| License | CC BY-NC-ND 4.0 |
| Suggested citation | G. Hagestein, A. Plank, A. Lin, G. Hainböck & D. Thierer (2016) DiversityDescriptions information model (version 3.0.15). http://www.diversityworkbench.de |
| Notes | This models currently reside in MS SQL Server, so knowledge of same SQL Server LSI diagram conventions will be helpful. Reverts the screen shots below, a Microsoft T-SQL script for the generation of the tables is provided. |

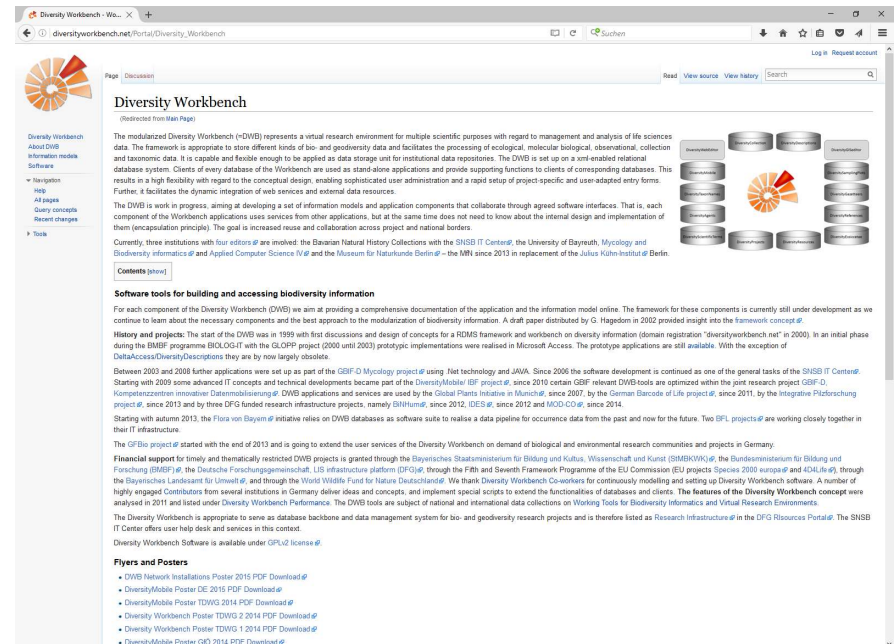
dwBD Database Scheme
This information model is available as OWL database scheme with each single data table and data column referenced as term or concept by its own stable and persistent URL.



DWB – Agile Software-Entwicklung

.... seit mehr als 20 Jahren

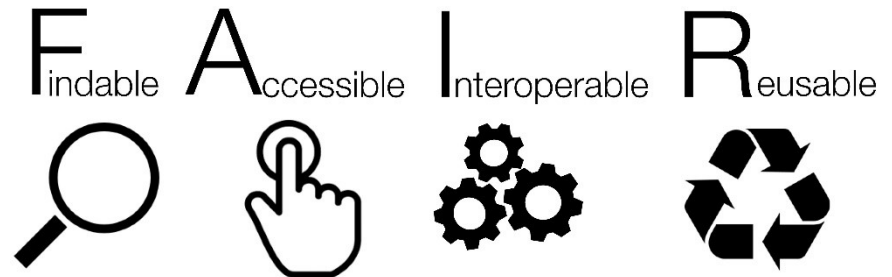
- Software ist frei verfügbar unter **www.diversityworkbench.net**
- **Open-Source-Implementierung** mit mehr als 2 Mio Code-Zeilen
- Software Design, Datenmodelle und ER-Schemata innovativ und als **Open Access** publiziert
- Agile Software-Entwicklung mit Software Tests durch derzeit mehr als 30 engagierten Anwender
- Workshops seit 14 Jahren



The screenshot shows the Diversity Workbench website. The page title is "Diversity Workbench" and the URL is "diversityworkbench.net/Portal/Diversity_Workbench". The page features a navigation menu on the left with links for "Diversity Workbench", "About DWB", "Information media", "Software", "Navigation", "Help", "All pages", "Query concepts", "Recent changes", and "Tools". The main content area includes a "Page Discussion" section, a "Diversity Workbench" header, and a central diagram showing a network of interconnected nodes. Below the diagram, there is a "Contents" section with a list of links to various pages. The page also contains several paragraphs of text describing the project's history, goals, and current status.

DWB – Datenmanagement

- Fokus: Erzeugung und Prozessierung von FAIR data
- DWB wird entwickelt für
 - Anwender aus den Lebens- und Geowissenschaften (**Diversitätsdaten**)
 - Datenerzeuger, die professionelle Datenkuration anstreben
 - Datenerzeuger, die möglichst lange eine umfassende Datensouveränität behalten wollen
- DWB stellt eigene Dienste und Inhalte zur Verfügung (cloud services)
 - Terminologien
 - Vokabularien
 - Taxonomien
 - Gazetteers



Technical documentation for the core applications and rich clients

| | |
|-----------------------------------|---|
| Name of the database framework | Diversity Workbench (DWB) |
| DWB contact persons | T. Weibulat, D. Triebel at the SNSB IT Center ↗ |
| Operating system server | MS Windows Server 2008 R2, 2012 R2 |
| Database system | MS SQL-Server 2008 R2 to MS SQL-Server 2014 ↗ |
| Clients | C# desktop applications (local clients) (and web APIs for various projects) |
| Operating system local clients | MS Windows XP (not recommended), MS Windows 7 to MS Windows 10 |
| GIS functionalities | GIS-Editor , management of geometry and geography data |
| GUIs for data import | Import-Wizards, txt, CSV, xml in various schemes, xml/xslt, shapes in ESRI-Format |
| GUIs for data export/ reports | Export-Wizards, txt, CSV, xml in various schemes, xml/xslt, shapes in ESRI-Format |
| GUI language | default: english (multilingual through translation tables) |
| Open access | DWB software download |
| Open source | DWB SVN code repository ↗ , DiversityMobile GitHub repository ↗ |
| Licenses | GPL v.2 |
| Information models online | DWB data models |
| State of development | since 1999, ongoing |
| Code language, developer platform | C#, .Net Framework 3.5 |
| User manuals | under DWB user manuals and with the download of the respective applications in the DWB Wiki |
| Training | DWB workshops ↗ for users and database administrators since 2007 |

Diversity Workbench – Schnittstellen zum Datenmanagement

The screenshot displays the Diversity Workbench interface, which is used for managing biological specimen data and taxonomic information. The interface is divided into several main windows:

- DiversityCollection v. 3.0.3.6:** Shows specimen details for *Ceratotherium simum* (Burchell, 1817) with specimen ID 178065 and event version 20971. It includes a list of displayed fields and a table of specimen records.
- DiversityScientificTerms v. 3.0.0.0:** A hierarchical tree view of scientific terms, currently showing the 'Indusium' term. It includes a search bar and various filters.
- DiversityAgents v. 3.0.0.3:** Displays information for the agent 'Hertel, Hannes, Prof. Dr.', including his title, given name, and affiliation.
- DiversityTaxNames, Database: DiversityTaxNames_Fungi v. 3.0.1.5:** Shows taxonomic data for the genus *Biatora*. It includes a list of species, a hierarchy tree, and a detailed view of the species *Biatora sylvana* Korb. The detailed view includes fields for taxonomic name, nomenclature, taxonomic reference, and synonymy.

The interface is designed for efficient data management and research, providing a comprehensive view of specimen records, scientific terminology, and taxonomic relationships.

DWB – aktuelle Zahlen I

- DWB Software Entwickler an den SNSB: **4**
- DWB Datenbanken auf SNSB Servern: **120**
- Aktive DWB Anwender, verwaltet in DWB Instanzen an den SNSB: **200**
- DWB Anwender geschätzt: mehr als **350**
- SNSB hostet Daten von rund **30** Organisationen, Arbeitsgruppen, Verbundprojekten (verschiedene Hostingkonzepte)
- SMNK, SMNS, SNSB, ZFMK besitzen eigene Installationen von DWB Arbeitsumgebungen für ihre Institutionen und Projekte



DWB – aktuelle Zahlen II

- Seit 2007: mehr als **470** Teilnehmer an DWB Workshops in München (+ weitere Workshops an SMNK, SMNS und ZFMK)



- UserHelpDesk am SNSB IT Center, teilweise in Kooperation mit **GFBio e.V.**



- DWB Daten im GBIF Netzwerk: > **15,5 Mio**

- DWB Daten im Flora von Bayern-Netzwerk: > **15 Mio**



- DWB Daten im **GFBio** Netzwerk: > **14,5 Mio**

DWB-DC Daten im GFBio Datenportal und VAT



The screenshot shows the VAT (Visualization and Analysis Tool) interface. On the left, there is a list of data sources with colored circular markers:

- IBF Monitoring... (Yellow)
- IBF Monitoring... (Blue)
- The Fish Colle... (Green)
- The Spider Col... (Red)
- The Barcoding ... (Cyan)
- The Barcoding ... (Yellow)
- The Pisces Col... (Blue)
- The Fish Colle... (Green)

The main area displays a world map with numerous colored data points. On the right, a panel titled 'Operators' is open, showing a search bar and a list of available operations:

- Mixed
 - Raster Polygon Clip: Clip a raster image via polygon boundaries
 - Raster Value Extraction: Attach raster values to vector data
 - R Script: Execute an R script (experimental)
- Plots
 - Box Plot: Box plot your data
 - Histogram: Create a histogram from vector or raster data
 - Pie Chart: Plot your data as a pie chart
 - Scatter Plot: Scatter plot your data
- Raster
 - Expression: Calculate an expression on a raster

The screenshot shows the GFBio website homepage. The header includes navigation links: About, Services, Infothek, Events, GFBio e.V., and Sign In. The main content area features the GFBio logo (GERMAN FEDERATION FOR BIOLOGICAL DATA) and the tagline 'FAIR • Research • Data Biodiversity, Ecology & Environmental Science'. Below this is a search bar with the text 'Enter a search term...' and a 'FIND DATA' button. Two featured images are shown: 'Environmental & Ecological Data' (a landscape with a blue sky and green hills) and 'Biodiversity & Collection Data' (a butterfly on a yellow flower). At the bottom, there are three icons: 'Plan' (a pencil), 'Submit' (a cloud with an arrow), and 'Visualize' (a location pin).

<https://www.gfbio.org/data/visualizeandanalyze>



DWB Taxonomien im GFBio Terminology Server



Regionalised and Domain-specific Taxon Lists

The DWB REST Webservice for Taxon Lists is part of a Diversity Workbench (DWB) services network. It is delivering basic information on taxon names in use, synonyms, classification and German vernacular names of a number of groups of animals, fungi and plants.

The current focus is on domain-specific lists (checklists, taxon reference lists, red lists) from Germany under active curation by experts on taxonomy or floristics and faunistics. Each regionalised and domain-specific taxon list has its own history and objectives, is managed completely separately and has its own hierarchical classification. The DiversityTaxonNames (DTN) data resources accessed by the REST API may include additional taxon-related data useful, e. g., for regional nature conservation agencies and environmental projects. This information might be mobilised in a next step.

For more information please refer to [DTN_Taxon_Lists_Services](#)

[Home](#)[Content](#)[Developer Section](#)[Tools](#)[About](#)

CONTENT / EXTERNAL SERVICES

Web services connected to the Terminology Server

The following services have been integrated into the search [API](#):

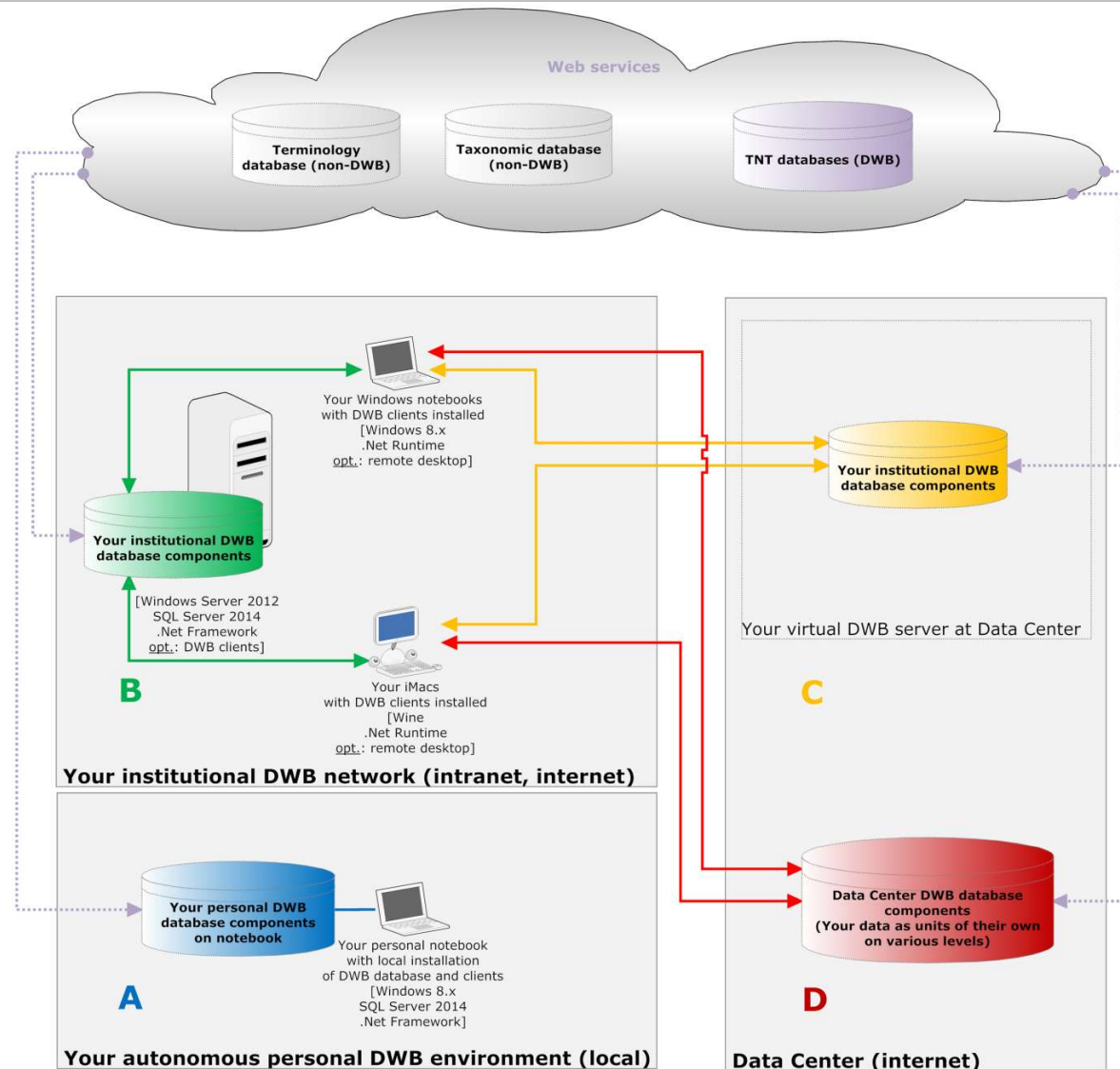
- The Catalogue of Life: <http://cybertaxonomy.eu/cdmlib/rest-api-name-catalogue.html>
- The Integrated Taxonomic Information System (ITIS): http://www.itis.gov/web_service.html
- The World Register of Marine Species (WoRMS): <http://www.marinespecies.org/aphia.php?p=webservice>
- Fauna Europaea via PESI: <http://www.eu-nomen.eu/pesi/about-pesi>
- The GeoNames geographical database (Geonames): <http://www.geonames.org/export/web-services.html>
- The DWB REST Webservice for Taxon Lists (DTNtaxonlists): <http://services.snsb.info/DTNtaxonlists/rest/v0.1/static/api-doc.html>
- The Prokaryotic Nomenclature Up-to-Date Taxon list (PNU): <http://bacdive.dsmz.de/api/pnu/>



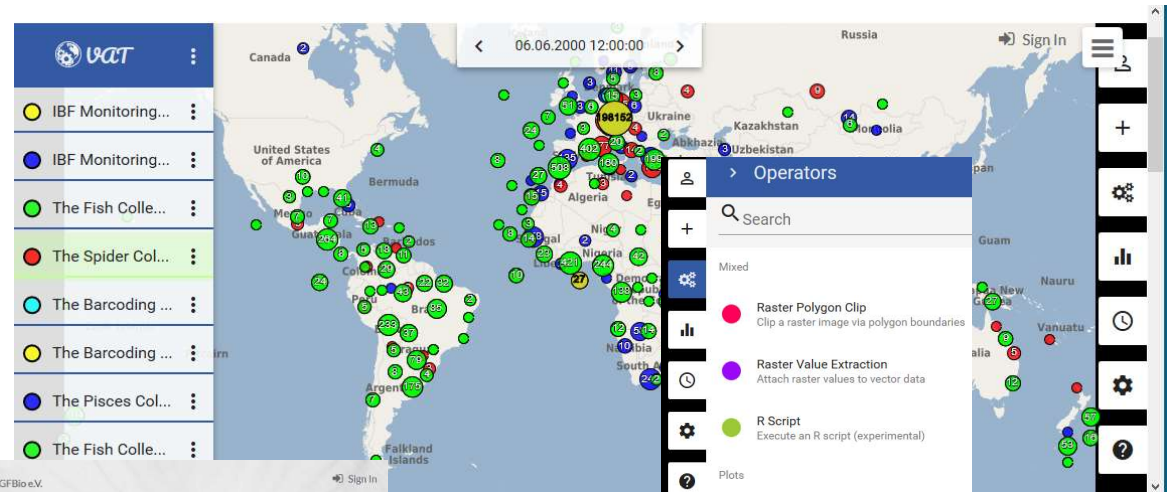
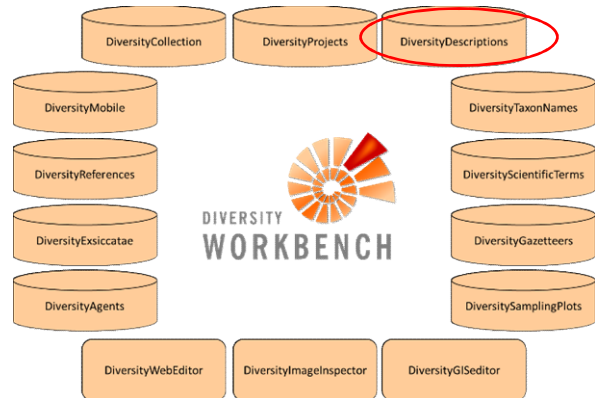
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Imprint

DWB-Arbeitsumgebungen und GFBio Hosting



DWB-DD Daten im GFBio Datenportal und VAT



DWB – DiversityDescriptions in GFBio



- Unterstützung beim Datenmanagement durch GFBio-DWB Team

Tools & Workbenches for Data Management



GFBio supports researchers with software for data management. Two German developer groups ([Diversity Workbench \(DWB\)](#) and [BEXIS 2](#)) providing open source platforms for biodiversity data management extend their applications in the GFBio context. Using one of these platforms during the active phase of research projects will facilitate data transfer for long-term archival and data publication via the GFBio portal.

Learn more about the scope of application, specific features and functionalities of DWB and BEXIS 2!

DWB in 10 Questions

+ What is DWB?

+ For whom is DWB designed?

+ Which part of the data life cycle is primarily addressed?

Workshop aktuell: Programm



A screenshot of the top part of a web page. On the left is the SNSB logo (Staatliche Naturwissenschaftliche Sammlungen Bayerns). The main title is "DivWorkbenchWorksh...". On the right are search and user icons. Below the title is a navigation bar with "Imprint and Privacy", "Anhänge", "Info", "Bearbeiten", and "Weitere...".

39. Diversity Workbench Workshop am IT-Zentrum der SNSB ↗

Thema: Einführung in [DiversityDescriptions \(DWB-DD\)](#) ↗; Schwerpunkt: Management von Merkmals- und Messdaten, Importe, Exporte, DWB-DD als Teil des GFBio Netzwerkes

Es wird das Management von wissenschaftlichen Daten im Bereich Bio- und Geodiversitätsforschung ohne direkten Sammlungsbezug behandelt. Dies betrifft Mess- und Merkmalsdaten, wie sie in ökologischen Projekten mit Prozessen im Labor anfallen, inklusive dem Management von strukturierten Beschreibungsdaten. Dabei werden Fragen der Interoperabilität, des Datenaustauschs und der Standardisierung behandelt, besonders mit Bezug zur **German Federation for Biological Data (GFBio)** ↗. Die Teilnehmer werden angeleitet, mit der DWB-Applikation *DiversityDescriptions* in einer Trainingsdatenbank selbständig zu arbeiten. Verschiedene Vorträge und Demos verdeutlichen den vielfältigen und flexiblen Einsatz der Software.

An der Vorbereitung und Durchführung des Workshops beteiligtes Team

- aus München: [Dagmar Triebel](#) ↗, [Ariane Grunz](#) ↗, [Eva Haiduk](#), [Anton Link](#) ↗, [Dieter Neubacher](#) ↗, [Wolfgang Reichert](#) ↗, [Stefan Seifert](#) ↗, [Tanja Weibulat](#) ↗, [Markus Weiss](#) ↗
- aus Bayreuth, Universität Bayreuth: [Janno Harjes](#) ↗, [Gerhard Rambold](#) ↗
- aus Göttingen, GWDG: [Sven Bingert](#) ↗
- aus Stuttgart, Staatliches Museum für Naturkunde: [Ingo Wendt](#) ↗

Der Workshop wird in Kooperation mit der [German Federation for Biological Data \(GFBio\)](#) ↗ veranstaltet.

Workshop aktuell: Datenpakete in DWB-DD



Demo-Beispiele:

- AraMob (<https://aramob.de>)
- BacDive-DSMZ (<https://bacdive.dsmz.de/>)
- BEF-China (<http://www.bef-china.de>)
- DEEMY (<http://www.deemy.de/>)
- Flora von Bayern (www.bayernflora.de)
- LIAS (<http://www.lias.net/>)
- Uni Bayreuth, Daten aus Forschung und Lehre

BEF-China



DEEMY

LIAS