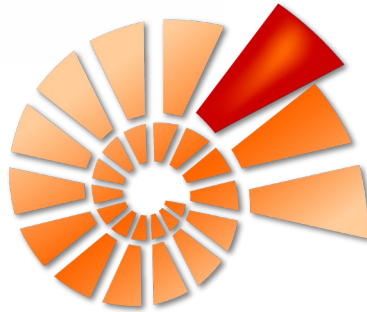


# Einführung in Diversity Workbench



Tanja Weibulat

**SNSB**   
Staatliche  
Naturwissenschaftliche  
Sammlungen Bayerns

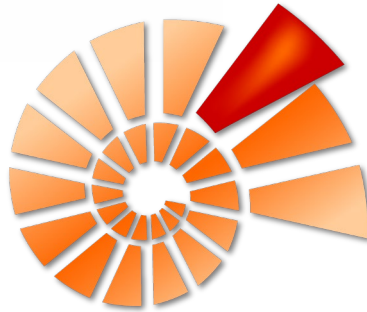
 **snsb  
it center**

# Inhalt



1. Diversity Workbench (DWB): Eine Übersicht
2. DiversityCollection (DC): Ein DWB-Modul im Überblick

# 1. Diversity Workbench: Eine Übersicht

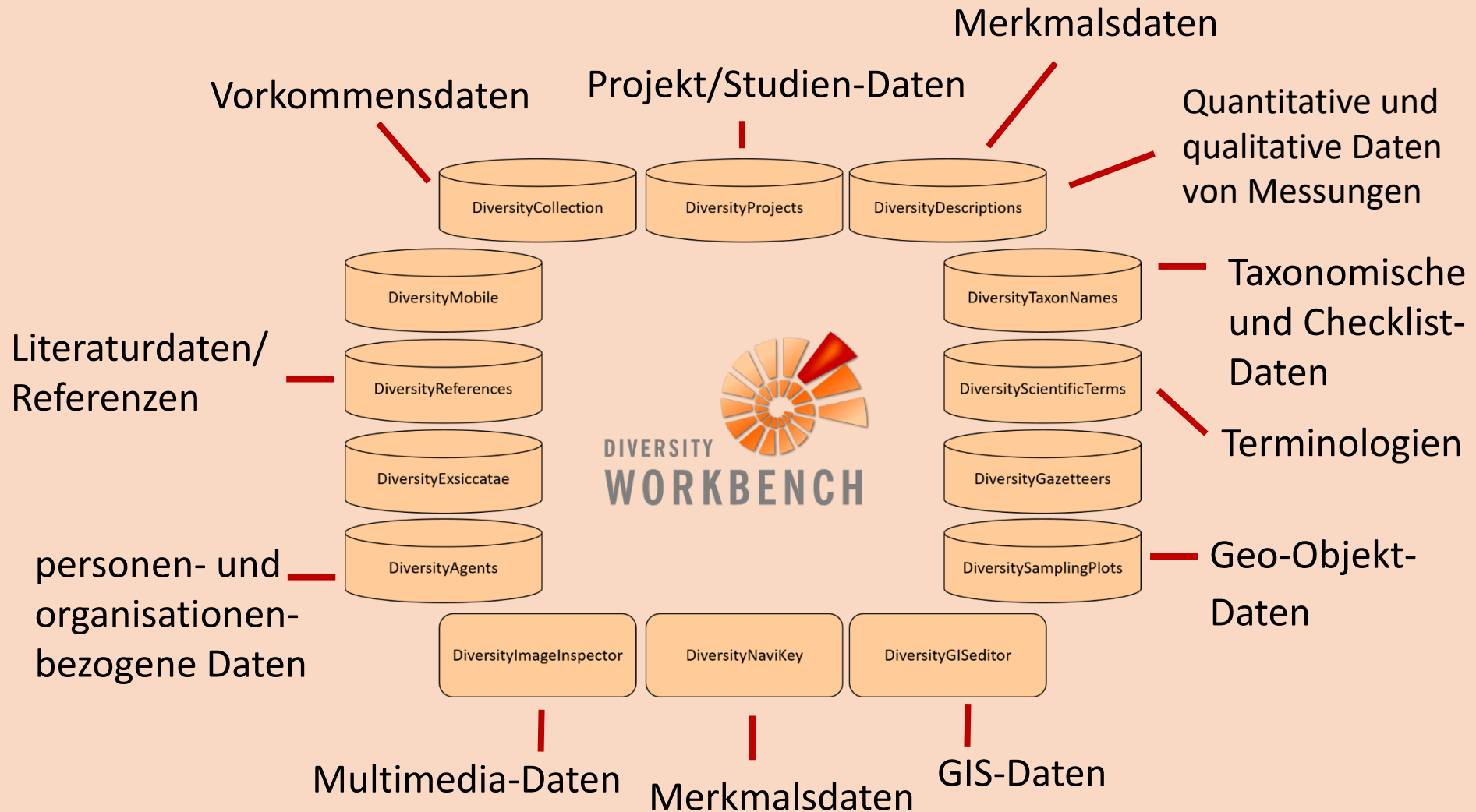


# Was ist die Diversity Workbench?

- Datenmanagementsystem (DMS) für Anwender/Daten aus den Lebens- und Geowissenschaften (Diversitätsdaten)
- Anpassung für Zielgruppen:
  - Naturwissenschaftliche Sammlungen (inkl. Imaging)
  - Artenmonitoring und Naturschutz
  - Ökologische Forschung und Traitdaten
  - Taxonomien und Checklisten
  - Geosciences und Stratigraphien

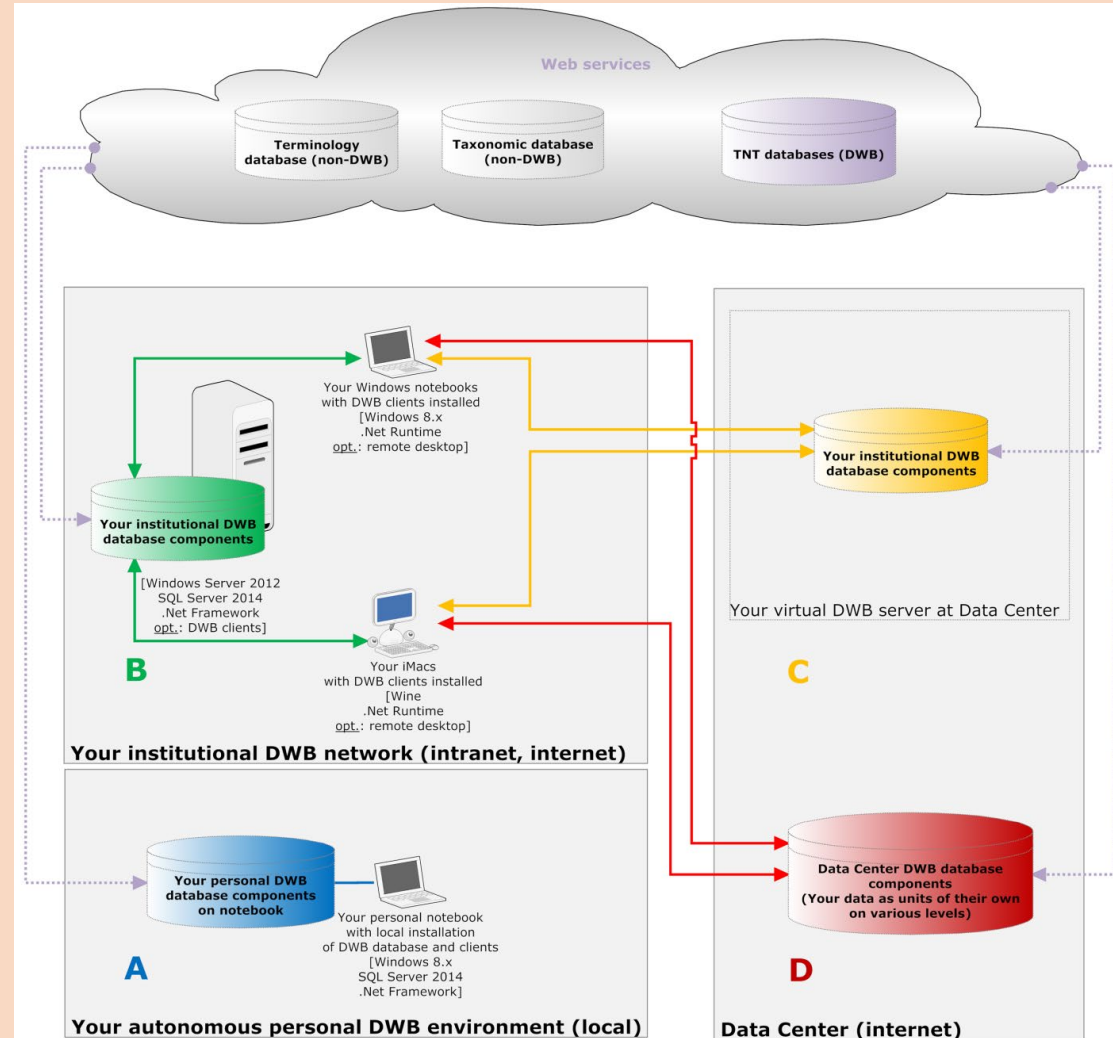


# DWB Module mit Datentypen



# Anwendung der Diversity Workbench?

- Einsatz flexibel und skalierbar (Laptop bis Server, Cloud, Intranet bis Internet, als „virtuelle Arbeitsumgebungen“)
- generische Werkzeuge zum Import und Export nach Standard Schemas
- generische Werkzeuge zur Analyse und Diagnose



# DWB – Philosophie des Teams

- DWB ist definiert als Langzeit-Software Projekt (seit mehr als 26 Jahren; 1999), seit 24 Jahren drittmittelgefördert

The image shows a screenshot of the Diversity Workbench (DWB) interface on the left and a conceptual diagram of its components on the right.

**Interface Screenshot:**

- Logo: A stylized orange and red fan-like shape.
- Text: "Diversity Workbench"
- Search bar: "Search..."
- Home button: "Home"
- Navigation menu: "Manual", "Best practice", "Workflows", "Modules", "Special software", "Development"
- Footer: "imprint", "Built for [logo] with [heart] by Hugo"

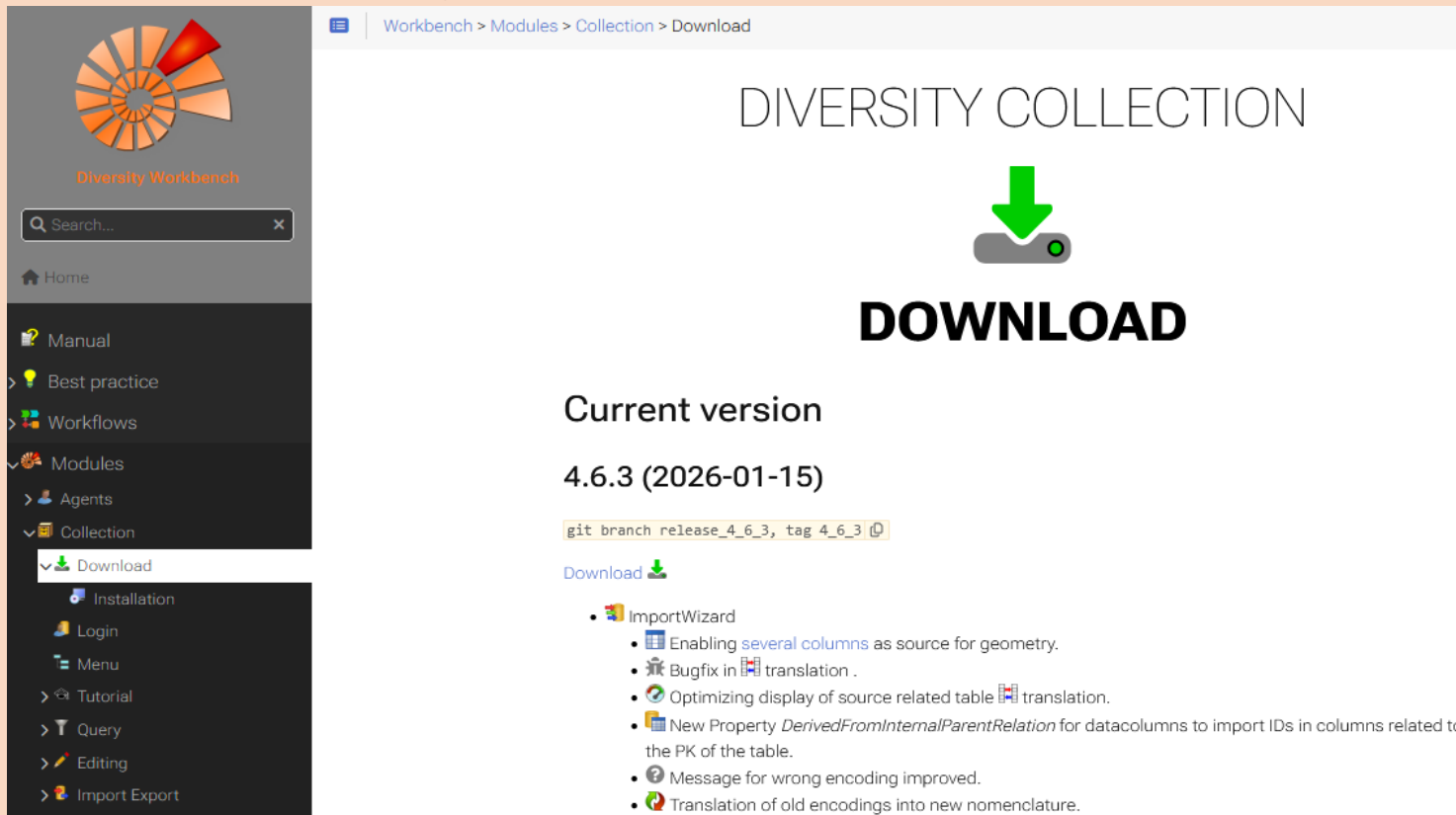
**Conceptual Diagram:**

The diagram illustrates the architecture of the Diversity Workbench. At the center is a large grey oval labeled "Biodiversity data". Above it are two purple cylinders labeled "CacheDatabase". To the left is a yellow box labeled "DiversityCollection". To the right is a grey cylinder labeled "DiversityDescriptions". Below the central oval is a large grey arrow pointing upwards, labeled "Thesauri". To the left of the arrow are two grey cylinders: "DiversityTaxonNames" (with a green leaf icon) and "DiversityScientificTerms" (with a purple pyramid icon). To the right of the arrow are two grey cylinders: "DiversitySamplingPlots" (with a red flag icon) and "DiversityGazetteer" (with a globe icon). At the bottom are two grey cylinders: "DiversityAgents" (with a person icon) and "DiversityReferences" (with a green book icon). On the far right, there are three colored circles (green, blue, red) next to three yellow boxes containing "Lorem ipsum dolor sit amet" text.

<https://www.diversityworkbench.de/manual/dwb/>

# DWB – Philosophie des Teams

- DWB ist definiert als Langzeit-Software Projekt (seit mehr als 26 Jahren; 1999), seit 24 Jahren drittmittelgefördert
- Software ist frei verfügbar und im Manual verlinkt

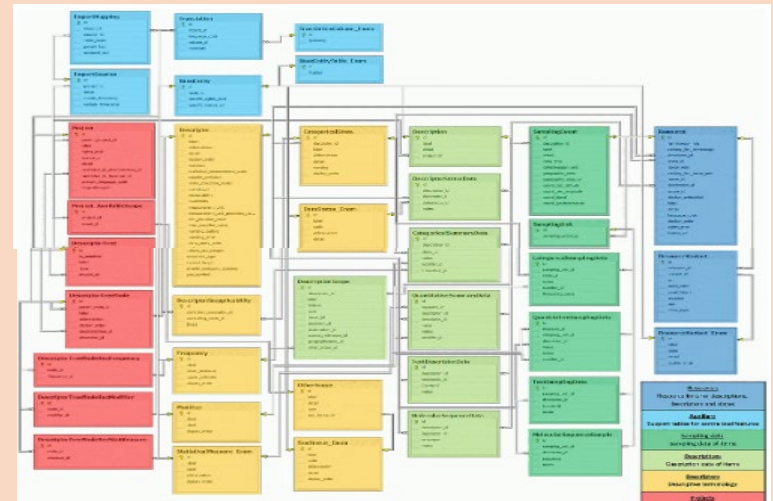


The screenshot displays the Diversity Workbench interface. On the left is a navigation sidebar with a search bar and a menu containing: Home, Manual, Best practice, Workflows, Modules (expanded), Agents, Collection (expanded), Download (selected), Installation, Login, Menu, Tutorial, Query, Editing, and Import Export. The main content area shows the breadcrumb 'Workbench > Modules > Collection > Download'. The title 'DIVERSITY COLLECTION' is centered above a large green download arrow icon and the word 'DOWNLOAD' in bold. Below this, the 'Current version' is listed as '4.6.3 (2026-01-15)'. A code snippet shows 'git branch release\_4\_6\_3, tag 4\_6\_3'. A 'Download' button with a green arrow icon is present. A list of changes for the 'ImportWizard' module is shown, including: enabling several columns as source for geometry, a bugfix in translation, optimizing display of source related table translation, a new property 'DerivedFromInternalParentRelation' for datacolumns to import IDs, a message for wrong encoding improvement, and translation of old encodings into new nomenclature.

[https://www.diversityworkbench.de/manual/dwb/modules/diversitycollection/download\\_dc/index.html](https://www.diversityworkbench.de/manual/dwb/modules/diversitycollection/download_dc/index.html)

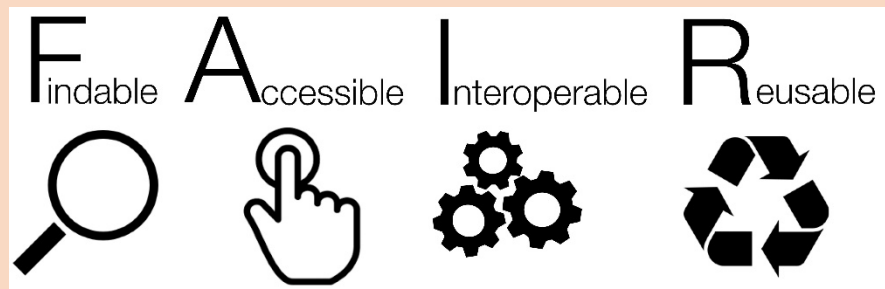
# DWB – Philosophie des Teams

- Open-Source-Implementierung mit mehr als 2 Mio Code-Zeilen
- Software Design, Datenmodelle und ER- Schemata als Open Access publiziert
- „User-driven development“ (UDD)
- Aktuelle Software-Entwicklung und DWB-Training/Beratung an 4 Organisationen (SNSB, LIB, SMNK, SMNS) sowie über NFDI4Biodiversity



# DWB – Datenmanagement

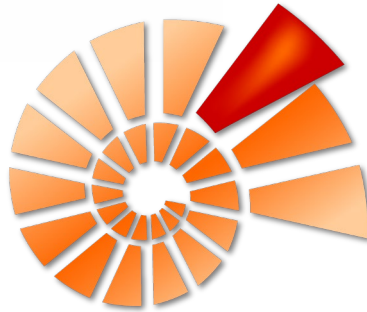
- Fokus: Erzeugung und Prozessierung von FAIR Data in Forschung und Sammlung
- DWB stellt eigene Dienste und Inhalte zur Verfügung (cloud services)
  - Terminologien
  - Vokabularien
  - Taxonomien
  - Gazetteers
- Einbindung globaler Terminologie-Dienste
- entwickelt für Datenerzeuger, die professionelle Datenkuration anstreben
- entwickelt für Datenerzeuger, die möglichst lange eine umfassende Datensouveränität behalten wollen



# Technische Informationen

<b>Name and mission of the database framework</b>	<a href="#">Diversity Workbench (DWB)</a>
<b>Software</b>	<a href="#">Diversity Workbench Suite</a> of database applications with client interfaces and supporting data processing tools
<b>DWB first contact address</b>	dwb-support@snsb.de
<b>Operating system server</b>	MS Windows Server 2019 onwards; see Info in Wikipedia ( <a href="#">de</a> , <a href="#">en</a> )
<b>Database system</b>	MS SQL-Server 2022 or MS SQL-Server Express; see Info in Wikipedia ( <a href="#">de</a> , <a href="#">en</a> )
<b>Clients</b>	C# desktop applications (local clients), PWA – Progressive Web Application DiversityNavyKey (browser-based), several web APIs
<b>Operating system local clients</b>	MS Windows 11; see Info in Wikipedia ( <a href="#">de</a> , <a href="#">en</a> )
<b>GIS functionalities</b>	<a href="#">DiversityGisEditor</a> , management of geometry and geography data
<b>GUIs for data import</b>	Import Wizards, txt, CSV, xml in various schemes, xml/xslt, shapes in ESRI-Format
<b>GUIs for data export/ reports</b>	Export Wizards, txt, CSV, xml in various schemes, xml/xslt, shapes in ESRI-Format
<b>GUI language</b>	default: english (multilingual through translation tables)
<b>Open access</b>	<a href="#">DWB software download</a>
<b>Open source</b>	<a href="#">DWB SVN code repository</a> , <a href="#">SNSB DWB GitHub repository</a> ; see also DWB code statistics
<b>Licenses</b>	GPL v.3
<b>Information models online</b>	DWB data models and DWB database schemes
<b>State of development</b>	since 1999, ongoing
<b>Code language, developer platform</b>	C#, .Net Framework 4.8 and .Net Framework 8; see Info in Wikipedia ( <a href="#">de</a> , <a href="#">en</a> )
<b>User manuals</b>	<a href="#">DWB user manual</a> and with the download of the respective applications
<b>Training</b>	<a href="#">DWB workshops</a> , <a href="#">Best practices</a> and <a href="#">Training materials</a> for basic users, intermediate, advanced, expert users and database administrators
<b>ELIXIR bio.tools</b>	<a href="#">DWB software in bio.tools</a> : Technical profile of DWB tools

# 2. DiversityCollection: Ein DWB-Modul im Überblick



# Rich Client DiversityCollection

Anzeigen von  
Multimedia-Dateien,  
Karten und Labeldruck

The screenshot shows the DiversityCollection v. 4.6.3 interface. On the left, a list of query results is circled in red, with a callout box labeled "Abfrageergebnisse". Below it, the search criteria section is also circled in red, with a callout box labeled "Abfragekriterien". The main panel displays specimen details for *Arthrocladiella mougeotii* (Lév.) Vassilkov, with a red circle around the specimen tree and a callout box describing details like date, location, and collector. Another red circle highlights the specimen storage details, with a callout box explaining storage methods like herbarium or DNA. On the right, the "Collection event" form is circled in red, with a callout box explaining that details for the selected specimen are visible here.

Abfrageergebnisse

Abfragekriterien

Details zu den Specimens/  
Beobachtungen wie die  
geographischen  
Informationen, Datum,  
Identifikationen, Typstatus,  
Beobachter/Sammler, ...

Details zur Lagerung von  
(Sammlungs-) Objekten,  
Materialkategorie (Herbarbeleg,  
Objekt in Alkohol, DNA- oder  
Gewebe-Probe, etc.),  
verschiedene Teile des  
Specimens, Transaktionen, ...

...und entsprechend  
den Informationen,  
die in einem der  
beiden Bereiche auf  
der linken Seite  
ausgewählt wurden,  
sind hier die Details  
zur ausgewählten  
Zeile sichtbar.

# Beispiel Beobachtungsdaten

DiversityCollection, Database: DiversityCollection\_Workshop v. 4.6.3

Connection Grid Query Data Administration Help

Context

Specimen 446568 Event 316817 Version 11 19 Withhold. STOP

Query results 1 - 100 of 1993

- ID: 407826
- ID: 407965
- ID: 446568
- ID: 446619
- ID: 446632
- ID: 446639
- ID: 446763
- ID: 446787
- ID: 446804
- ID: 446807

ordnen nach: Acc. Nr.

Suchkriterien

Project

Project ~ +

Specimen

Acc.no.sp. Depositor Depos.Ac. Orig. notes

Event

Coll. date Locality Loc. verb.

UTM


Recor. me. East North

TK25

TK25 Quadrant

**Tilia cordata P. Mill.**

Resources of the specimen



1:1 Max. MB: 2.0 URI: <http://pictures.snsb.info/IBI>

2012-07-18 Deutschland, Bayern, R.-Bez. Oberfranken, LK Bayreuth, V  
Coordinates WGS84 (Longitude / Latitude) Long. (EW): 11.461597  
[ID: 446568]  
Tilia cordata P. Mill.  
Eriophyes lateannulatus Schulze [det. by Alexander Guhr]  
Eriophyes lateannulatus Schulze [det. by Alexander Guhr]

Collection event

Date: 18 7\_ 2012 Suppl.: Category: End: Time: T.span: Ref.: No.: Withhold.: Notes: Country: Germany Col.meth.: Locality: Deutschland, Bayern, R.-Bez. Oberfranken, LK Bayreuth, Waldrand in der Umgebung Verbatim: Habitat: Methods: Mark.:

Cre.dat.: 2014-01-09 by BOTSAMML40/Alex  
Last changes: 2014-01-09 by Owner of database

# Beispiel Sammlungsdaten

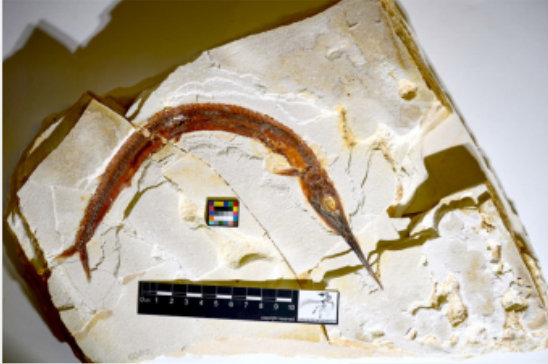
DiversityCollection, Database: DiversityCollection\_Workshop v. 4.6.3

Connection Grid Query Data Administration Help

Acc. Nr. **Belonostomus cf. kochi Münster 1836** Specimen 507875 Event 352886 Version 26 12 Withhold. STOP

JME-ETT-00016

Resources of the specimen



1:1 Max. MB: 2.0 URI: http://pictures.snsb.info/JM

Query results 1 - 57

ID: 183265  
A3  
BSPG-1949-010-000059  
GLM-F000015  
GLM-F000016  
GLM-F000028  
HER-30  
**JME-ETT-00016**  
JME-ETT-00107  
LIT-00000

ordnen nach: Acc. Nr.

Suchkriterien

Project  
Project ~ + DWBsanr +

Specimen

Acc.no.sp. ~  
Depositor ~  
Depos.Ac. ~  
Orig. notes ~

Event

Coll. date =  
Locality ~  
Loc. verb. ~

UTM

Recor. me. ~  
East ~  
North ~

TK25

TK25 ~  
Quadrant ~

Etting West  
late Kimmeridgian - early Tithonian [Chronostratigraphy]  
Malm [Lithostratigraphy]  
JME-ETT-00016  
Belonostomus cf. kochi Münster 1836  
Belonostomus cf. kochi Münster 1836  
Martin Ebert

Cre.dat.: 2014-01-08 by Sanz Ciria, V.  
Last changes: 2016-10-31 by BSM7.Sanz

JME-ETT-00016  
Belonostomus cf. kochi Münster 1836  
Belonostomus cf. kochi Münster 1836

Collection event

Date: 16 11 2006 Suppl.: Category:  
End: Time: T.span: STOP  
Ref.: Details:  
No.: Withhold.: STOP  
Notes:  
Country: Germany Col.meth.:  
Locality Verbatim Habitat  
Germany, Bavaria, Hartheim basin, Etting  
Property of the collector site  
late Kimmeridgian - early Tithonian  
Hierarchy: Mesozoicum | Jura | Malm  
Value:

Type	IPR	EXIF
Title:		
Unit:		
Part:		
Type:		
Note:		
Int.N.:		
Withhold.:	STOP	
D.ord.:		1

# Beispiel Sammlungsdaten

DiversityCollection, Database: DiversityCollection\_Workshop v. 4.6.3

Connection Grid Query Data Administration Help

Context

Specimen 183265 Event 213539 Version 2 33 Withhold. STOP

Query results 1 - 57

ID: 183265  
 A3  
 BSPG-1949-010-000059  
 GLM-F000015  
 GLM-F000016  
 GLM-F000028  
 HER-30  
 JME-ETT-00016  
 JME-ETT-00107

ordnen nach: Acc. Nr.

Suchkriterien  
 Project  
 Project DWBsan

Specimen  
 Acc.no.sp.  
 Depositor  
 Depos.Ac.  
 Orig. notes

Event  
 Coll. date  
 Locality  
 Loc. verb.

UTM  
 Recor. me.  
 East  
 North

TK25  
 TK25  
 Quadrant

**Meridion circulare**

Resources of the specimen

Type IPR EXIF

Title:

Unit: Planothidium ellipticum

Part:

Type: photograph = photographic still in

Note: E879

Int.N.:

Withhold.: STOP

D.ord.: 1

Exsiccat.:

Exsiccata Ident.: Exs. No.:

**Meridion circulare**

Tax. group: alga No. of units: Only obs

Sex: Substr. rel.

Family: Order: ID 464186

Identifier: E 734 Descript.:

Display order

Show in label:

- Meridion circulare
- Stauroneis anceps
- Cymbella obtusa
- Nitzschia sinuata
- Cocconeis placentula

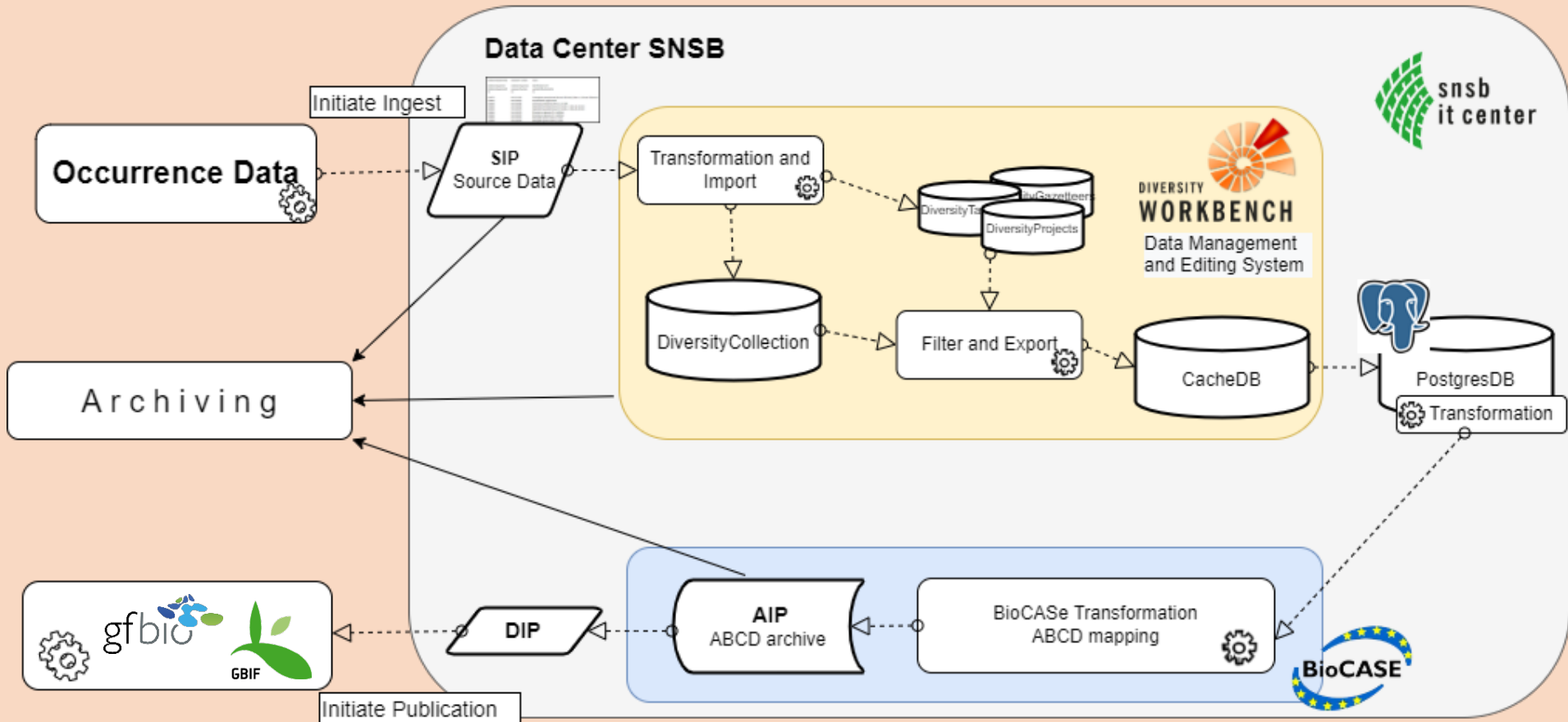
Cre.dat.: 2014-01-08 by Owner of database  
 Last changes: 2014-01-08 by Sanz Cria, V.

[ID: 183265]

- E 734: Meridion circulare [respons.: F.J.Weinzierl]
- Meridion circulare [respons.: F.J.Weinzierl]
- E 735: Stauroneis anceps
- Stauroneis anceps [respons.: F.J.Weinzierl]
- E 736: Cymbella obtusa

- E 874: Gomphonema longiceps var. commutata
- Frustule 1: 55 µm
- E 878 - E 878
- E 878: Pinnularia
- E 879 - E 879
- E 879: Planothidium ellipticum
- Frustule 1: 15 µm

# Datenfluss von Vorkommensdaten



**Vielen Dank!**

