



Workshop 2020-10-26 to 2020-10-27: DiversityDescriptions as Research Data
Management System (RDMS) – 39. Diversity Workbench Workshop

DELTA, Konzept des RDMS DWB-DD und Einsatz in der
universitären Lehre am Beispiel Biosystem Pflanzengallen

Janno Harjes, Gerhard Rambold
Universität Bayreuth



Daten-Domänen

Zwei wichtige Typen von Datendomänen:

- 1) Herkunft von Umweltproben, Eigenschaften der Lokalität, Beobachtungsbedingungen

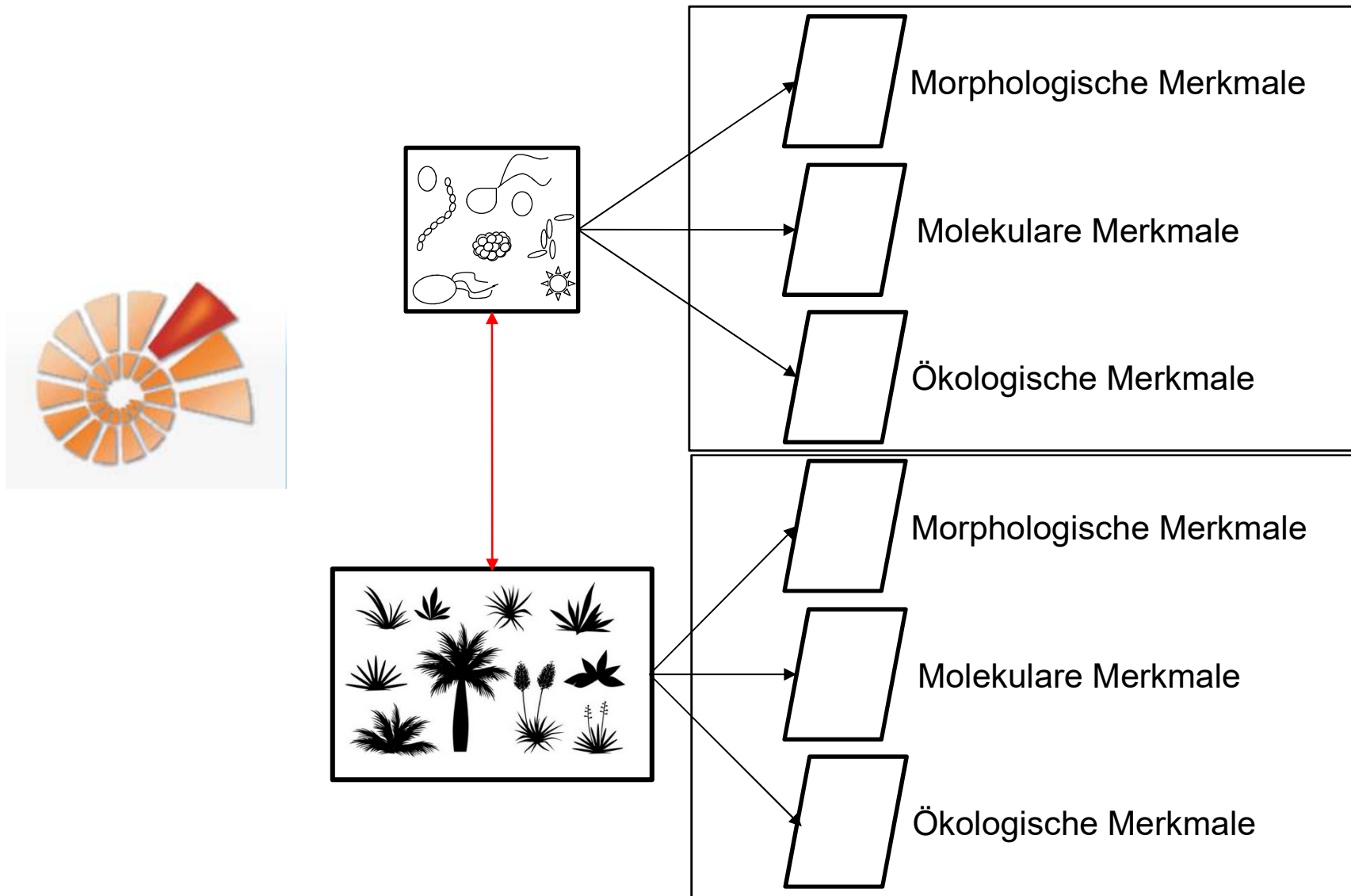


- 1) 'Descriptive data', 'trait data' also Eigenschaftsdaten



https://gfbio.biowikifarm.net/wiki/Major_Types_of_Biological_Data

Beschreibende Daten



Beschreibende Daten

[illegible]

Beschreibende Daten, Datentypen

Text:

abcd1234 abcd1234 abcd1234 abcd1234
agct agct agct agct agct agct agct agct agct

Quantitativ bzw. numerisch:

1.23456789234567892345678923456789
-2, -1, 0, 1, 2, 3, 4, 5, 6, 7

Kategorial:

Wert 1	☒	☐	☐
Wert 2	☐	☒	☐
Wert 3	☐	☐	☒
Wert 4	☒	☐	☐

Beschreibende Daten, DELTA

References:



DELTA site (Editor, u. a. Anwendungen):
<https://www.delta-intkey.com/>



DELTA bei TDWG (Standard-Datenaustauschformat):
<https://www.tdwg.org/standards/delta/>



Free DELTA (Editor usw.):
<http://freedelta.sourceforge.net/>



SDD bei TDWG (Standard-Datenaustauschformat):
<https://www.tdwg.org/standards/sdd/>

DELTA File chars

*SHOW ~ Character list.

*CHARACTER LIST

#1. host plant <species>/

1. Acer campestre/
2. Acer platanoides/
3. Acer pseudoplatanus/
4. Alnus glutinosa/
5. Cornus sanguinea/

#2. host plant <growth habit>/

1. herbaceous/
2. shrub-like/
3. tree-like/

#3. structure <type>/

1. mine/
2. gall/

#4. gall <basic type>/

1. organoid/
2. histioid/

#5. gall <ontogenetic and phenetic type>/

1. Blattrollung/
2. Blattfaltung/
3. Filzgalle/
4. Beutelgalle/
5. Kugelgalle/

#6. gall/mine <length>/

mm/



kategorialer
Deskriptor

DELTA Files chars, specs

***SHOW ~ Character list.**

***CHARACTER LIST**

#1. host plant <species>/

1. Acer campestre/
2. Acer platanoides/
3. Acer pseudoplatanus/
4. Alnus glutinosa/
5. Cornus sanguinea/

#2. host plant <growth habit>/

1. herbaceous/
2. shrub-like/
3. tree-like/

#3. structure <type>/

1. mine/
2. gall/

#4. gall <basic type>/

1. organoid/
2. histioid/

#5. gall <ontogenetic and phenetic type>/

1. Blattrollung/
2. Blattfaltung/
3. Filzgalle/
4. Beutelgalle/
5. Kugelgalle/

#6. gall/mine <length>/

mm/

***SHOW ~ Dataset specifications.**

***DATA BUFFER SIZE 4000**

***NUMBER OF CHARACTERS 6**

***MAXIMUM NUMBER OF STATES 5**

***MAXIMUM NUMBER OF ITEMS 999**

***CHARACTER TYPES 6,RN**

***NUMBERS OF STATES 1,5 2,3 3,2 4,2
5,5**

***IMPLICIT VALUES**

***DEPENDENT CHARACTERS 3,1:4-5**

***MANDATORY CHARACTERS 1**

DELTA Files chars, specs, items

***SHOW ~ Character list.**

***CHARACTER LIST**

#1. host plant <species>/

1. Acer campestre/
2. Acer platanoides/
3. Acer pseudoplatanus/
4. Alnus glutinosa/
5. Cornus sanguinea/

#2. host plant <growth habit>/

1. herbaceous/
2. shrub-like/
3. tree-like/

#3. structure <type>/

1. mine/
2. gall/

#4. gall <basic type>/

1. organoid/
2. histioid/

#5. gall <ontogenetic and phenetic type>/

1. Blattrollung/
2. Blattfaltung/
3. Filzgalle/
4. Beutelgalle/
5. Kugelgalle/

**#6. gall/mine <length>/
mm/**

***SHOW ~ Dataset specifications.**

***DATA BUFFER SIZE 4000**

***NUMBER OF CHARACTERS 6**

***MAXIMUM NUMBER OF STATES 5**

***MAXIMUM NUMBER OF ITEMS 999**

***CHARACTER TYPES 6,RN**

***NUMBERS OF STATES 1,5 2,3 3,2 4,2
5,5**

***IMPLICIT VALUES**

***DEPENDENT CHARACTERS 3,1:4-5**

***MANDATORY CHARACTERS 1**

***SHOW ~ Item descriptions.**

***ITEM DESCRIPTIONS**

Aceria macrochela/

1,1 2,3 3,2 4,2 5,4 6,3

Aceria cephalonea/

1,2 2,3 3,2 4,2 5,4 6,3.5

DELTA Import nach DWB-DD

 Import DELTA

File name:

Encoding:

☒ Multi-file

File tree

- ☒ Descriptors
- ☒ Descriptor types
- ☒ Descriptor reliabilities
- ☒ Mandatory descriptors
- ☒ Descriptor headings
- ☒ Descriptions

Analysis settings

Language:

☐ Insert "variable" state

☐ Check strings for illegal characters

DELTA comments in descriptions

☒ Move comments to details

☐ Keep comments in description titles

DELTA comments in descriptors

☒ Move comments to details

☐ Move comments to notes

☐ Keep comments in descriptor titles

DELTA comments in states

☒ Move comments to details

☐ Keep comments in categorical state titles

Import settings

☒ New import ☐ Update ☐ No update

☒ New project ☐ To project

Project name:

Workbench project:

☐ Accept comma as decimal separator

☒ Create default descriptor tree

Analyse data

Descriptions

- Acalitus brevitarsus
- Acalitus brevitarsus_Template_SampleData_Galle-Blatt_Höhe-Durchmesser
- Acalitus stenaspis
- Acalitus stenaspis
- Aceria brevipunctata
- Aceria cephalonea
- Aceria cephalonea
- Aceria cephalonea
- Aceria cephalonea
- Aceria lateannulatus
- Aceria lateannulatus
- Aceria macrorhyncha
- Aceria macrotrichus
- Aceria macrotrichus
- Aceria macrotrichus
- Aceria macrotrichus
- Aceria tiliae

Start import 

Import to database: **DiversityDescriptions_Training**

Analysis success 

DWB-DD Descriptor View

Liste der
Deskriptoren

Projektzuordnung,
Details, Resources

DiversityDescriptor 4.2.9

Connection Edit Help

Query results 1 - 26

- 1 - Objekt-ID (physische und virtuelle Objekte)
- 2 - Object-UUID (nur physische Objekte)
- 3 - Verantwortliche Person
- 4 - Für Statistik
- 5 - Struktur (Blattmine vs. Galle)
- 6 - Wirtspflanze Familie
- 7 - Wirtspflanze Gattung
- 8 - Wirtspflanze Art
- 9 - Wirtspflanze Wuchsform
- 10 - Blattminen Typ
- 11 - Galle Ontogenie Typ
- 12 - Galle Typ
- 13 - Galle Pflanzenorgan Typ
- 14 - Galle Position/Orientierung auf Blatt
- 15 - Galle Oberflächenstruktur
- 16 - Galle Farbe
- 17 - Galle Größe

order by: Sequence number

Query conditions

Descriptor

Title ~

Details ~

Project = Training

Class =

Mandatory =

Exclusive =

Sequ. type =

Categorical state

Title ~

Descriptor resource

Title ~

State resource

Title ~

Descriptor tree

Title =

Tree node =

Assignment

Descriptor

Objekt-ID (physische und virtuelle Objekte)

Descriptor: Objekt-ID (physische und virtuelle Objekte) No: 1 ID: 2454

Main attributes

Abbrev.:

Details: physische und virtuelle Objekte

Notes:

Descriptor type

☐ Categorical

☐ Quantitative

☒ Text

☐ Sequence

☐ Exclusive

☒ Mandatory

Descriptor settings

Statistical measurement scale: Nominal

State collection model: OrSet

Repeatability: Standard

Availability: Standard

Measurement data

Prefix: Base:

Unit:

☐ Unit is prefix

Minimum: -1,790000E+308

Maximum: 1,790000E+308

☐ Values are integer

Edit descriptors

Deskriptortyp

DWB-DD Descriptor View

DivesityDescriptions, Database: DivesityDescriptions_Training v. 4.2.9

Connection Edit Grid Query Data Administration Help

Query results 1 - 26

- 1 - Objekt-ID (physische und virtuelle Objekte)
- 2 - Object-UUID (nur physische Objekte)
- 3 - Verantwortliche Person
- 4 - Für Statistik
- 5 - Struktur (Blattmine vs. Galle)
- 6 - Wirtspflanze Familie
- 7 - Wirtspflanze Gattung
- 8 - Wirtspflanze Art
- 9 - Wirtspflanze Wuchsform
- 10 - Blattminen Typ**
- 11 - Galle Ontogenie Typ
- 12 - Galle Typ
- 13 - Galle Pflanzenorgan Typ
- 14 - Galle Position/Orientierung auf Blatt
- 15 - Galle Oberflächenstruktur
- 16 - Galle Farbe
- 17 - Galle ...

order by: Sequence number

Query conditions

Descriptor

- Title ~
- Details ~
- Project = Training
- Class =
- Mandatory =
- Exclusive =
- Sequ. type =

Categorical state

- Title ~

Descriptor resource

- Title ~

State resource

- Title ~

Descriptor tree

- Title =
- Tree node =
- Assignment

Descriptor: Blattmin No: 10 ID: 2356

Main attributes Categorical states Descriptor tree Modifier/Frequency Resource links

No.	Categorical state	Abbreviation	Details	Wording
1	Pallisadenparenchym			
2	Schwammparenchym			
3	Gesamtparenchym			
4	Obere Epidermis			
5	Untere Epidermis			

State resource links

<https://de.wikipedia.org/wiki/Parenchym>

Resources

No.	Resou name	Ranking	Role	URL	Type	Variant
1	Pallis...		unkno...	https://de.wikipedia.org/wiki/Parenchym	applicatio...	tiny sa...

URL [e.wikipedia.org/wiki/Parenchym](https://de.wikipedia.org/wiki/Parenchym) Size Width Height Duration

Edit descriptors

Auswahlmöglichkeiten

Multimedia

DWB-DD Project View

Auswahl:
Training

Projektauswahl

Descriptor Tree

The screenshot displays the DWB-DD Project View interface. On the left, a 'Query results' panel shows a list with 'Training' and 'Training 2019'. Below this is a 'Query conditions' section with filters for Project, Title, Details, Rights, Language, DWB project, and Parentprese. A 'Tree node resource' section is also present. The main area features a 'Descriptor tree' for the selected 'Training' project (ID: 1685). The tree is organized into categories: General (Objekt-ID, Object-UUID, Verantwortliche Person, Für Statistik, Struktur), Wirtspflanze (Wirtspflanze Familie, Wirtspflanze Gattung, Wirtspflanze Art, Wirtspflanze Wuchsform), Blattmine (Blattminen Typ), Galle (Galle Ontogenie Typ, Galle Typ, Galle Pflanzenorgan Typ, Galle Position/Orientierung auf Blatt, Galle Oberflächenstruktur, Galle Farbe, Galle Höhe, Galle Durchmesser, Galle Pflanzenorgan Höhe (s. Notes), Galle Pflanzenorgan Durchmesser (s. Notes), Galle Saisonalität), and Erreger (Erreger Art, Erreger organismische Großgruppe). To the right of the tree is a 'Recommended statistical measure' list with checkboxes for various measures like range limits, mean, median, and variance. Below this are sections for 'Recommended modifier' and 'Recommended frequency'. The bottom of the interface includes an 'Edit projects' button.

DWB-DD Project View

DiversityDescriptions, Database: DiversityDescriptions_Training v. 4.2.9

Connection Edit Grid Query Data Administration Help

Query results 1 - 2

Training
Training 2019

order by: Project

Query conditions

Project

Title ~

Details ~

Rights ~

Language =

DWB project =

Parentprese. ~

Tree node resource

Title ~

Descriptor tree

Presence ~

Description

Presence ~

Project Training ID: 1685

Main attributes Descriptor applicability Descriptor tree Modifier/Frequency

Descriptor tree

- Training
 - Course 2020
 - General
 - Objekt-ID (physische und virtuelle Objekte)
 - Object-UUID (nur physische Objekte)
 - Verantwortliche Person
 - Für Statistik
 - Struktur (Blattmine vs. Galle)
 - Wirtspflanze
 - Wirtspflanze Familie
 - Wirtspflanze Gattung
 - Wirtspflanze Art
 - Wirtspflanze Wuchsform
 - Blattmine
 - Blattminen Typ
 - Galle
 - Galle Ontogenie Typ
 - Galle Typ
 - Galle Pflanzenorgan Typ
 - Galle Position/Orientierung auf Blatt
 - Galle Oberflächenstruktur
 - Galle Farbe
 - Galle Höhe
 - Galle Durchmesser
 - Galle Pflanzenorgan Höhe (s. Notes)
 - Galle Pflanzenorgan Durchmesser (s. Notes)
 - Galle Saisonalität
 - Erreger
 - Erreger Art
 - Erreger organismische Großgruppe

Änderung der Position und Nummerierung

Maximum value

Mean (= average)

Harmonic mean

Geometric mean

Mode

Median

Interquartile mean (= average)

Variance (sample df = n-1)

Recommended modifier

Recommended frequency

Edit projects

DWB-DD Description View

The screenshot shows the DWB-DD Description View interface. The left sidebar contains a list of taxon names, with *Acalitus brevitarsus* selected. A yellow callout bubble points to this list with the text "Namen der Objekte". Below the list is a "Filterfunktion" (filter function) section with various search criteria. A yellow callout bubble points to this section with the text "Filterfunktion". The main content area displays the description for *Acalitus brevitarsus*. A yellow callout bubble points to a link in the "Description scopes" table with the text "Verlinkung zu Inhalten". The "Filterkriterium" (filter criterion) section is also visible at the bottom left.

Namen der Objekte

Filterfunktion

Verlinkung zu Inhalten

Filterkriterium

Description View: Acalitus brevitarsus

Project: Training Language: en

Description: Acalitus brevitarsus AID: ID: 2491

Main attributes | Descriptor view | Continuous view | Resource links | Sample data

Details:

language support

Description scopes

Scope type	Scope value
Taxon name	Acalitus brevitarsus (Focke)

Taxon name: Acalitus brevitarsus (Focke) [http://](#)

Project

- ☒ Training
- ☐ Training 2019

Edit descriptions

DWB-DD Description View

DiversityDescriptions, Database: DiversityDescriptions_Training v. 4.2.9

Connection Edit Grid Query Data Administration Help

Query results 1 - 105

Acalitus brevitarsus
Acalitus brevitarsus_Template_SampleData_Galle-Blatt_Höhe-Durchmesse
Acalitus stenaspis
Aceria brevipunctata
Aceria cephalonea
Aceria cephalonea
Aceria cephalonea
Aceria lateannulatus
Aceria lateannulatus
Aceria macrohyncha
Aceria macrotrichus
Aceria macrotrichus
Aceria macrotrichus
Aceria macrotrichus

order by: Description

Query conditions

Description

Title ~

Details ~

Project = Training

Description resource

Title ~

Descriptor

Categorical =

Quantitative =

Text =

Sequence =

Data status

+ -

Scope

Taxon ~

Geography ~

Specimen ~

Reference ~

Descriptor view Continuous view Resource links Sample data

Descriptor name

			Descriptor name
1	text	•	General Objekt-ID (physische u...
2	text		General Object-UUID (nur phys...
3	categorical	•	General Verantwortliche Person
4	categorical	•	General Für Statistik
5	categorical	•	General Struktur (Blattmine us...
6	categorical	•	Wirts...
7	categorical	•	
8	categorical	•	
9	categorical	•	Wirtspflan...
10	categorical	x	Blattminen Typ
11	categorical	•	Galle Ontogenie Typ
12	categorical	•	Galle Typ
13	categorical	•	Galle Pflanzenorgan Typ
14	categorical	•	Galle Positi...
15	categorical		Galle O...
16	categorical	•	Galle Farb...
17	quantitative		Galle Höhe
18	quantitative		Galle Durchmesser
19	quantitative		Galle Pflanzenorgan Höhe (s. ...
20	quantitative		Galle Pflanzenorgan Durchmes...
21	categorical		Galle Saisonalität
22	text	•	Erreger Art
23	categorical	•	Erreger organismische Großgr...
24	categorical	•	Erreger Arthropoden Ordnung
25	categorical	•	Erreger Stadium
26	categorical	•	Erreger Wirtswechselnd

Descriptor tree: Course 2020

Restricted

Descriptive text

723333df

Status data

x	ID	Status	Notes
☒	!	To be checked	
☐	o	Not to be recorded	
☐	-	Not applicable	
☐	?	Data unavailable	
☐	#	Not interpretable	
☐	\$	Data withheld	
☐	0	Missing data	

Edit descriptions

Merkmalsansicht

Textmerkmale

Identifizier

Kategoriale Merkmale

Numerische Merkmale

DWB-DD Description View

Divi v. 4.2.9

Conne Help

Query results 1 - 105

Name des Objektes

Acalitus brevitarsus
Acalitus brevitarsus_Template_SampleData_Galle-Blatt_Höhe-Durchmesse
Acalitus stenaspis
Acalitus stenaspis
Aceria brevipunctata
Aceria cephalonea
Aceria cephalonea
Aceria cephalonea
Aceria lateannulatus
Aceria lateannulatus
Aceria macrotrichus
Aceria macrotrichus
Aceria macrotrichus
Aceria macrotrichus
Aceria macrotrichus

order by: Description

Query conditions

Description

Title ~
Details ~
Project = Training

Description resource

Title ~

Descriptor

Categorical =
Quantitative =
Text =
Sequence =

Data status

Scope

Taxon ~
Geography ~
Specimen ~
Reference ~

Description: Acalitus brevitarsus

Main attributes Descriptor view Continuous view Resource

No.	Type	Descriptor name
1	text	Objekt-ID (physische u...
2		phys...
3		latmine vs...
4		
5	categorical	Wirtspflanze Familie
6	categorical	Wirtspflanze Gattung
7	categorical	Wirtspflanze Art
8	categorical	Wirtspflanze Wuchsform
9	categorical	Blattminen Typ
10	categorical	Galle Ontogenie Typ
11	categorical	Galle Typ
12	categorical	Galle Pflanzenorgan Typ
13	categorical	Galle Position/Orientierung auf...
14	categorical	Galle Oberflächenstruktur
15	categorical	Galle Farbe
16	quantitative	Galle Höhe
17	quantitative	Galle Durchmesser
18	quantitative	Galle Pflanzenorgan Höhe (s. ...
19	quantitative	Galle Pflanzenorgan Durchmes...
20	categorical	Galle Saisonalität
21	text	Erreger Art
22	categorical	Erreger organismische Großr...
23	categorical	Erreger Arthropoden Ordnung
24	categorical	Erreger Stadium
25	categorical	Erreger Wirtswechselnd
26		

Kategoriales Merkmale

x	State	Notes
☐	Acer	
☒	Alnus	
☐	Capsella	
☐	Carpinus xxxx	
☐	Castanea	
☐	Cirsium	
☐	Clematis	
☐	Crataegus	
☐	Erica	
☐	Eupatorium	
☐	Fagus	
☐	Filipendula	
☐	Glechoma	
☐	Linaria	
☐	Lonicera	

State collection model: OrSet

Status data

x	ID	Status	Notes
☒	!	To be checked	
☐	ø	Not to be recorded	
☐	-	Not applicable	
☐	?	Data unavailable	
☐	#	Not interpretable	
☐	\$	Data withheld	
☐	0	Missing data	

Descriptor tree: Course 2020 ☐ Restricted

Edit descriptions

DWB-DD Description View

The screenshot shows the DWB-DD Description View interface. On the left, a list of query results is displayed, with *Acalitus brevitarsus* selected. A yellow callout bubble points to this list with the text "Name des Objektes". Below the list are filters for query conditions (Title, Details, Project), description resources, descriptors (Categorical, Quantitative, Text, Sequence), data status, and scope (Taxon, Geography, Specimen, Reference). The main panel on the right shows the "Description" view for *Acalitus brevitarsus*. A yellow callout bubble points to this panel with the text "Kompaktansicht". The panel displays a hierarchical tree of descriptors, including Gattung (Alnus), Art (Alnus glutinosa), Wuchsform (Baumartig), Galle, Ontogenie Typ (Filzgalle), Typ (Histioid), Pflanzenorgan Typ (Blatt), Position/Orientierung auf Blatt (Blattunterseite), Farbe (Grün, grünlich; Weiß, weißlich), Erreger, Art (Acalitus brevitarsus), organismische Großgruppe (Tiere), Arthropoden Ordnung (Acari), Stadium (Imago), and Wirtswechselnd (Nein). At the bottom, a legend identifies the descriptor types: Categorical Descriptor (Categorical state(s)), Quantitative Descriptor (Quantitative measure), Text Descriptor (Text), and Sequence Descriptor (Sequence). The interface also includes a "Descriptor tree" dropdown set to "Course 2020" and an "Edit descriptions" button.

Name des Objektes

Kompaktansicht



Vielen Dank für Ihre Aufmerksamkeit

