

# **Getting started with BRAHMS**

Updated March 2024

This guide provides a rapid walk-through of key functions and features available in BRAHMS. No previous experience using the software is expected.

The larger <u>BRAHMS manual</u> covers all aspects of system operation including administration, configuration, connections to data stores, import and export, Rapid Data Entry, editing, report design, image management and mapping.

The examples in this guide mostly refer to the <u>demo conifer database</u> but you can use another database as available. You can also request a <u>quick migration</u> of your own data, free of charge.

Mostly, this guide does not focus on functions that apply to specific modules (for example those that work with museum collections, botanic gardens and seed banks). Rather, it deals with functions that apply to all modules. Having said that, the conifer demo database is 'preserved specimen' oriented.

If you have not installed BRAHMS or connected to a database, refer to the installation guide.

For licensing enquiries, contact <u>brahms@innovation.ox.ac.uk</u> To obtain an evaluation version, visit <u>https://herbaria.plants.ox.ac.uk/bol/brahms/software/evaluations</u> Technical enquiries, contact <u>brahms@biology.ox.ac.uk</u>

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## Introduction

BRAHMS is a scalable management system for preserved and living natural history collections as well as those undertaking floristic or taxonomic research. Its development is based on almost 30 years of database implementation. It manages biodiversity data.

For researchers, collection managers in museums, botanic gardens, herbaria and seed banks, BRAHMS helps to optimise the value of your data for management and research, increasing outputs and productivity.



Data integration for research and collection management is a key objective with BRAHMS.

#### Some database project examples:

- Manage your herbarium, grasshopper or beetle collection.
- Develop a comprehensive botanic garden or seed bank management database.
- Create a catalogue of fungi.
- Produce an annotated checklist for any specific area or region.
- Create an online portal to search and display your data, images and maps.
- Help prepare a monograph for a taxonomic group.
- - or all of these combined as part of a larger, integrated natural history database.

Online training videos can be found on: <u>https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos</u>

## Building a BRAHMS database

#### Introduction

The development of a well organised database is often a key activity for curators, collection managers and researchers. The strategy adopted varies depending on your resources; the amount of data you have; and your overall objectives. In all cases however, the paths to successful database development are similar.

#### Hardware

For individual researchers running their own show, the software and the database will most likely be installed on a personal computer running Windows or on a Mac with Windows emulation. Aside from having sufficient disk space and as much RAM as possible (8GB or ideally more), there are no special requirements other than that the .NET version is sufficiently up to date. Performance is broadly related to how well resourced your infrastructure is.

For institutions with large collections and potentially many simultaneous users, the database will be stored on a server. The server will need sufficient disk space and adequate RAM. If you try to run any large database on an inadequately resourced server, performance may be poor.

The BRAHMS software itself will either be installed on individual client workstations or in a shared location. You can also have a set up with remote server log in by users located on different sites. Cloud solutions are ideal for BRAHMS and if you are interested to explore this, contact the BRAHMS project. On larger networks, the set up you adopt will be fine-tuned to achieve the maximum performance, a specialised IT task not further discussed here.

Cutting corners on hardware set up is something of a false economy when it comes to establishing a healthy database environment, all the more so when there are large databases and many users.

### Data migration

You may have data in BRAHMS v7; in Excel; in Access; or in another bespoke database package. These data can be migrated into BRAHMS v8. Databases in BRAHMS v7 can be automatically upgraded to v8. Contact the BRAHMS project and we will do this for you. Data in Excel can usually be imported via the BRAHMS Rapid Data Entry module (RDE) component. Data held in other packages will require some form of migration input.

### Optimising data capture

Data entry efficiency can be optimised for all projects. While smaller number of records can be added directly into BRAHMS, the recommended procedure for larger scale data capture and processing data backlogs is to use Rapid Data Entry (RDE). A section on using RDE is included in this document and in the main manual. Mastering RDE is easy and certainly worthwhile when you are processing a lot of new data.

#### Query and analysis

BRAHMS is provided with flexible query functions. You can query your data on any combination of fields and save complex queries for future use. There are also numerous further features for viewing, sorting, filtering, calculating and analysis. Data grids are virtualized, ensuring they are fast even if you are working in tables with millions of records.

### Exporting and reporting data

All data can be exported to Excel or CSV – and all such exports respect your currently selected column views, applied filters and sort order. You can also export data as Darwin Core Archive (DwC-A) format. You can also export your entire database to XML files.

Aside from using the basic data export options, you can create report templates for lists, labels, loan forms and others. Learning to design cool report templates is one aspect of mastering BRAHMS where users can go the extra mile, delving into the report design options as laid out, for example in <a href="https://www.stimulsoft.com/en/documentation">https://www.stimulsoft.com/en/documentation</a> . The BRAHMS guide has a section on report design and we also have a few videos: <a href="https://www.youtube.com/user/StimulsoftVideos">https://www.youtube.com/user/StimulsoftVideos</a> .

### Mapping and map point editing

Procedures for creating maps using different GIS options such as QGIS are reviewed in the manual map section. Bear in mind that if you are online, you have access not only to the in-built mapping tools but also the <u>map point location editor</u>. One of the handiest features in BRAHMS is the ability to view data records and map points together, dynamically linking these to highlight the current data record, and respect filters.

### Getting more detail on some of the key BRAHMS modules

The following sections can be found in the main BRAHMS guide: <a href="https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS\_Manual.pdf">https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS\_Manual.pdf</a>

- A closer look at taxa and related data
- Collection Events
- Museum and herbarium specimens
- BRAHMS for Botanic Gardens
- BRAHMS for Seed Banks and Seed Conservation Projects

## Register and log into the demo database

If you haven't installed BRAHMS and/or do not have a link to the conifer database or any another database, refer to the installation guide:

https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS installation.pdf

If you do not have a BRAHMS licence key, please register here: <u>https://process.innovation.ox.ac.uk/software/p/14165t/brahms-trial/1</u> or write to BRAHMS@biology.ox.ac.uk.

There are 2 main ways you can register and log into the conifer demo database.

Method 1: Download the conifer database in SQLite

- From <a href="https://herbaria.plants.ox.ac.uk/bol/brahms/support/conifers">https://herbaria.plants.ox.ac.uk/bol/brahms/support/conifers</a> choose the option 'Download the v8 SQLite demo database'. This will download coniferdbv8.zip. Open the zip to create a single file called brahms.db.
- If you don't have a folder Document\BRAHMS, create it. If logged in before, the folder will exist.
- Copy the brahms.db file to your Documents BRAHMS folder. If that file already exists in that folder, overwrite it with your downloaded file.
- Log into BRAHMS choosing the default Personal data location. Any problems, refer to: <u>https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS\_installation.pdf</u>
- When you log in, choose BRAHMS Authentication. The default conifer database username is 'Demo' and the password is 'demo'. The password is case-sensitive.



Logging in to the Personal Data Location using BRAHMS authentication.

#### Method 2: Download the conifer XML folder

- From <a href="https://herbaria.plants.ox.ac.uk/bol/brahms/support/conifers">https://herbaria.plants.ox.ac.uk/bol/brahms/support/conifers</a>, choose the option 'Download the demo database in XML format'. This will download a zip file called 'conifer\_xml\_feb2023.zip' or similar. Expand the zip to a new folder. This will result in a series of XML files.
- Log into BRAHMS choosing the default Personal data location. Any problems, refer to: <u>https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS\_installation.pdf</u>
- In a new BRAHMS system, this is an empty data store. When you log in, you can choose Windows authentication. The first log in to a data location will auto-add the log in you first use. This is something you can alter later on.
- As initially, the data location has no registered database project, the **Database Project Manager** autoopens. Select the Import option, navigate to the conifer XML folder and select the XML file listed by BRAHMS - DatabaseProject.xml. This will then trigger the import of the conifer database to your personal data store.

Note – the same XML folder can be imported into PostgreSQL and MSSQL SERVER data stores.

## Task 1: Some setup options

#### • Select System > Options

On networked systems, the ability to edit set up options will be restricted – depending on your user permissions. However, as a personal user logged in with Admin rights, you have access to all options. A few are discussed here to get you started.

Rapid Data Entry (RDE)	Таха	Entities	Preserve	ed Collections	Living Collections	
Seed	Images	Management		Mapping	Modules	
Shared Folders	Banner Image	Backgrou	nd Image	Font	Grid Options	
Grid Options						^
Enable/disable sorting	using grid column head	ers by default				
	5.5					
Enable/disable column	header text wrapping b	y default.				
Grid Line Options						
O No grid lines						
O Show vertical grid lines	s only					
O Show horizontal grid li	nes only					
Show both horizontal a	and vertical grid lines					
Grid line colour:						
Gainsboro 👻						
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ag Highlight Colours						
Tag highlight ! or 1 R	estore default					
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- Choose **Taxa** to configure how calculated taxa names appear.
- Select Grid Options to set how data grids appear and to set Tag colour options.
- Select **Background Image** to personalise the application.

There are many other settings, e.g. to configure plant numbering and Rapid Data Entry features – these can be checked out later on, as appropriate for your project.

	Management		Mapping					
Banner Image	Backgrou	und Image	Font					
DE) Taxa	Entities	Preserved (	Collections					
	e.g. (last authors): Pinus sylvestris e val. mongolica Litv. e.g. (last author): Pinus sylvestris var. mongolica e.g. (no authors): Pinus sylvestris var. mongolica							
Include trade names in	plant name calculatio	ns						
e.g. (with trade name): Juniperus horizontalis [DEEP RED] 'Frederick'								
	DE) Taxa ✓ Include author names in ✓ Use lowest ranked e.g. (all authors): Pi e.g. (last author): Pi e.g. (no authors): Pi ⊡ Include trade names in	DE) Taxa Entities	DE       Taxa       Entities       Preserved (         ✓       Include author names in plant name calculations       ✓       Use lowest ranked author only         e.g. (all authors): Pinus sylvestris L var. mongolica Litv.       e.g. (last author): Pinus sylvestris mongolica Litv.         e.g. (no authors): Pinus sylvestris var. mongolica         ☐       Include trade names in plant name calculations	DE       Taxa       Entities       Preserved Collections         ✓       Include author names in plant name calculations       ✓       ✓         ✓       Use lowest ranked author only           e.g. (all authors): Pinus sylvestris L var. mongolica Litv.           e.g. (last author): Pinus sylvestris mongolica Litv.           e.g. (no authors): Pinus sylvestris var. mongolica           Include trade names in plant name calculations				

Picking on one example on the Taxa tab, you can control how the calculated field #Full Name appears in your system. Some projects prefer to see all authors, others not. Bear in mind, when creating reports, species names, with or without authors, can be formatted in any way you like.

## Task 2: Adding a user account and setting permissions

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#useraccount

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#userpermissions

Adding users and setting permissions is described in detail in the BRAHMS guide. You can add users with BRAHMS, Local Windows account or Domain account authentication. Users can be assigned access and permissions to one or more databases. With Windows or Domain accounts, users will not require any additional password to log into BRAHMS.

In this example, add a new BRAHMS authentication user and assign this user permissions.

- Log into the demo database and select **System > Manage Users and Permissions**.
- Choose the User List option above the grid (or use Add on Data Tools).
- Select New User > Add BRAHMS User adding the Username, Password and 'Known As' name. Do not set the user as an Administrator.

System	Rapid Data Entry	Taxa Entitie	es Geo	Collections I	Biblio Images/Documents	Management Pu	ublish Online	Grid Tools	Data
✓ ∵ Tag	Arr     Arr </th <th>Sp. Sort</th> <th>NoFilte</th> <th></th> <th>Add - Comme Delete - Record o Form Document Edit</th> <th>4444</th> <th>Segal Copy Value View</th> <th>℃ Refresh D * #Calc Fiel</th> <th></th>	Sp. Sort	NoFilte		Add - Comme Delete - Record o Form Document Edit	4444	Segal Copy Value View	℃ Refresh D * #Calc Fiel	
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	John	Add Windows A		Domain User	Add BRAHMS User			New User	
	DESKTOP-50S1ASA\(	Password:						Edit User	
		Known As: Jo	hn Smith					Delete User	-
			Add As Admin	nistrator? Add this	s User Back		users	nain list shows r in this data sto ns above add. e	re. Th

- Select Create this User and follow through with Add this user.
- Close the user form and select the new user on the **User Management** data grid.
- Then select the **Access/Permissions** option.

User Access 8	& Permissio	ns	Stand .		User Access & Permissions
Member Project: Conifer I Permission Set: Volunteer		Delete App	ly Apply To Tagge	Project Member: John Smith	Member Project Confer DB October 2021 Project Member Joh Permission Stel Volunter V Deleter Apply Apply 10 Topped Constraints
General: Modules & Data	Specific Actions	Plant Events			General: Modules & Data Specific Actions Plant Events
Available to User?		Read Only	Read & Modify	+ Additional Permitted Actions Add Delete Tag Del.	⊙ Editing Tools
Entities			(8) +		Reporting
🗹 Geo		۲	0 *	🗌 Add 📋 Delete 📄 Tag Del.	✓ reporting ✓ Can create and edit reports?
Biblio					Can share reports with all users?
Collection Events			• *	Add 🔽 Delete 🔽 Tag Del.	(♥) Web Links

After editing some settings on the General and Specific Action tabs, assign new permission role name (here 'Volunteer') and use the **Apply As** option to save the settings and assign this Permission Set to the current user.

In practice, a larger project may have many different permission sets to apply to different users.

## Task 3: Opening tables and using data grids

### Working on a small or low resolution screen?

If you are working on a small screen and/or have the screen resolution set to lower values, the toolbars may collapse as shown in the screen below.



Note that the Calculate and Import/Export toolbar options have collapsed. In these cases, you need to click on the larger icons to expand the options.

Syst	em Rapid Data Entry	Taxa G	ieo	Collections	Biblio	Image	es/Documents	Management	Publish Online	Grid Tools	Data Tools	Web	Links		
./	އ Sort ▼ 🛃 Last Mod	lified 👻		X NoFilter			🕂 Add 🕞	Comments	윤] Images	🚰 Legal	🔁 Refresh Data	• •	$\Sigma$ Summary	🗐 Export Tagged	<ul> <li>Match/Import</li> </ul>
	🗙 NoSort 👌 Natural S	p. Sort	u	Tree View		dit	🗙 Delete 🕞	I Record Checks	Documents	🔍 Zoom 🔹	1 #Calc Fields		∑+ Summary (+)	View	Import/Link images
•	[t= Grouping 🔎 Multi-See	arch		P Find	6	-	E Form	쉽 Lookup	◎ Literature	Copy Value				Reports •	
Tag	Sort	Filter, Quer	у				Edit			View			Calculate	Imp	ort/Export

The same toolbar on a higher resolution screen.

### Opening and closing tables in data grids

By default, BRAHMS uses data grids with context sensitive toolbars to browse, locate, sort, edit, query and analyse your data. Data tables are opened using a single click on the selected menu entry.

• On the Taxa menu, click once on Families.

System	Rapid D	Data Entry	Taxa	Geo	Collections	Biblio	Images/Documents	Management	Publish On
Higher Class	sification	E Species		🖽 Spe	cies Use Dictiona	ary 🏛 Sp	oecies Colour/Fragrance	Classification Sy	stem:
E Families		Commo	n Names	📰 Spe	cies Uses	III Al	l Genus-Family Links	Default	
III Genera		III Taxa Des	scriptions	III Def	ault Prop. Values				
				View				Classific	ation System

When a table opens, the toolbar changes to **Data Tools** – this is where most of the general processing options are to be found. For Taxa specific tools or if you want to open another taxa table, return to the **Taxa** menu.

• To close the table, select the **X** next to the opened table name.

Families	₽×	Genera Spec	cies
Tag	Del	Taxon Status	Taxa Group
▼		Acconted	aumpochorm

Closing a table using the X mark next to the table name.

• Alternatively, to close tables, use Alt+X. Function keys such as Alt+X are listed using Shift+F1 when in any data grid. A grid must be active to do this. Refer to the section on <u>navigation and function keys</u>.

#### **Opening multiple tables**

See examples on <u>https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#multiple</u>

You can open and utilise different tables at the same time. The task here is to open the main family, genus, species and collection events tables.

- On the Taxa menu, click once on Families.
- Return to the **Taxa** menu and click on **Genera**. Repeat this now for **Species**. Note that each time you open a table, the Data Tools toolbar is activated so you have to return to the **Taxa** menu.
- Finally, on the main menu, select **Collections** and choose **Collection events** and then **Specimens**.

- 5	ystem	Rap	id Data Entry	у Таха	Geo	Collections	Biblio	Images/Docum	ents Management	Publish Online	Grid Tools	Data Tools	Web Links	
Ta		Sort NoSor	t ∯Natu ing µMult	Modified • Iral Sp. Sort i-Search Sort, Filter, Qu	Y Hery	NoFilter	E	Form	Comments     Record Checks     Dookup dit	윤 Images ⑧ Documents ④ Literature	Copy Value Copy Value View			tary (+) 📔 View
Farr	nilies	G	enera	Species 🖶	× Co	ollection Events		Specimens						
;	Tag	Del	Taxion Status	Family		# Full Name			Genus	Species		Species Author		Subspecies
7														
			acc	Leieuneacea	90	Aphanoleieune	a micros	copica (Tavlor)	Aphanoleieunea	microscopica		(Taylor) A.W.Evans		

Each table has a tab which can be selected to view the data in that table.

## Task 4: Docking tables, forms and other windows

See examples on <u>https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#multiple</u>

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#opendocklink

To view two or more of the tables opened in the last exercise at the same time, use the docking features. Tables can be detached from a centrally docked position and docked to the side, above or below another table – or dragged to a different monitor. Forms, images, external web sites, maps, query tools and others are all dockable.

Positioning tables and other items takes a little practice - there are many potential docking arrangements. The tasks here assume one monitor – but if you have two or more, take advantage of these to display tables and other screens fully undocked.

- Drag table tabs to undock them. Initially, it can be a little tricky to grab the tab correctly. When you drag any table to undock it, a series of yellow 'docking boxes' appear.
- Drop the table on one of these docking options the central box redocks the table as it was.
- As a first try, drag the genus table and re-dock this by placing and releasing your mouse pointer over one of the yellow docking points. Repeat for the species table.



Here the genus table has been undocked and is floating above the other tables. And the species table is about to be docked to the right.

• Repeat this with the collection events table, docking elsewhere or moving it to a different monitor.

E Br	RAHMS v8.0 - Conifer dat	abase						D X	4	ollectio	ns:				
5						Grid To	ols Data Tools Mapping We	b Links	ſ	Tag	Del 0	Collectors	Field Number	Collection Day	Colle
System	Rapid Data Entry	Taxa Geo Colle	ctions Manage	ment Bib	rio BOL Ima	pes Extracts Grid To	ols Data Tools Maps We	b Links 😧 🕨		-	1	Weijer, W.	4783	16	3
.1	ID Copy- At	× Remove Sort	Remove fill	Tree	View.	mages. Q. Record.	20 Di Export		-		1	Dvienet, J.W.	4586	19	6
	Sort		5 Selection			11 Farm. 8	Calculate Man Report		-	-		Oberminkler, F.; Mayr, B.	11339	18	5
•	lag		*. +Selection		in the second se	Kalengel. B	Calculate View Report		-		,	Moir, T.R.G.	349	16	8
anil	las 4 X			Species	-			10	7	n -		Grivda, W.	10	15	В
-	Family	FamilyAuthor	1.2	The second	Genus	Sp1	Author1	Taxon Rank *	-	1		Hernández, R.	7258	18	5
2	Myricaceae	Diame	-	-	Pseudotsuga	menziesi	(Mirb.) Franco	var.	-		,	Heldreich, T.H.H. von	962	16	7
	Diselmacese	(Eichler) A.V. Bobro	rv & Melikyan	-	Pinus	mariana	(Mit) Du Roi		-	-		Vogel, E.F. de	5864	18	6
	Widdringtoniaceae	Doweld		-	Pinus	smithiana	Wall.		-			lensen, H.A.	381	1	6
1	Pigerodendraceae	A.V. Bobrov & Mel	ikyan	-	Juniperus	occidentalis	Hook.		-	1	1	Frodin, D.G.	26662	26	4
-	Austrotanaceae	Nekai ax Takht. & I	leveal	-	Tauga	heterophylia	(Raf.) Sarg.				-	Shaw, G.R.	55		11
				-	Law	principis-rupprechtii	Mayr		-		,	Aedo, C.; et al.	6243	18	6
iene	a = X			-	Pinus	sylvestris	L	VAC.		1		keif, B.	4263	19	8
10	amily	Genus	Genus Ar	-	lunipena	lobelli	Guass.					Robert, M.F.	10011	10	2.
0	Cupressaceore	Glyptostrobus	Endi	-	Pinus	montana	Mil	ssp.			1	eg. ign.	523	13	7
0	Supressaceae	Calitris	Verst.	-	Finus	cembroides	Zucz.	100.	-			Meyer, K.M.; et al.	20	16	3
P	Inaceae	Apinus	Neck. ex	-	Juniperus	savicola	Britten & P. Wison	1000	-			Sidorov, L.	7052	24	7
1	axaceae	Amentotaxus	PNIo.	-	C. Walt				-			forster P1- et al.	24562	25	

The various tables rearranged with collections events dragged off the main application

-	er Procese Prus syn Author Description Distribution Comments Checked By Check Dat y T Procese Prus syn	glehnii sitchensis	(F. Schmidt) Voss Bong.
	Evergreen, mon North America: (	phoenicea	(L) Antoine
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hor 3 Protologue Cita Year Province	I I I I I I I I I I I I I I I I I I I	engelmanni	Carrière
Abh. Königl. Aka 1830	dex	gigantea	(Lindl.) Decne.
Mitt. Deutsch. D 1907	Plnaceae and Genus = Pinus and Species = sitchensis and Ranks = all whine all nerveries continue to an interface family.	chensiensis	Tiegh.

The yellow docking points appear when you drag a table from a docked position.. Docking options vary depending on the windows opened. Some experimentation is required.



Map screen undocked and dragged to separate monitor. In this example, data records have been tagged using different colour symbols, these reflected on the map. A column summary on the Tag column is also active and docked to the right of the main grid.



Left monitor with genus and species tables docked next to the TROPICOS Weblink. The collection events table is shown in the lower small screen and an ArcGIS map with Google Images on the left monitor. The events table is set to update to the selected species record – together with the map and the images.

## Task 5: Short cut keys (F-Keys)

It may be useful to print this page at it lists all the handy shortcuts keys to help speed up activities across all database tables. You can also open this list using **Shift +F1** from any active grid.

#### **Function keys**

Modifier	Key	Action
	Delete	Toggle records delete flag and move to next record
	End	Go to last column
	F11	Toggle advanced query tool visibility
	F4	Copy field from record below (edit mode only)
	F5	Refresh data grid
	F6	Toggle records tag and move to next record
	F7	Toggle Zoom visibility
	F8	Toggle column manager visibility
	F9	Open value look-up for a read-only field if available (edit mode only)
	Home	Go to first column
	PgDn	Scroll down
	PgUp	Scroll up
Alt	F11	Create grid column range filter
Alt	F2	Toggle Sigma summary (+) visibility
Alt	1	Copy and increment numeric field from record below (edit mode only)
Alt	м	Toggle magnifier window
Alt	v	Toggle visibility of record verification tool.
Alt	х	Close the active grid view
Alt	Z	Toggle Zoom visibility
Alt, Control	Z	Toggle grid cell content viewer visibility
Control	E	Toggle edit mode for the current grid
Control	End	Go to last row and column
Control	F11	Deactivate all currently applied filters
Control	F2	Toggle Sigma summary visibility
Control	F4	Copy current record to a new record (edit mode only)

Control	F5	Remove any existing sorts
Control	F6	Untag all records in the grid
Control	G	Toggle visibility of grid data grouping area.
Control	н	Toggle Find and Replace
Control	Home	Go to first row and column
Control	1	Field Help
Control	к	Copy current cell value to clipboard
Control	L	Open value look-up for a read-only field if available (edit mode only)
Control	Ν	Add a new record
Control	Ρ	Toggle grids print preview visibility
Control	R	Toggle Reporter visibility
Control	Т	Show tagged records only
Control	U	Show my data only
Control, Shift	?	Show related data record counts
Shift	F1	Toggle this list of shortcuts
Shift	F11	Set current cell value as a quick filter
Shift	F12	Append current cells value to quick filter list
Shift	F2	Toggle grid form visibility
Shift	F4	Copy and increment numeric field from record below (edit mode only
Shift	F6	Tag all records in the grid
Shift	F7	Toggle grid cell content viewer visibility
Shift	F8	Cycle column autofit widths

### Column Help

Using Ctrl+ I on any column open, you can see the properties of that column

Column Description Column Description	otion : TaxSt	atus	
Property: TaxStatus	Type: String	Is Enumeration?	Is Read-Only?
DB table/view: speciesgridview	DB column: taxstatus	Not Nullable?	Max. chars: 25

Taxonomic status of a name. This is normally set as a custom lookup field. You can define your own entries.

Also, assuming you have database permissions, you can use Edit Description to add/edit the descriptive help text for that column (in any language).

## Task 6: Data grid navigation, F-keys, Zoom, Context menu

### Navigation

There are a few tricks to learn to move efficiently between columns and rows in BRAHMS data grids. BRAHMS draws data from your data store into the grids and presents these data with low-lag data virtualization, storing as much data as possible in memory. As you scroll up or down, the system retrieves the relevant data to memory and refreshes the opened grid.

- Close all the tables used in the previous task.
- Select **Collections > Collection Events** to open the events table. Activate the grid by clicking in any data cell. The default mode for data grids is read-only mode, nothing can be edited.

Action in non-edit mode	Keys
Move to the next / previous column	Right / Left Arrow
First/Last column	Home / End keys
First/Last row	CTRL Home / CTRL End
Next /Previous row	Down / Up arrow
Scroll up and down	PgUp / PgDn
Select or activate a column or cell	Click in the cell
Action in edit mode	Keys
Move to the next / previous column	TAB / Shift TAB
Next /Previous row	Down / Up arrow or use Alt+Arrows in memo or numeric fields

### Function keys

The list of available keys is provided in a previous section. If you have not printrd out the list, you can open using **Shift+F1**. Some examples:

- Press F6 several times to tag a few records. Pressing F6 on the same records will un-tag them.
- Press **Ctrl+T** to set a filter on the tagged records.
- Press Ctrl+F11 to remove all filters.
- Press Ctrl+E to enter edit mode. Ctrl+E again to exit edit mode.
- Press **Alt+X** to close the current table.

### Record Zoom to sum record and to quickly go to a column

The record **Zoom** function is a great way to summarise and view the current record in any table – but you can also use it to navigate to a column.

Syste V Tag	Repid Data Entry Tava Geo Collections Biblio I     Stort - Be Last Modified -      XNoSort      Stort Statual Sp. Sort     Stropping      Dividit-Search      Sort, Filter, Query	➡ Add • □ Comments	ata Tools Maps Web Links Refresh Data * Σ Summary (Calc Fields Σ) Summary (+) Wew ℚ Import/ Calculate Import/Export.
Collecti	ion Events 🛥 🗙		Record Zoom
7	<u># Full Nome</u>	# Full Name (HTML)	Record Zoom
-	Anemopaegma jucundum Bureau & K.Schum.	Anemopaegma jucundum Bureau & K.Schum.	Double-Click field name to navigate to that column
-	Protium divaricatum Engl.	Protium divaricatum Engl.	Double-Click held name to havigate to that column
-	Iryanthera ulei Warb.	Iryanthera ulei Warb.	Search
-	Cissus erosa Rich.	Cissus erosa Rich.	# Accepted Name Lacmellea
			# Accepted Name (HT <i>Lacmellea </i>
	Spondias testudinis J.D.Mitch. & Daly	Spondias testudinis J.D.Mitch. & Daly	# Collection Date (long) 11 April 1919
-	Aparisthmium cordatum (AJuss.) Baill.	Aparisthmium cordatum (A.Juss.) Baill.	# Collection Date (short) 11/04/1919
_	Aparistrinium cordatum (Abuss.) bain.	Apartstimitam coroatam (4.7435.) bain.	# DGMS 10° 06' 00.000" S, 59° 24' 00.000" W
	Pimenta pseudocaryophyllus (Gomes) Landrum	Pimenta pseudocaryophyllus (Gomes) Landrum	# Field Number (Sorta 00000000001167
-			# Full Name Lacmellea
	Pogonophora schomburgkiana Miers ex Benth.	Pogonophora schomburgkiana Miers ex Benth.	# Full Name (HTML) <i>Lacmellea </i>
	Vochysia divergens Pohl	Vochysia divergens Pohl	# Gazetteer Summary Brasil; Mato Grosso; Mata de terra firm
-			# Natural Species Sort LACMELLEA
	Caperonia	Caperonia	# Sperimens 1

Double-click on the Zoom field header name e.g. '# Full Name (HTML) to go to that column. If it is not visible, it will be made visible.

## Using a right-click on data grids for context menu

Right-clicking on data grids opens up a short-cut menu to widely used options.

Sy	/stem Rapid D	ata Ent	ry Taxa (	Geo Colle	ections	Biblio	Images	Management	Publish Online
Tag	2 Natural Sp			ig Filter, Query	**	lection	<ul> <li>(1) Filter Info</li> <li>1: Tree View</li> <li></li></ul>		Add      Comr     Comr     Delete     I Recor     Form     £dit
- 1	Family		Genus		Species		SL	<u>bspecies</u>	Variety
7	Papaveraceae		Chelidonium		majus				
•	Onagraceae	Q	Oepothera Current Record	Zoom A	nanviflor Alt+Z				
-	Polypodiaceae Apiaceae	Σ	Σ Summary Manage Columns		Ctrl+F2	,			
	Pteridaceae	<i>4</i> ,	View +Selection	c	Shift+F12	•			
	Brassicaceae	×	NoFilter	(	Ctrl+F11				
_	Fabaceae		Count Tags Tag All		Shift+F6				
	Amaranthaceae Amaryllidaceae	-	Clear Tags Form		C <b>trl+F6</b> Shift+F2	um			
-	Primulaceae	<b>+</b> ₫∎	Add Lookup		Ctrl+N 9				
	Apiaceae	ß	Copy Cell Value	. (	Ctrl+K				

The functions offered here are all available on the main toolbar. Most have shortcut F keys.

## Task 7: Column Manager

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#columnviewvideo

### Selecting fields to view

When you open a table, the default data grid columns will be visible. You can adjust and save new column views using the **Column Management** options. This applies to all tables. Selecting a particular set of visible columns is a handy way to view selected data and speed up specific editing tasks.

Select **Collections > Collection events** then **Grid Tools > Manage Columns.** You can also use **F8** or a right-click on the data grid to open the Column Manager. In practice, using **F8** is usually the fastest way to open the form.

Field Help Help		out Hanage Columns	I€ First  Previous  Next →I Last Column F UII Name (HTML)  Include Hidden Hide Current Column Navigation	I€ First ≦ Previous ≛ Next →I Last Record No. 18 🗢 / 290,928 Record Navigation	Enable Header Sort     Wrap Column Headers     Options	
ollection Eve	nts 🕁 🗙				Column Management	
Family		# Full Name		# Full Name (HTML)	Column Management	
Bignonia	ceae	Anemopaegma jucundum	Bureau & K.Schum.	Anemopaegma jucundum Bureau & K.	Schum.	Martin Martin Martin
Burserace	eae	Protium divaricatum Engl. Iryanthera ulei Warb. Cissus erosa Rich.		Protium divaricatum Engl.	Select/Deselect All Filter	Show/hide columns using the list the up/down buttons to change
Myristica	ceae			Iryanthera ulei Warb.	Move Column	
Vitaceae				Cissus erosa Rich.	☑ Tag	<ul> <li>Optionally, save column arranger</li> <li>'Save As' button or load previou arrangements by selecting from</li> </ul>
Anacardia	aceae	Spondias testudinis J.D.Mit	ch. & Daly	Spondias testudinis J.D.Mitch. & Daly	☑ Del	
Euphorbi	iaceae	Aparisthmium cordatum (A	Juss.) Baill.	Aparisthmium cordatum (A.Juss.) Baill.		Optionally, add/edit custom colu
Myrtacea	e	Pimenta pseudocaryophylli	us (Gomes) Landrum	Pimenta pseudocaryophyllus (Gomes) I	Landrum # Docs	Custom Columns Editor
Peraceae		Pogonophora schomburgki	iana Miers ex Benth.	Pogonophora schomburgkiana Miers e		What type of data will be stored
Vochysiad	ceae	Vochysia divergens Pohl		Vochysia divergens Pohl	# Type Specimens	Field Data Type Text
- Fuphorbi	aceae	Caperonia		Caperonia	# Plants	What column heading and optio

The Column Management Tool allows you to select visible columns. You can use the Filter option at the top of this form to locate columns by name. Note that there are options to move the field positions.

Another way to adjust visible columns and field order is to right-click on any of the column headers. This opens a dialogue form with options to show hidden columns and alter the column order. You can also drag column headers to change order and size. And here's another handy way to hide columns:

• Click anywhere on the **Family** table to make it the active table. Now click in a field you want to hide. Select the **Grid Tools** tab and then **Hide Current** – this hides the selected field.

System	Rapid Data Entry	Taxa	Geo	Collections	Man	agement	Biblio	BOL	Images	Extracts	Grid Tools	Data Tool
Field	+ • Size				I€ First	1 Previous	🏝 Next	→I Last	t I€ First	t 🛸 Previo	us 🖆 Next	→I Last
	Save layout   Manage columns				Column Family				Record	Record 1 - / 38	/ 38	
	Layout Default		•	Includ	de hidden	Iden Hide Curr			-			
Help		Column	15			Column	erigation			Record	Navigation	

#### Saving a view

You can save a view using **Save layout** on the Column Manager form itself or from the **Grid Tools** toolbar. This will create a small *data grid view* file with a file extension '.dgv'. The file is saved to your

Documents\BRAHMS\Columns folder. You can create as many views as you want, choosing the view using the **Layout** dropdown. You can share views with all user on your BRAHMS database by copying the .dgv file to the designed Shared folder as specified in your set up options.

#### Deleting a view

Deleting a .dgv file from the Columns folder will remove it from your list.

## Task 8: Querying the database

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#datagridfilters

#### Using the data grid filter row

See examples on https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#explore

- Open the main file collection events table using Collections > Collection Events.
- Enter values into the yellow grid filter row as shown below. You can use operators \*, =, <, >, <=, >= and combine values using capitalized AND/OR statements. You can use keywords NOT and NULL. <> means not. Thus, adding <> NULL shows non-empty records. The grid filter bar is an efficient way to apply single or multiple filters and locate records. Note that you must use capitalized key words such as AND and OR.



Using the grid filter row, you can add values to as many columns as needed. For text strings, the default filter mode is 'includes'. Use = to make a precise match.

				ow 🥒 Edit Lookup \ w fill Relational Loo		
refix	Field Number	Suffix	Collection Day	Collection Month	Collection Year	
				>0 AND <4 ×		1
	s.n.		8	2	1979	(
	1708		14	2	1948	
	12321		29	2	1992	
PI	6381		25	3	1992	
	93-40		15	1	1993	

An example in the Month field using the operators < and >.

#### • You can use \* to select 'starts with' and 'ends with', thus:

Collectio	lections 42 X						Collections 🛥 🗙						Co	Collections ⇔ X				
Tag	Del	Collectors	Prefix	Field Number	Suffix		Tag	Del	Collectors	Prefix	Field Number	Suffix		Family	Genus	# Full N		
7		ter*	<			4	-	-	ter >	<		_	4		*illa	×		
		Termiji; Paul, W	SAN	87633		-			Kostermans, AJGH		5578			Orchidaceae	Vanilla	Vanilla		
		Terré, J		s.n.		-			Rastetter, V		s.n.		_	Rosaceae	Potentilla	Potentil		
-		Terré, J		s.n.		-			Esterhuysen, EE		35669		_	Rosaceae	Alchemilla	Alchemi		
-		Terlaag, CH		205		_							-	Melastomataceae	Medinilla	Medinil		
-		Terpstra; Vermeulen, P		s.n.		_			Steyermark, JA; Dunstervil.	**	92379		_	Rosaceae	Potentilla	Potenti		
-		Teraoka, W; Kennedy, H		129					Schlechter, FRR		19354		_					
-		Terpstra, WJ		s.n.		-			Kostermans, AJGH; Kruyt,		2			Caprifoliaceae	Diervilla	Diervilla		
-		Terré, J		4209		-			Kostermans, AJGH		18034	в		Rosaceae	Potentilla	Potentil		
_		in the second se		4605		-			Kenter AKII		10544		_	Rosaceae	Potentilla	Potentil		

Setting a filter where collector name starts with 'ter (left) or includes 'ter' (centre) and right, where the genus ends 'illa'.

#### Using Selection and +Selection

You can set filters on current cell values using the **Selection** and **+Selection** options.

• Open the main file collection events table using **Collections > Collection Events**. Set a filter on a cell value by clicking on the value and then the **Selection** toolbar. This option overrides any previous filters.

• You can add multiple cell-based queries using the **+Selection** option. As soon as you select **Selection** rather than **+Selection**, the filter will be again restricted to a single value.

Syster	n Rapid Data	Entry	/ Таха	Geo	Collections	Biblio	Images/Documents	Management
<b>V</b>		Natu	Modified 🔹 ral Sp. Sort -Search	Y	NoFilter		Add • X Delete •	Comments Record Check
Tag		Y	Show tagge	d only			Edit	
Collectio	on Events 👍 🗙	Events -= X Y Show my edits only Column range filter						
	ocality Notes	Ş	Selection				Latitude	Longitude
7		÷.,	+Selection					
		0	Filter Info.				-3.33333333300	-60.33333333
N	Várgem direita do R	io Ne	gro.				-3.1666666700	-60.10000000
<b>F</b>							4 3 7 4 4 4 4 4 4	50 6700000

Using the Selection options on the Filter dropdown. On the same dropdown, you can use the Filter info option to check filter settings.



Checking filter settings

### The main Query tool

Using the main query tool **X**, you can create and save commonly used queries. Refer to the Find, Filter and Query section of the main guide <u>https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS\_Manual.pdf</u>

The Query tool can be a faster way to run queries, especially in large databases and where you are using > 1 query parameter. This is because the query is sent to the database in one go rather than as separate queries (as is the case with the grid filter row).

-	le All Show:	All filters	Delete All	Reset Brackets	_
nable	Join	((((	Filter Expression	)))) Remove	Top
<ul> <li>✓</li> </ul>	AND Y		Collectors.Contains("Laubenfels") Collector Number > "600"	) ~ 🗙	Up
<ul> <li>✓</li> </ul>	AND Y	( *	Institute Code = "K"		Dow
<b>v</b>	AND Y		Family = "Podocarpaceae"	) ~ 🗙	Botto
Collecto	ors	~	/ IS v = v	Farjon, A.	+ Add
			Save enabled filter se	t as Sample query	ave Cance
Collect	ors Contains	"Laubonfo	els")) AND (Collector Number > "6	500") AND (Institute Code - "K")	AND

## Task 9: Calculated fields

### What are calculated fields?

Many BRAHMS tables have fields which are calculated. These usually start with #. Many are numeric totals. Most of these fields are not automatically updated – there is a special recalculation tool used to update them. This tool can be auto-run overnight using a Windows Task but this Task is not further discussed in this guide.

#### Numeric totals examples:

- Most tables: # Images total number of images linked to the current record.
- Species table: # Collection Events total number of collection events per species.
- Country table: # Species total number of species collected per country.

#### **Text examples:**

- Species table: # Full Name the full species name calculated based on your set up options.
- Species table: # List Syn. A-Z a list of synonyms for the current species record.
- Gazetteer table: # Full Gazetteer a collation of text fields from country to location name.

### Updating calculated fields

To update all # Calc Fields for your database:

- Select Management > Recalculation Scripts
- Then select **Run All** which will update # Calc Fields for the entire database. This process may take a few minutes in the conifer demo database.

- 1	System	Rapid D	Data Entry Ta	axa Geo	Collection	s Biblio	Images/D	ocuments	Management	Publish Online	Grid Tools	Data Tools		
Ⅲ	Recalculatio	on Scripts	People		Wisitor Log	🎛 Legal Pe	rmits	🖽 Manage	e Web Links	ELookup Fields 🔹				
Ⅲ	Custom Fie	lds	Assemble	d Names		🎹 Legal Pe	III Legal Permit Links			Grouped Values				
Ⅲ	Edit History	/	Address E	Book										
	View		1	View (Peopl	e)	Legal P	ermits	Web	o Links	Lookup Resources				
Rei	Recalculation Scripts += X													
1														
Run All* Run Current Only Run All Tagged* (* applied filt							e respected)							
	Tag [	Del Da	ta Type	Ca	lc. Column Head	der Co	Calculation Description			Calculation Status	Last Ru	ın On	Last Run By	Last Run R
7														
_		Ad	dress	#1	mages	U	Update count of linked images.			Succeeded	17/11/	2023 19:56:52	DESKTOP-5OS1ASA\	Ran succes
•		Ad	dress	#	Documents	U	odate count	of linked do	cuments.	Succeeded	17/11/	2023 19:56:52	DESKTOP-5OS1ASA\	Ran succes
_		Address # Taxa			U	odate count	of taxa.		Succeeded	17/11/	2023 19:56:52	DESKTOP-5OS1ASA\	Ran succe:	
		Ad	dress	# 1	Species	U	odate count	of species (g	jenus + sp.).	Succeeded	17/11/	2023 19:56:53	DESKTOP-5OS1ASA\	Ran succes
_	Address # Specimens						Update count of specimens.			Succeeded		2023 19:56:53	DESKTOP-50S1ASA\	Ran succes

Use Run All to update all Calc Fields in your database.

#### Viewing #Calc fields

Most calculated fields, by default, are not visible in the tables. You need to select the ones you wish to view in the data grids.

- Select Taxa > Species and then you can open the Column Manager (as in the previous task) to add one or more # fields.
- You can also use **# Calc Fields** on the Data tools toolbar to view all **#** Calc Fields per table (on/off toggle).

S	/stem		id Data Entry	Taxa Geo		blio Images/Documents Management	Publish On		Data Tools Web Li	
		21 Sort NoSort	-	p. Sort	NoFilter     Tree View     O Find	H Add - Comments X Delete - I Record Checks FII Form f∏ Lookup	R Images	ents 🔍 Zoom 🔹		E Summary Summary (+)
Ta		II = or or opp		Filter, Query		Edit	0	View		Calculate
Spe	cies +⊐	1 1	# Collection							
;	Tag	Del	# Collection Events	Taxon Status	Family	# Full Name		Genus	Species	Species Auth
7			> 100 X							
			127	acc	Pinaceae	Abies alba Mill.		Abies	alba	Mill.
			119	acc	Pinaceae	Pinus flexilis E. James var. flexilis		Pinus	flexilis	E. James
_			206	acc	Pinaceae	Picea abies (L.) H. Karst. var. abies		Picea	abies	(L) H. Karst.

Using a grid row filter on a #Calc Field in the species table – showing species that have > 100 collection events.

## Task 10: Sorting Records

See examples on https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#sorting

#### Sort on single or multiple data grid columns

If column sorting is enabled, tables can be sorted on single columns by clicking on the column header, Shift Clicking on multiple column headers ... or using the Sorting Tool. To use header-click sorts, make sure this option is enabled by setting *Enable Header Sort* on the Grid Tools toolbar. You can also set this on by default for all tables in **System > Options > Grid options**.

Rapid Data Entry (R	DE)	Таха	Entities	Preserve	d Collections	Living Collection
Seed		nages	Management		Mapping	Modules
Shared Folders		Banner Image	Backgro	und Image	Font	Grid Options

- Select **Taxa > Genera** to open the main genus table.
- Click once on the Family column header to sort A-Z. Click the same column header again to sort Z-A. Click a third time to remove the sort.
- You can combine as many columns as needed using Shift Click on columns headers.

Family	Genus	Family	Genus	( )
Zygnemataceae	Ghosella	Cactaceae	Winteria	
Zygnemataceae	Sangirellum	Cactaceae	Wittia	
Zosteraceae		Cactaceae	Wittid	
Zosteraceae	Phyllospadix	Cactaceae	Zehntnerella	
Zosteraceae	Heterozostera	Cactaceae	Zygocactus	
Zingiberaceae	Paracautleya	Cafeteriaceae	Acronema	
Zingiberaceae	Stadiochilus	Cafeteriaceae	Cafeteria	
Zingiberaceae	Geocharis	Cateteriaceae	Careteria	
sinale column sor	t, here descending (Z-A).	A multiple column se	ort, here ascending (A-Z).	

### Saving complex sort commands

Using the **Sorting tool**, you can add fields of any type to create complex sorts. You can save these sorts using the **Save** option provided.

System	F	Rapid Data Entry T	faxa Geo Collections	Biblio Images Management	t Publish Online Grid Tool	s Data Tools	Web Links			6
A ag		t Last Modified - X ural Species Sort	NoSort 5	IoFilter Info. election ∵ Tree View Edit Selection ♀ Find	HAdd - Comments Delete - Record Checks Form Dookup Edit	윤 Images s 🔋 Documents 은 Literature	S Q Zoom → Copy Cell Value View	Σ Σ Summary	Export Tagged      View     Reports      Import	Match/Import Import/Link images t/Export
ecies 4	×α					÷	Sorting	May along		ENERG
Tag	Del	Taxon Status	Family	# Full Name		Genus ^	Sorting Street	Anto	and search	1 2 1 C
		acc	Hydrangeaceae	Deutzia gracilis SIEBOLD & ZUCC.		Deutzia	Sort Designer My Saved Sorts			CARLES AN
			Solanaceae	Solanum humboldtii		Solanum	Tag		[Asc] Family	
		acc	Rosaceae	Prunus japonica THUNB. ex MURRA	Y	Prunus	Del		[Asc] Genus	
			Polypodiaceae	Belvisia platyrhynchos (KUNZE) COF	PEL.	Belvisia	Taxon Status # Full Name		[Asc] Species [Asc] Subspecies	
			Rosaceae	Cotoneaster salicifolius FRANCH. 'P	arkteppich'	Cotoneaster	Species Author		[Asc] Variety	
			Asteraceae	Cirsium arvense (L.) SCOP.		Cirsium	Forma Cultivar			
			Dryopteridaceae	Polystichum lachenense (HOOK.) BE	EDD.	Polystichum	Homonym			
			Rosaceae	Rubus orthostachyoides H.E.WEBER		Rubus	Vernacular Name Protologue Citation	Add D		
			Onagraceae	Oenothera hazelae		Oenothera	Publish Year	Add		
			Cyperaceae	Carex flacca subsp. flacca		Carex	Label Range Text Habit	Remove		-
			Orchidaceae	Dactylorhiza fuchsii (DRUCE) SOÓ s	ubsp. fuchsii	Dactylorhiza	IUCN Red List	8월 Clear All		~
			2.1.1				Collection Justification (ARP )			

Using the sort form, any combination of character, numeric, date and logical field can be selected to sort your records. Complex commands can be named and saved for future use.

### Sorting collection events by collector and number

Collection event field numbers are alphanumeric and thus, by default, sorting the field number column AZ gives an incorrect sort order.

y Collectors	Field Number	Field Number (Sortable)	Suffix	# Collection D	y Collectors	Field Number	# Field Number (Sortable)	▲ Suffix	# Collection Date (la
Wilson, EH	4079	00000000004079		October 1910	Wilson, EH	293	00000000000293		May 1900
Wilson, EH	4082	00000000004082		October 1910	Wilson, EH	418	00000000000418		04 October 1907
Wilson, EH	4085	00000000004085		October 1910	Wilson, EH	479	0000000000479		28 April 1900
Wilson, EH	418	00000000000418		04 October 19	Wilson, EH	572	0000000000572		May 1901
Wilson, EH	4650	0000000004650		06 October 19	Wilson, EH	624	00000000000624		May 1900
Wilson, EH	479	0000000000479		28 April 1900	Wilson, EH	624	00000000000624		May 1900
Wilson, EH	572	0000000000572		May 1901	Wilson, EH	647	0000000000647		11 July 1907
Wilson, EH	6011	000000000000011		1914					
Wilson, EH	6011	00000000006011		19 February 1	Wilson, EH	662	0000000000662		June 1900
Wilson, EH	6027	00000000006027		19 February 1	Wilson, EH	693	0000000000693		April 1900
Wilson, EH	6035	000000000000035		21 February 1	Wilson, EH	696	0000000000696		May 1907
Wilson, EH	6076	0000000006076		1914	Wilson, EH	794	0000000000794		November 1907

As can be seen here on the left, sorting these Wilson, EH collections on **Field Number** gives a bad result. This is resolved using the calculated field # Field Number (sortable) shown on the right which pads the number field with zeros.

- To display this field, select Grid Tools > # Calc Fields
- You could now sort the collection events table on the Collectors + Field Number (sortable) fields but in reports, still refer to the column Field Number. NB If you do not see data in the sortable field number field, use **Data Tools > Calculate > Recalculate**.

In reports, you can auto-sort on the Field Number field avoiding the need to use the above calculated field. The procedure is explained in <u>https://herbaria.plants.ox.ac.uk/bol/content/software/v8/brahms\_manual.pdf</u> section Reports and Report Templates > Sorting alphanumeric fields numerically in reports.

#### Date sorting

Records can be sorted on date fields. For example, you can sort on the audit fields *Created By, Created On, Last Modified By* and *Last Modified On* and such sorts are useful for a variety of purposes.

When you add a new record, the data grid is auto-sorted on the *Created On* field. But you may find it useful to sort on this field (click on field header) at other times, perhaps in combination with other fields.

For example, to view records most recently added, you can sort on *Created On*, clicking the column header twice to bring the most recently added record to the top of your data grid.

If you want to sort collection events by date, sort on year, month and day in that field order, shift clicking on fields for multiple selections.

Syster	m Rapid Data Entry	Таха	Geo	Collec	tions	Biblio	Images	Management	P
<b>v</b>	2t Sort →	[t = Grou	iping		NoF	ilter	🕕 Filter Info.		<b>+</b> A
	Sort: Last Modified	• 🗙 NoS	ort	u	📕 Sele	ection	Tree View		ΧĽ
-	21 Natural Species Sort				<b>∮</b> + Se	lection	🔎 Find	Edit	- <u>-</u>
Tag		Se	ort, Filte	r, Query					

You can also easily sort on the Last modified date, or using the dropdown on that toolbar option, Date Created.

## Task 11: Tagging functions

See examples on <u>https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#tagging</u>

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#tagsandmaps

#### **Tagging records**

Tagging refers to the addition of a single character to the TAG field. This field is available in all tables in the first column. Tagging has multiple uses throughout BRAHMS with record selection and grouping. While the default tag symbol is \*, you can tag records with different symbols or numbers. Each of these can be assigned a colour. Tags are user-specific, thus one users' tags do not interfere with those of another working in the same table.

RAHMS	Options	1	-	-		0		S۱	/stem	<u> </u>	Rapid	Data	Entry	Таха	Geo	Colle	ctions	Biblio	Ima	ages
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Rapid Data Entry	(RDE) Ta	ixa	Entities	Preserved	Collections	Living Collections			Z	Sort	t: Last	Mod	ified	- 🗙 NoS	ort	u	- 53	Selection	- Tre	e View
Seed	Images		Managemen		Mapping	Modules		÷	Az	1 Nati	ural S	pecie	s Sort				· +, ·	+Selection	PFine	d
Shared Folders	Banner	Image	Backgr	ound Image	Font	Grid Options	-		Transfer	Tags				S	ort, Filte	er, Query				
Grid Options	de contine colore	and a sector	mn headers by d	-fault		1		-				- 11				-		_		
			apping by defaul						Count Ta					Species		Collectio	ons 🚽	× Spe	cimens	
								¥ 3	Show tag	ged (	only									
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	or 6 Restore							-		_	7.	1								
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- Select System > Options > Grid Options to edit the default colour options.
- Clicking on the Tag option on the Data Tools toolbar (or using F6) adds the selected symbol to the TAG field.

### Tag related options

The Tag toolbar dropdown provides a list of handy tagging options:

Transfer tags	Copy tags to parent or child tables.
Count tags	A count of all tagged records.
Show tagged only	Show only tagged records *
Tag Random	Tag a specified number or % of records.
Tag all	Tag all records in table – respecting any filters
Clear all grid tags	Remove your tags from all tables – does not respect filters
Clear current grid tags	Remove your tags from the current table – respecting current filters
Invert tags	Tagged records are set to no tag; records that had no tag are tagged *
Tag Groups	Create a saved group of tagged records.
Tag with	Choose tag symbol from list.

Spe	ecies 🖶	×					
	Tag	Del	Taxon Status	Family	# Full Name	Genus	Species
7							1
	•		accepted	Pinaceae	Pinus krempfii Lecomte	Pinus	krempfii
_	#		synonym	Pinaceae	Pinus vilmoriniana Roezl	Pinus	vilmorin
-	@		synonym	Podocarpaceae	Podocarpus taxifolius Kunth	Podocarpus	taxifoliu
	\$		synonym	Cupressaceae	Juniperus sphaerocarpa Antoine	Juniperus	sphaero

Records tagged with a variety of symbols.

### Tag Groups

By using **Tag > Tag Groups**, you can create and save 'groups' based on your tagged records. Tag groups can be shared with other users.

<b>v</b>		NoSort	Biblio Images Management NoFilter Offiter Info. Selection (1) ⊘ Find	Publish Online Grid Tools Data Tools Web Links    Publish Online Grid Tools Data Tools Web Links   Add + Comments  Comments  Deter Comparison  Deter Compari
Tag	Del Taxon Status acc	Family Papaveraceae	<u># Full Name</u> Hylomecon japonica (THUNB.) PRAN	Tag Group Manager
•		Asteraceae Bromeliaceae Rosaceae	Cirsium vulgare subsp. vulgare Tillandsia funckiana BAKER Rubus fabrimontanus SPRIB. var. fabr	Is Shared?     Group Name     Group Description     # Tags     Created By     Add.       My research taxa     Testing     27     DESKTOP-S
+ + +	syn acc	Malvaceae Poaceae Apiaceae	Tilia × vulgaris HAYNE Achnatherum calamagrostis Meum athamanticum JACQ.	Taxa for collection pr     Based on notes 2018-2019     91     DESKTOP-S       Doubtful entries     Testina     0     DESKTOP-S       Based on notes 2018-2019     0
+ + +	acc	Caryophyllaceae Rubiaceae Asteraceae	Silene conoidea Galium Iucidum ALL. Xanthium albinum subsp. riparium (C	(3 distinct tag(s))
+ +		Rosaceae Rosaceae Bromeliaceae	Rubus distortifolius MATZKE-HAJEK Aremonia agrimonioides (L.) NECK. Tillandsia castellanii L.B.SM.	
+	acc	Papaveraceae Salicaceae	Macleaya cordata (WILLD.) R.BR. Salix × simulatrix <	
+ \$	acc	Asteraceae Anacardiaceae	Coreopsis lanceolata L. Rhus potaninii MAXIM.	Apply Tag Filters Clear Tag Filters Load Tags to Grid Unload Tags from Grid

Some sample tag groups in the species table. One of these groups (Doubtful entries) is shared and thus can be seen by other database users.

### **Tag Transfers**

**Tag > Transfer tags** provides options to copy tags to related tables, either up or down a data hierarchy. This tool has multiple applications throughout BRAHMS.

, Tag	Sort NoSc [t = Group		st Modified • ntural Sp. Sort ulti-Search • Sort, Filter, Query	-	K NoFilter ☐ Tree View ○ Find	Edit	+ Add X Delete Form Ed	Comm     Comm     Comm     Comm     Control     Contro     Contro     Control     Control     Control     Control     Con	d Checks	A Images Documents Literature	Copy Value View	★ Refresh Data #Calc Fields	a •	Σ Summa Σ+ Summa Calculat
Tag	Del	Taxon Status	Family	# F	ull Name			Genus		Species		Species Author		
		States		1	lag Transfer Opt	tions								
		acc	Lejeuneaceae	A						ple, from the spe - or tag down to				
		syn	Melastomataceae	м	which would	l include sp	ecimens, det	ermination hist	tories, plant	records, seed te	sts and any oth	er		
		acc	Asteraceae	Ba				pecies. You cou er classification		up to genera or	up to the full p	arent		
		acc	Piperaceae	Pi	Transfer tag	Is DOWN		Trar	nsfer tags U	P				
			Strophariaceae	Ar	● Tag in	mmediate c	hild records	only. (	) Tag imm	ediate parent rec	ords only.			
		acc	Leguminosae-Caes	C	🔿 Tag a	II child reco	ords in hierar	:hy.	🔿 Tag all pa	arent records in a	ascendent hiera	rchy. hth.) H	I.S.Irw	n & Bar
		2acc	Leguminosae-Mim	м						_	_			
•		acc	Rubiaceae	Si	Tag with:	· · ·	] Clear all tag	s at start?	1	Ok	Cancel	erm.		
		syn	Orchidaceae	Ma	xillaria modesti	flora Pabst		Maxillaria		modestiflora	1	Pabst		
-							10							

For example, in the species table, tagging down would copy tags to child records including collection events and living accessions. By select the 'Tag all child records', the tags will also be copied to the plants, specimen and determination history tables – and any others in the hierarchy.

## Task 12: Summaries by data column

See examples on https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#colsum

The column summary option lists the different values in the selected column, providing the total number of records per value.

#### Summary for single columns

- Select Collections > Collection events.
- Locate and click in the column # Full Name and then select the **Summary** option on Data Tools. If you do not see the summary option, refer to the section on <u>small screens</u>.

	Rapid Data Entry			Grid Tools	Data Tools Maps		
	ੈ1 Sort • ਜ਼ੋਂ4 Sort: L	Taxe         Geo         Collections         Biblio         Images/Documents           ast Modified         Y         NoFilter         If Filter Info.         If Sectors         If Filter Info.           1 Species Sort         ✓         ✓         Selection         If Three View Info.         If Info.           Sort, Filter, Query         ✓         ✓         Selection         ✓         If Info.	Add • 🖵 Cor		ents Q Zoom -	Web Links     Sefech Data      C Summary     D Summary     D Summary     D Summary     D Summary     (a)     View     D Inport/Link     Calculate     Import/Export	
ect	tion Events 😔 🗙					Column Summary and Value Merging	7
g)	Family	# Full Name	Genus	Country	Major Admin Name	Column Summary and Value Mer	ai
	Cupressaceae	Juniperus semiglobosa Regel	Juniperus	China	Xinjiang	A DESCRIPTION OF THE PARTY OF THE PARTY OF	6
	Cupressaceae	Juniperus chinensis var. sargentii A. Henry	Juniperus	South Korea		Export     Gr Merge To Selected	
	Pinaceae	Pinus contorta Douglas ex Loudon var. contorta	Pinus	U.S.A.	Oregon	V # Full Name Co	unt
	Тахасеае	Taxus baccata L. [1]	Taxus	Hungary	Bakony Mts.	Juniperus communis var. saxatilis Pall.	388
	Cupressaceae	Juniperus communis var. depressa Pursh [1]	Juniperus	U.S.A.	Nevada		325
	Pinaceae	Pinus nigra subsp. pallasiana (Lamb.) Holmboe	Pinus	Ukraine	Crimea		284
	Pinaceae	Abies yuanbaoshanensis Y.J. Lu & L.K. Fu	Abies	China	Guangxi		283
	Pinaceae	Pinus lawsonii Roezl ex Gordon	Pinus	Mexico	Michoacan		276
	Pinaceae	Abies nordmanniana (Steven) Spach subsp. nordmanniana	Abies	Georgia	Caucasus Mts.		265
	Araucariaceae	Araucaria hunsteinii K. Schum.	Araucaria	Papua New Guinea	Morobe Province		206
	Cupressaceae	Libocedrus plumosa (D. Don) Sarg.	Libocedrus	New Zealand	North Island	Juniperus oxycearus L subsp. oxycearus	196
	Pinaceae	Pinus culminicola Andresen & Beaman	Pinus	Mexico	Coahuila		
			Thuia	Canada	Quebec		194
	Cupressaceae	Thuja occidentalis L	Thuja	Canada	quebec	Nageia wallichiana (Presl) Kuntze	194

Here, the summary shows the number of collection events per species. Moving to a different column will update the summary, assuming **Auto-update on column change is selected**. Click on the summary columns to sort by field name or count.

### Apply filters on one of more values

√  lag		lort Last Modified + Autural Species Sort Auto Search Sort, Filter, Qu	Selection :	Hiterinfo. Add - Comments The View Edit Delete - Macond Checks Find. From Editology Edit	Cocuments Q Zoom · Uterature D Copy Wei View		<ul> <li>E Summary</li> <li>Summary (s)</li> <li>Receloutee</li> <li>Calculate</li> </ul>	Export Tagged - Gil Metch-1     Wew     Proof.     Reports -     Import/Export
ollectio	n fvents 🗢 X					2	Column Summary a	nd Value Merging
poth	Collection Year	# Gallertine Date Storg-	Family	# Full Harry	Genus	Country	Column	Summary and Valu
						Barrens	ALC: NO	A SAMA
	1954	02 October 1954	Araucariaceae	Araucaria hunsteinii K. Schum.	Araucaria	Papua Ne-	-	
	1944	07 December 1944	Podocarpaceae	Podocarpus steyermarkii J.T. Buchholz & N.E. Gray	Podocarpus	Venezuela	all'Espert	State of Concession, Name
	1975	19 November 1975	Podocarpaceae	Podocarpus milanjianus Randle	Podocarpus	Tanzania	V Genus	Count
	1975	1975	Podocarpaceae	Podocerpai intelme Pilg.	Podocarpus	Venezuele	Pinus	9,362
	2005	06 November 2005	Ansucariaceae	Anaucaria memorosa de Laub.	Anaucaria	New Cales	Duniperus	5,155
	1973	10 March 1973	Araucariaceae	Agethis orbicula de Leub.	Agathis	Melaysia	Podocarpus	3,423
	1813	1813	Podocerpsoner	Podocarpus spinulosus (Sm.) R. Br. ex Meb.	Podocarpus	Australia	Abies	2,137
	1849	1849	Podocarpaceae	Podocarpus cunninghami Colanso	Podocarpui	New Zeak	Picea	1.893
	1979	10 January 1979	Podocarpaceae	Podocarpus globulus de Laub.	Podocerpus	Melaytia	Tanus	919
							Araucaria	904
	1942	06 May 1942	Podocarpaceae	Podocarpisi subtropicalis de Laub.	Podocarpus	China		896
	1957	13 July 1957	Podocarpaceae	Podocerpus pilgeri Foxw.	Podocarpus	Papua Nel	101 -	866
	1915	20 January 1915	Annucationee	Araucaria muelleri (Carrière) Brongn. & Gris	Acaucaria	New Cale:		
	1980	02 February 1990	Podocarpaceae	Podocerpus urbanii Pilg	Podocarpus	Jamaica	Cupressus	797
	2005	16 November 2005	Amucationee	Ansucaria scopulorum de Laub.	Acquicacia	New Caler	Larix	781
						1000 1000	Tiuga	770
	1971	03 August 1971	Podocarpaceae	Podocarpus orarias R.R. Mill & M. Whiting	Podocarpus	Venuatu	Decrydium	713
	1996	20 August 1986	Podocarpacese	Pisdocarpus milanjianus Rendle	Podocarpus	Malavi	Decrycerpu	s 573
	1964	26 March 1964	Podocarpaceae	Podocarpus nerifolius var. degeneri N.E. Gray	Podocarpus	6ýi	Cephalotas	05 507
	1995	10 May 1995	Podocarpaceae	Podocarpus nerifolius D. Don var. nerifolius	Podocarpus	Philippine	Phylodedu	5 495
	1994	17 November 1994	Podocerpaceae	Podocarpus madegascariensis Bakar ver madagascariensis	Podocerpus	Madegesc	Prumopity	s 432
	1984	19 March 1984	Podocarpaceae	Podocarpus steyermarkii J.T. Buchholz & N.E. Gray	Podocarpus	Venezuela	Pseudotsud	8 398
	1938	July 1938	Podocarpaceae	Podocarpus matudae Lundell	Podocarpus	Mexico	Apply alter	(260 distinct value(s))

The summary option can also be used to apply filters on one or more selected values. You can save a summary list to Excel using the **Export** option provided on the summary form.

### Multi-column summaries

You can also create summaries on 2 or more columns as selected from your visible columns list.

As an example based on data in the conifer training database, you may want to know how many collections were made per country per family.

- Select Collections > Collection events.
- Make sure the columns you need are visible. If not, use the Column Manager to enable them.
- Select Summary (+) on the Data Tools toolbar.
- Using the options provided, add the columns that you want to use to calculate the totals.
- Select Load Summary.

	NoSc		NoFilter	Edit Edit Edit Edit Edit Edit Edit Edit	Record Check     Incord Check     Incord Check	윤 Images S 이 Document 은 Literature	S Copy Value View			Σ Summary Σ+ Summary (+) Calculate		Match/Import Import/Link images port
lection	Events	eΧ						Multi-C	olumn Sum	imary		
Tag	Del	Collectors	Collector Number	Collection Day	Collection Month	Collection Year	# Collection L	M	ulti-C	olumn Sur	mmary	
		Kotov, M.	s.n.	8	7	1955	08 July 1955	Colum	ns Summar	y Saved Column Set	Setup/Designer	
		Lū, YJ.	1001	4	10	1978	04 October 1		Export			Mark Dupl
		Pringle, C.G.	10399	24	11	1907	24 Novembe		export	Filter grid data usir	ng selected row values:	
		Kolakovsky, A.	3201	8	9	1936	08 Septembe		untry	Family	Count	
		Lam, H.J.	7731	2	10	1954	02 October 1	_	ina ina	Podocarpaceae	231	
		Warren, F.M.	s.n.		1	1962	January 1962		ina	Cephalotaxaceae		
		Patterson, T.F.	1102	12	2	1974	12 February		ina	Тахасеае	387	
		Rolland-Germain, [?]	6031	16	8	1953	16 August 19	_	ina	Cupressaceae	1.531	
		Jepson, W.L.	2217	26	6	1903	26 June 1903	_	ina	Pinaceae	2,386	
		Hair, J.B.	s.n.	17	1	1957	17 January 15			- Indeede	2,000	
		Steyermark, J.A.	60876	7	12	1944	07 December					
		Damasur F	E7		e	1053	0414-1053					

The list created can be sort and filtered. In this example, the China filtered list is sorted by total collections per family.

>	NoSo	A Sort: Last Modified      Att and Species Sort     Multi-Search     Sort, Filter, Query	NoFilter	Edit Edit Edit Edit Edit Edit Edit Edit	Record Checks     Dookup		gal 한 Refresh Data + com + 행 #Calc Fields opy Value View	Σ Summary Σ+Summary (+) Calculate	Export Tagged + Match/li     View     View     Reports +     Import/Export	
ction Ev	vents	×			-	Multi-Column Summary	100 COL			
Tag	Del	Collectors	Collector Number	Collection Day	Collection Month	Multi-Col	umn Summary	Burger Be		E
						E hours	- The second		and the	A Cen
		Kotov, M.	s.n.	8	7	Columns Summary Sa	wed Column Sets Setup/Desi	igner		
		Lū, Y.J.	1001	4	10	Export Fil	ter grid data using selected ro	w values: V X	Mark Duplicates	
		Pringle, C.G.	10399	24	11		1-			1.
		Kolakovsky, A.	3201	8	9	Collection Year	▲ Genus	Country new zeal	Major Admin Name	Count
		Lam, H.J.	7731	2	10	1826	Prumnopitys	New Zealand	North Island	2
		Warren, F.M.	s.n.		1		Dacrycarpus	New Zealand		1
		Patterson, T.F.	1102	12	2	1826	Agathis	New Zealand	North Island	1
		Rolland-Germain, [?]	6031	16	8	1829	Podocarpus	New Zealand	North Island	
		Jepson, W.L.	2217	26	6	1834		New Zealand	North Island	1
		Hair, J.B.	s.n.	17	1	-	Phyllocladus		North Island	
		Steyermark, J.A.	60876	7	12	1834	Libocedrus	New Zealand		2
		Damanu, E.	53	4	5	1838	Dacrydium	New Zealand		1
		Bean, W.J.	s.n.	22	1	1839	Lepidothamnus	New Zealand	North Island	1
		Jury, S.L.	11711	4	7	1839	Lepidothamnus	New Zealand	South Island	1
		Howell, J.T.	2279	6	2	1839	Libocedrus	New Zealand	South Island	2
				6	2	1839	Podocarpus	New Zealand	North Island	1
		Lu, S.Y.	14498			1839	Halocarpus	New Zealand	South Island	3
		Hill, S.R.	16722	4	5	1839	Phyllocladus	New Zealand	South Island	3
		Lowe, R.T.	878	22	7	1839	Prumnopitys	New Zealand		1
		Sarlin, P.	241			1839	Prumnopitys	New Zealand	South Island	1
		Court, D.J.	84	28	2	- 1840	Prumnopitys	New Zealand	North Island	

In this example, the number of collections per genus per year per region for New Zealand is calculated.

## Task 13: Saving data to Excel

#### See examples on https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#exporting

Data are easily exported to Excel /csv spreadsheets using the **Export Tagged** option on **Data Tools**. Exporting works only with tagged records. Exports respect applied filters, your currently selected column view and any sorting you may have applied.

In this task, export specimen data from BRAHMS, sorted by family and species name, restricting the export to some columns and the filter selection to holotypes. Adjust filters as necessary, depending on your data.

- Select **Collections** from the main menu and choose 'Preserved Specimen' using the Category drop down.
- Select **Specimens** to open that table.
- Now press F8 or select Grid Tools > Manage Columns and here you can remove any columns you don't want to export and sort the table as wanted.
- Locate the Type Category column and enter 'holo' in the filter bar to apply a filter on Holotypes.
- Select **Tag > Tag all** this will tag records within your filter group.
- You can now use the **Export Tagged** option to save the tagged records. If you do not see the Export option, refer to the section on small screens.

Ta	X NoSort 21 Na [[: Grouping O Mu	st Modified + tural Sp. Sort	ed :=	ons Biblio NoFilter Iree View Find.	Add · Co	cord	ents 웜 In Checks 🔋 D	h Online nages ocument: terature	Grid Tools	€ Refr ∰ #Cal ue	esh Data 🔹	b Links Σ Summary Σ+ Summary (+) Calculate	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	orts 🔹		h/Import rt/Link images		
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	Collectors	Collector Number	Tag	Type Category	<u># Full Name</u>			-	9 · C II									
4				holo ×		1	AutoSave (	on) (								iler 🥌		
	Buchholz, J.T.	1691		holotype	Araucaria biramulata	F	ile Home	Insert	Draw Pa	ige Layout	Formula	s Data Revie	w View	Automa	te Help	PC	Comments	B *
	Illustration	s.n.	•	holotype	Araucaria rulei			А	$\equiv$	%	K Condi	tional Formatting ~	Ē	$\cap$				
	Moore, C.	8	*	holotype	Callitris columellaris		Paste D ~	Font	Alignment	/O Number	Forma	it as Table ~	Cells	Editing	Add-ins	Analyze		
_	Hoogland, R.D.; Schodd	7463		holotype	Dacrycarpus expansus		~ <\$	۷	~	~	Cell S	tyles ~	~	~	1100 1110	Data		
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-	Brass, LJ.	30568		holotype	Dacrycarpus imbricatus v	A1	~	: × 5	/ fx Coll	ectors								
-	Steup, F.K.M.	22857		holotype	Dacrycarpus steupii [1]	-	A Collectors		FieldNumbe	B	Tag	C	D		CalcFullN	E	CountryNa	F
-	Vieillard, E.	1260		holotype	Dacrycarpus vieillardii		Buchholz, J.T.		1691		*		lotype			biramulata	New Caledo	
_							Illustration		s.n.		•		lotype		Araucaria		Unknown	
	Vieillard, E.	1262		holotype	Dacrycarpus vieillardii		Moore, C.		8		•		lotype			olumellaris	Australia	100000
	Nimsch, H.	5122	•	holotype	Dacrydium × suprinii		Hoogland, R.D.		378		:		lotype			ous expansus	Papua New	/ Guin

Exporting tagged records to Excel.

You can list all saved files using the **View** option on the Export Data toolbar section.

## Task 14: Adding and Deleting records

### Adding records

New records are easily added to your database. If you are working on a non-personal database, you may need permission to add/edit data in different tables. But if you are logged in as Admin level to the training database, you will have full access to all functions.

Adding records efficiently in bulk is a separate process that uses the BRAHMS module called Rapid Data Entry (RDE). This is discussed elsewhere. This section looks at adding records one by one.

When you add a new record, the record will appear at the top of the table. The 'Added On' and 'Added By' database audit fields are updated for all new records.

- Select **Taxa > Species** to open the main species table.
- Select the Add option on the main toolbar. The system will automatically go into Edit mode.

Note: if you are not in Edit mode, all records will be read-only.

• When you add a record to the species table, the **Genus Selector** form auto-opens. This is because a genus name (even if indet.), is required. If the genus you want is not yet stored in your genus list, you will need to add that first using **Taxa > Genera**.

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J To		NoSe Sort	ort 11 Netural Sp. 5 iping DMulti-Search	ion T 🗄 Tree Vie	w Eda X Delete - [] Ra	cord Cl okup		Copy Value	한 Refresh Data 웹 #Calc Fields	∑> Sum	nmary nmary (+)	Export Tagg  View  Reports •
ip:	cies 4	×				20	1 Hr. Chi		A	8 M		10 - M
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	•		acc culti acc	Pannariaceae Olesceae Restionaceae	Erioderma mollissimum (Samp.) Du Ligustrum japonicum Thunb. Rotu Restio stereocaulis Mast.		axon Status Genus tri* acc Triscenia	halum	Gens X Grise	s Author b.	Family	

When you add a genus name to the species table, the family and any higher level classification is also added.

- You can now proceed to add in more data to the new record for example the species name itself and infra names if you have.
- Using the toolbar **Form** option, you can add and edit data using the form rather than the grid. Forms are further discussed below.

The same procedures can be used to add records to all tables. There will be some variations as required fields will vary from table to table.

#### **Deleting records**

In all BRAHMS tables, record deletion is a 2-stage process.

- Locate a record that you want to delete it might be the record you have just added.
- Press the **DEL** key or click on the **X Delete** toolbar. Note that \* is added to the DEL field and the record goes to strikeout font. All tables have a DEL field.
- The record is not yet deleted it is only marked for deletion. You can reverse the above by removing the DEL field \* manually, or by clicking again on **DEL** or the **X Delete** toobar option when on the deleted record.
- To finally delete the record and indeed any other records that have the \* in DEL, on the toolbar, on the toolbar, select **Delete > Remove records marked for deletion**.

If you delete a record that has children records – e.g. a species with linked collections, BRAHMS reports the consequences. For example, you may be warned that the species you want to delete has linked collections.

## Task 15: Using forms for data entry and editing

#### Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#speciesformvideo

Forms are provided for most tables. They can be used for editing and often provide additional options to view and cross-reference data in other tables. Forms update as you move to new records. They can be undocked and re-sized. If you are not in **Edit mode**, data cannot be edited/saved.



The form icon indicates if you are in Edit mode or not.

Most forms have the option to edit data and then **Save** or **Cancel** the edits made. Once any edits have been made, the form is given a red surround.

- Select Taxa > Species and then select the Form option on Data Tools.
- Review the various form tabs, moving through grid records to update the form data.

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	Podocarpus	micropeduncula	tus de La	ub				0.		0.4117		1			×	-

Data can be viewed and edited using grids or forms. Forms can be resized, docked or dragged to separate monitors.

 To hide unwanted fields on the species form, select System > Options > Taxa > Species Form and here you can choose to hide unwanted species epithets.

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ame	Genus	Species	Species Author	Species Form
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pus beccarii	Podocarpus	beccarii	Parl.	
pus neriifolius var. atjehensis	Podocarpus	neriifolius	D. Don	# Full Name Podocarpus micropedunculatus
pus urbanii	Podocarpus	urbanii	Pilg.	# Accepted Name Podocarpus micropedunculatus
pus gibbsiae	Podocarpus	gibbsiae	N.E. Gray	Nomenclature Descriptive Texts Collection Summary Species Features Custom Fields
pus fleuryi	Podocarpus	fleuryi	Hickel	Collection Events (All Preserved Specimens Accessions Plants Germplasm
pus montanus var. diversifolius	Podocarpus	montanus	(Willd.) Lodd.	Specimen Category Institute Code  Barcode  Type Category  # Type Of  Collect
pus glaucus	Podocarpus	glaucus	Foxw.	specimen category insuture code parcode Type category # Type Or Collecti
pus sellowii	Podocarpus	sellowii	Klotzsch ex Endl.	Herbarium sheet K K000289440 Lauben
pus pilgeri var. thailandensis	Podocarpus	pilgeri	Foxw.	Herbarium sheet L Brunig.
pus imbricatus [1]	Podocarpus	imbricatus	Blume	Herbarium sheet A holotype Podocarpus micropeduncula Lauben
pus neriifolius var. bracteatus	Podocarpus	neriifolius	D. Don	Herbarium sheet L Yacup, I
pus montanus var. meridensis	Podocarpus	montanus	(Willd.) Lodd.	Herbarium sheet L Smythi
pus micropedunculatus	Podocarpus	micropedunculatus	de Laub.	Herbarium sheet NY 1381 isotype Podocarpus micropeduncula Lauben

Summary of collections displayed from the main species form. Move to a new species in the grid to update the form.

## Task 16: Using field lookups

When editing data, the challenge is to maximise efficiency. You can use function keys; some handy tools such as value merging; and using **Lookups**. Lookups minimise typing and help standardise your data.

There are two main categories of Lookup. Those that link to other main tables in BRAHMS such as species, place names and collection events. And those for all other fields such as habit, IUCN category and taxon status. These may be standard or custom fields.

### Activating lookups

In this guide, you have already used a lookup when adding a new species record as this action opened the Genus Selector. You can activate the Genus Selector (and any other lookup in an appropriate field) by:

- Clicking on the Lookup option on the main toolbar.
- Pressing F9.
- Typing Ctrl+L.
- Selecting Lookup on the Right-Click context menu.

#### Using standard lookups

- Select **Taxa > Species** to open the main species table. Make sure you are in Edit Mode.
- On any record, click in the genus field and press F9 or use one of the other lookup options. This will open the Genus Selector allowing you to change the Genus name of the current species.

#### Another example:

- Select **Collections > Collection Events** to open that table. Make sure you are in **Edit Mode**.
- On any record, click in a geographic field such as Locality Name and use a lookup to select a place name.
- In the map field Latitude, use a lookup this will open the Map Point Editor.

### Registering lookup values in the central Lookup Fields table

Lookup values for all fields that have lookup capability (excluding those that link to other BRAHMS tables such as the genus name example above) can be registered manually or by importing from an Excel list. Lookup fields can be single or multi-value lookups. Here's an example with IUCN Red List categories:

#### Lookup for IUCN categories

If you are using the conifer demo database, the field IUCN is probably already registered as a lookup called IUCN. As a useful exercise, you can delete this lookup field and its values – and then re-add it.

- Select **Management > Lookup Fields**. Locate the field IUCN. If you press the option Show Field Lookup Values, you will see the list of IUCN categories listed.
- Assuming the field is present, mark this look entry for deletion and then delete the record. Refer to the general section on deleting records for help.
- Now select Taxa > Species. Locate the field IUCN Red List. If is not visible, switch it on using the Column Manager (F8). In the conifer database, Red List values (EN, VU, CR, etc.) are already added for most accepted names.
- In the species table, ensuring you have clicked in the IUCN field, select the main **Edit** toolbar dropdown and then select **Edit lookup values...** you will see how all of the existing values in the species table are listed on the left. You can use the options provided here to register some or all of the values as lookups. Once selected, close this form.
- If you now move to **Edit mode**, you will see the IUCN field is a dropdown where you select a value.
- If you now select **Management > Lookups Fields** again, you will see your newly registered IUCN lookup field.

## Task 17: Create maps using the ArcGIS API

See examples on <u>https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#mapping</u> Video: <u>https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#mappingvideo</u>

You can also map your data to ArcMAP, QGIS, DIVA, Google Earth and GeoCAT. These topics are explained in the manual. If you use QGIS, refer to the QGIS videos on https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos.

#### Internal mapper - advantages

The in-built ArcGIS API provides a wealth of handy mapping features which you can take advantage of without installing any GIS software. You do need to be online. Some advantages of the in-built ArcGIS tool: \* No installation required; \* data points are highlighted on the map as you browse through your data grid; \* clicking on a map point locates the grid record, an excellent way to locate errors; \* maps are auto-updated as you apply grid filters; \* calculation of Extent of Occurrence (EOO); \* selectable base map including world imagery; \* map tagged only or map all; \* exclude cultivated records; \* search maps; \* save map as a png file and import to a document.

- Select Collections > Collection events then select Maps followed by ArcGIS in BRAHMS.
- Maps respect filters and, by default, will only plot tagged records.
- To plot records, tagged or not, adjust the Tagged only option.



In the above example, nothing is mapped because there are no tagged records and the option "Tagged Only" is selected.

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	Hinton, G.S.		19366			1989	Pinaceae	Pseudotsuga menzie	Mexico		
	Buchanan, A.M.		9508	14	1	1987	Phyllocladaceae	Phyllocladus asplenii	Australia	Start and the second start of	
	Turczaninow, N.S.		s.n.			1835	Pinaceae	Abies sibirica subsp	Russia		
	Wilde, W.J.J.O. de; Wilde		10044	14	11	1966	Podocarpaceae	Afrocarpus gracilior	Ethiopia		
	Lewalle, J.		9000	11	4	1979	Cupressaceae	Cupressus duprezian	Morocco		
	Heckard, L.R.		1678	13	8	1967	Pinaceae	Pinus balfouriana	U.S.A.	and a second	
	Moldenke, H.N.		10396	27	3	1938	Pinaceae	Pinus resinosa f. Mat	U.S.A.	Caller and the second	
	Yu, T.T.		11271	14	5	1937	Taxaceae	Torreya fargesii var	China	· · · · · · · · · · · · · · · · · · ·	
	Martin, P.S.		046	26	2	1953	Pinaceae	Pinus hartwegii	Mexico		
	Huang, T.C.		2071	14	2	1961	Cephalotaxace	Cephalotaxus harrin	Taiwan		
	Chapman, J.D.		328	28	12	1956	Cupressaceae	Widdringtonia whytei	Malawi		
	Grierson, A.J.C.; Long, D.G.		1871	13	6	1979	Pinaceae	Picea spinulosa	Myanmar (Bu		
	Zanoni, T.A.		2718	22	12	1973	Cupressaceae	Juniperus monticola	Mexico		
	Veldkamp, J.F.		7037	17	6	1975	Podocarpaceae	Podocarpus rubens	Indonesia	N 4 (19) TAN	
	Vargas, I.G.		301	2	9	1989	Podocarpaceae	Prumnopitys exigua	Bolivia	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	King, R.M.; Garvey, R.M.		12384	11	3	2003	Pinaceae	Picea engelmannii s	U.S.A.		1
	Rohlena J.		s.n.		8	1927	Cupressaceae	Juniperus communis	Manhanana		

A map displaying all conifer collections. The setting here does not restrict to tagged records and a dark grey base map is selected. The current data grid record in Mexico is highlighted on the map with a yellow dot.

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ction E	events -⊨ X			Major Admin	Minor Admin			ArcGIS Map		
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983	Phyllocladaceae	Phyllocladus trichom	New Zealand	North Island	Central Volcanic	Motuoapa *isla			Contraction Mathematica	
938	Podocarpaceae	Halocarpus bidwillii	New Zealand	South Island	Southland	Mossburn				
912	Podocarpaceae	Lepidothamnus laxif	New Zealand	South Island	Westland	Mt. William			The Mall of	
997	Xylariaceae	Rosellinia sp.	New Zealand							
000	Teratosphaeria	Teratosphaeria crypti	New Zealand				Kaikohe, Knudsen Rd, John			
949	Podocarpaceae	Podocarpus nivalis	New Zealand	North Island	Tongariro N.P.	Mangatepopo	near Mangatepopo Hut			
948	Cupressaceae	Libocedrus bidwillii	New Zealand	South Island	Westland	Mawheraiti				
957	Podocarpaceae	Prumnopitys taxifolia	New Zealand	North Island	Tongariro N.P.	Lake Rotoaira				
929	Araucariaceae	Agathis australis	New Zealand	North Island	Great Barrier Isl	Mt. Hirakimata [				
961	Podocarpaceae	Dacrycarpus dacrydi	New Zealand	North Island	Wellington	Kaitoke Waterw				
000	Indet.	Fairmaniella leprosa	New Zealand				Panmure lagoon			
984	Cupressaceae	Libocedrus plumosa	New Zealand	North Island	Bay of Islands	Puketi Forest	NE of Waikape Stream			
967	Podocarpaceae	Podocarpus nivalis	New Zealand	South Island	Marlborough	Lake Tennyson	SE end of lake			
000	Podoscyphaceae	Podoscypha petalodes	New Zealand				Rotorua, Whakarewarewa F	and the second		
972	Podocarpaceae	Podocarpus totara	New Zealand	South Island	Westland	Cronadun		100		
010	Phyllocladaceae	Phyllocladus toatoa	New Zealand	North Island	Northland	Whangarei Heads				
952	Podocarpaceae	Podocarpus totara	New Zealand	North Island	Wellington	Taita		122.21		
99	Phanerochaeta	Phlebiopsis gigantea	New Zealand				New Plymouth, Intercepted		Par and and	
917	Podocarpaceae	Prumnopitys ferrugi	New Zealand	North Island	Waikato	Pukeatua		DE		
990	Podocarpaceae	Lepidothamnus laxif	New Zealand	South Island	Fiordland	Borland Burn	["south branch"]	the and		
010	Podocarpaceae	Dacrydium cupressi	New Zealand	North Island	Gisborne	Wharekahika Ri				

Here, a filter set on New Zealand with the base map set to World imagery. The point colour has been changed and the current grid record is highlighted.

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lection Events	eΧ							ArcGIS Map
Collection Year	Family	# Full Name	Country		<u>Minor Admin</u> Name	Locality Name	Locality Notes	Satellite Base Y
			"new zealand" ×					Enable/disable map point selection (0 selections)
2010	Podocarpaceae	Podocarpus totara	New Zealand	North Island	Northland	Rotu Bush		101 3M 1022 9
1977	Podocarpaceae	Prumnopitys taxifolia	New Zealand	North Island	Hauraki Gulf	Little Barrier Isla		A CARL AND A
1920	Podocarpaceae	Dacrycarpus dacrydi	New Zealand	North Island	Northland	Ruatangata		
1985	Podocarpaceae	Lepidothamnus inter	New Zealand	North Island	Coromandel Ra	Maumau Paki		
1964	Podocarpaceae	Podocarpus cunning	New Zealand	North Island	Western Volcani	Pureora		
1974	Araucariaceae	Agathis australis	New Zealand	North Island	Northland	Ohaeawai		
1955	Podocarpaceae	Manoao colensoi	New Zealand	North Island	Northland	Kaitaia		
1992	Podocarpaceae	Prumnopitys ferrugi	New Zealand	North Island	Bay of Plenty (g	Mayor Island		
1984	Phyllocladaceae	Phyllocladus trichom	New Zealand	North Island	Bay of Islands	Puketi Forest	Bramley's Ridge	
1988	Cupressaceae	Libocedrus plumosa	New Zealand	North Island	Waikato	Pukemokemoke		
1867	Podocarpaceae	Halocarpus kirkii	New Zealand	North Island	Hauraki Gulf	Great Barrier Isl		
1958	Araucariaceae	Agathis australis	New Zealand	North Island	Coromandel Pe	Te Mata		
1956	Podocarpaceae	Podocarpus cunning	New Zealand	North Island	Coromandel Pe	Tairua S.F.		692.6759
1938	Phyllocladaceae	Phyllocladus trichom	New Zealand	North Island	Auckland	Warkworth	along Bluff Road	F AN
1964	Podocarpaceae	Prumnopitys ferrugi	New Zealand	North Island	Great Barrier Isl	Port Fitzroy	track to Whangapar	
1983	Podocarpaceae	Lepidothamnus laxif	New Zealand	North Island	Waikato	Herangi Hills		A A A A A A A A A A A A A A A A A A A

Here the map toolbar options Draw Search Area and Search Map Area have been used. The records in the data grid have been filtered accordingly.

• To add a map image to a document, you can select **Map Screenshot** on the map toolbar. This creates a png file which you can easily import to your document.

## Task 18: Images and Documents

See examples on https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8#images

#### Images

Images can be linked to any record in BRAHMS. You can link multiple images to the same record. All images are listed in the central images table with their full pathname or web URL.

Images may be stored in any location including media libraries and on the cloud. Read more about <u>managing</u> <u>images</u> in BRAHMS. You can store links to images using a URL – no need to have a copy of the image file.

Images can be viewed from the main image file and/or wherever they are linked. As an example, you can link some images to a species:

- Select Taxa > Species. On Data Tools, select Images... to open the Image Viewer.
- You need to make sure you are in **Edit mode**.
- Now, you can either use the Link ... button or drag images to the Image Viewer.





The Image Viewer has several handy toolbar options (Rotate, Zoom, etc.). You can also use F keys and your mouse to control the viewer, for example Shift + mouse wheel = zoom in/out around central point.

Images can be transferred from Excel files to RDE and also from RDE to BRAHMS.

#### **Documents**

Multiple documents of any type can be linked to records in BRAHMS. This could be a Material Transfer Agreement; a collection permit for a specimen; a protologue description linked to a species; a sound file linked to an animal entry; or perhaps a video or slideshow linked to a botanic garden location.

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rder	Family	Genus	Species	Species Author	- 10 Br 12	Documen		A 0	
	Cupressaceae	Cupressus	sempervirens	L				the los	18 Am
	Pinaceae	Abies	taxifolia	(Lamb.) Poir.	-				
	Cupressaceae	Juniperus	formosana	Hayata	54	documents\Measu		ISX	
	Pinaceae	Pinus	takahasii	Nakai	C:\BRAHMS	documents\Pheno	ology.pptx		
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	Pinaceae	Pinus	rotundata	Link	C:\BRAHMS	documents\Interv	iew.wav		

*Linking pdf, docx, wav, pptx and xlsx documents to a species record. Media and documents can be opened using the Open option or double-clicking on the linked entry.* 

- Select Taxa > Species and go to Edit mode.
- To link a document, select the **Documents** toolbar option.
- You can now link one or more documents to the current species record.

## Task 19: Merging values and records, using Find/Replace

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#mergevalues

The tasks here demonstrate Value Merging and Record Merging.

### Value merging

The Column Summary tool, as well as listing and giving a count for each different value in the selected column, can be used to quickly clean up data errors in non-relational, non-read-only fields. Value merging standardises different spellings of the same value in a column – and is a fast way to find and clean these errors. You can use value merging in any table – as long as the field is not read-only.

- In the conifer demo database, select Geo > Gazetteer and select the Major Admin Name and/or Minor Admin Name columns.
- Select the Summary tool on the Data Tools toolbar. Sort the summary record by values by click on the value header.

mn Summary and Value Merging

Tag the value(s) to be merged - then select the correct value by click on that record (no need to tag). Use Merge to Selected to complete the task.

	Column Summary and Value Mer	ging		Column Summary and Value Merging
Major Admin Name			Minor Admin Name	
		ary and Value Merging	che	Column Summary a
E Brunei			Apache Co.	
	Export 🕅 Merge to S	elected	Chernyvetska Oblast	Export 🔒 Merge to Selected
Alberta	Major Admin Name	Count	Baicheng Xian	Minor Admin Name Cou
Colorado	Almaty	2	Bouches-du-Rhône	Chernyvetska Oblast
North Island	Almeria	2	Chengkou Xian	Chernivets'ka Oblast
New Mexico	Alpes Maritimes	7	Xiangcheng Xian	Chernivetska Oblast
South Island	Alpes-Maritimes	3	Labiche River	Chernihiv Oblast
Caucasus Mts.	Alps	1	N.P. Sachsische Schweiz	Cherkas'ka Oblast
Grande Terre	Alsace	9	Apache Co.	Cherangany Hills

In the example on the left, either spelling of Alpes-Maritimes may be acceptable but clearly, it is better to be consistent. The right-side example is in the Minor Admin Name column where you will find plenty of other entries to correct. Note that a grid filter has been used with the Minor Admin example to narrow down the summary entries.

### **Record merging**

Record merging leads to 2 or more similar or identical records being merged into one record with a resulting deletion of the merged records. When record merging takes place, the system must ensure all child records are moved to the selected record. Record merging is used to clear up double (or more) entries of entire records – for example if you had two or more entries in the genus table for the same genus, both with linked species, you could not simply delete one, you would need to merge the records.



The Merge records tool is found on the Edit dropdown.

In this example, you can merge some gazetteer records.

- In the conifer demo database, select Geo > Gazetteer and enter 'jiang' in the grid filter bar for the field Locality Name. Click on the column header to sort by name. Locate the entries 'Nu Jiang - Qi Qu divide' which is entered twice, slightly differently.
- Tag the one you want to remove and then select the record to merge into. Then select the Merge option on the Edit dropdown on Data Tools.

Country	Major Admin Name	Minor Admin Name	Locality Name
			jiang
China	Xizang (Tibet)	Chamdo	Jiangda Xian
China	Sichuan	Longmen Shan	Jiange Xian
China	Hunan	Yongzhou	Jianghua Yaozu Zizhixia
China	Guizhou Records	NE Guizhou	Jiangkou
China	Records		Jiangkou
China 6	You are about to irreversibly me		Jiangpu
China	currently selected target record		Jin Jiang
China	This operation cannot be revers	ed	Jiujiang
China	Are you sure you want to proce	ed?	Lijiang
China	r		Lijiang Naxizu Zizhixian
China		Yes No	Longjiang Forest Statio
China	Jilin	Fusong Xian	Manjiang

In this example, the calculated field shows each of these Nu Jiang records has 1 linked collection event. These will be joined under the selected entry.

### Find and Replace

On the **Data Tools > Edit** dropdown, you will find the **Toggle Find/Replace Tool.** Assuming that you have permission to use this, this tool provides an excellent way to tidy up and edit data in the active column. For example, in the conifer training database:

Select **Taxa > Species** and ensure the TaxStatus column is visible.

Click in that data column and then open the **Toggle Find/Replace Tool** on the Eidt dropdown.

The task here is to replace the text 'acc' with 'Accepted'

Syste	am Raj	pid Data	Entry Taxa Geo	Collections Biblio	Images/Documents Management Publish Online	e Grid Tools Data Tools Web Links
✓ ∵ Tag	∑t Sort ➤ NoSor [t≣ Group	t ĝį	Sort: Last Modified • Natural Species Sort Multi-Search Sort, Filter, Query	X NoFilter     E Tree View     P Find_	HAdd · Comments Add · Comments Delete · I Record Checks ③ Docu Form ☆ Lookup ۞ Litera Edit	ments Q Zoom • * # #Calc Fields Σ+ Summary (+) 📄 View 🚺 Import/Link images
Species	s 🗄 X				×	Find and Replace
Tag	9	Del	Taxon Status	Family	# Full Name	Find and Replace
_			syn	Pinaceae	Pinus uncinata var. zonata Hartig ex Willk.	
•			syn	Pinaceae	Abies lasiocarpa var. fallax (Engelm.) Franco	Find and replace text in the current column (text, integer, decimal and boolean columns only).
_			syn	Cupressaceae	Juniperus davurica subsp. maritima Urussov	To replace null or empty values leave 'Replace' blank. To replace with a null value, leave 'With' blank.
_			acc	Pinaceae	Pinus pungens Lamb.	To replace all text values (null, empty and non-null) enter "%' on its own in 'Replace' and a replacement value, if required, in 'With'.
_			syn	Pinaceae	Larix dahurica var. japonica Maxim. ex Regel	
_			acc	Cupressaceae	Athrotaxis cupressoides D. Don	The "Replace" term can start and/or end with a "% wild card: "%term%' is equivalent to 'contains term;" term%' is equivalent to 'starts with term; "%term' is equivalent to 'ends with term'. To match only whole words you can include spaces. For example "% term % would match 'term' only when prefixed and suffixed by a space.
			syn	Podocarpaceae	Podocarpus ulugurensis Pilg.	term % would match term only when prerixed and surrived by a space. NB. To use a literal % (percentage) character in the 'Replace' term you can double it, so, to find the text 100% you should use
			syn	Cupressaceae	Sabina pseudosabina (Fisch. & C.A. Mey.) W. C. Cheng $\boldsymbol{\xi}$	'100%%' as the 'Replace term (or %100%%%' for 'contains 100%'
			syn	Araucariaceae	Agathis robusta var. palmerstonii (F. Muell.) Silba	The "With' term will be substituted for the 'Replace' term exactly as entered.
			syn	Cupressaceae	Callitris subumbellata (Parl.) Schltr.	Optionally restrict edits to tagged records. Current filter settings are always respected.
			syn	Taxaceae	Taxus caespitosa var. latifolia (Pilg.) Spjut	
_			syn	Pinaceae	Pinus orizabensis (D.K. Bailey) D.K. Bailey & Hawksw.	Current Column: Taxon Status
			acc	Pinaceae	Abies alba Mill.	Replace acc
			syn	Cupressaceae	Cupressus sempervirens var. sphaerocarpa (Parl.) Parl.	With Accepted
_			syn	Cupressaceae	Cuprespinnata disticha (L.) J. Nelson	Options In tagged Records Only* Reset Replace
_			syn	Pinaceae	Pinus cephalonica (Loudon) Endl.	NOTE: Current filter settings are always respected during find/replace operations.
				-		1

Fill in the Replace and With options. Optionally restrict the update to tagged records. Note that if you are replacing part of a string, you need to use % wildcards as described on the form help text.

## Task 20: Adding custom fields to BRAHMS

BRAHMS databases and the tables they contain are provided with a defined structure. However, as well as defining the data columns that you choose to see in your data grids, you can add new data storage fields that are specific to your project.

You can choose the field name, type and size. These custom fields become a permanent part of your database unless you subsequently opt to delete them. This also applies to RDE files.

- Select **Collections > Collection events** or another table if you prefer.
- Select Grid Tools > Manage Columns.
- Add one or more new columns using the Custom Columns tab. Field names can include spaces.

and the state of		What type of dat	a will be stored here?	
Column Management	and the second second	Field Data Type	Text	×
Select/Deselect Al Filter		What column he	ading do you want?	
Move column: Up Earling Top Earling	Show/hide columns using the list checkboxes. Use the sp/down buttons to ownge column ordering.	Column Name	My notes	]
Samp Name Habitat Text Threats	Optionally, save column anrangements using the "Save As" button or load previously saved anrangements by selecting from the "Load" list.	Max. Chars	\$	
Invest     Plant Description     Height     OBH     Abundance	Optionally, add/wdf custom columns below.	NB. For maximum value or set to 0.	n length text fields (like memos), clear the 'Te	ext Max Chars'
Count     C	What type of data will be stored here? Field Data Type [Datas	Column Manac	Sement Benyhold columns using the lat checklesses () column codering. Optionally, use column paragements using the processory used amagements by selection from Optionally, and column columns below.	Save As.," button or load
Collector Name Sorter Collector Name Sorter Collector Name Sorter Frence Tag Collector Name Sorter Collector		Field Det  Des Uses  Deno Cult  Cultivation Notes  General Notes  Label Total	Custom Colvern Wing venation notes Excloseration colour Mourted Book weigh	Deta Type Text X Text X Boolean X Real No. X
Created On     Zorskeleton colour     Zorskeleton colour     Zorskeleton colour     Zorskeleton     Sody length		tratial     Assilable     Curste Note     Origin Db     Origin Id	When mounted To rename a column: Double-click it's name, accept or press Esc. to cancel your changes.	Date X

The Column Manager form - options to add and edit custom columns are enlarged on the right side.

On this form, you have the option to add new fields. If the field is of type Text and you set Max. Chars to NULL or 0, this creates a text field equivalent to a v7 memo field. Using the **Editor** tab options, you can list and remove your custom fields. Field position can be modified using the buttons provided above the field list. You can also load existing field layouts, edit and save as a new layout.

	Longitude	Elevation	Habitat Text	Wing venation notes	Exoskeleton colour	Mounted	Body length	When mounted
330000	-123.5666670000	0						
330000	100.0833330000	3000	in forest on mountain slope					
3330000	175.0666670000	152						

Custom fields appear in your main data grids, assuming they are selected for inclusion in your data grid view. They have a different font to standard fields.

## Task 21: Register and open a Rapid Data Entry file

Video: https://herbaria.plants.ox.ac.uk/bol/brahms/software/v8videos#labelstoppt

While data can be entered directly into BRAHMS, RDE is recommended for entering larger numbers of records and also as a first step when importing or transferring data from other software packages such as Excel.



RDE files are entirely separate mini **SQLite databases** linked to your main BRAHMS database. They provide portability and flexibility – optimising data entry and cleaning.

You can store data in one or more RDE files and use these data to create summaries, maps, reports, manage images, and in general, use most of the BRAHMS tools and functions.

This example opens an RDE file of specimen data prepared by John Wood (Oxford based botanist) from his field work in Bolivia.

- First download the file <u>RDE Bolivia JRIWood.zip</u> and open the zip to the folder Documents/BRAHMS/RDE. This is the default location for RDE files. The zip file includes an RDE file of specimens and a report template sample for labels.
- Log into BRAHMS choosing any project and select Rapid Data Entry > RDE File Manager. This will list any RDE files located in your registered RDE folders.
- To open the RDE file downloaded above, double-click on the RDE manager entry 'JRI Wood Bolivia'.
- Explore this RDE file using the **Summary** option on Data Tools.

s	System	F	tapid Data Entry Taxa	Geo Collections B	iblio Images	Management	Publish Online	Grid Tools	Data Tools	Maps \	Web Links	
Ta			:: Last Modified 🔹 🗙 NoSo ural Species Sort	rt 🖉 🎜 Selecti	•	Edit	Add - Com Delete I Reco Form I Look	ord Checks	A Images	Copy Ce		h Data ▼
_		Bolivia itional D									n Summary and Valu	4
7	ag	Del	Institute Code	Collectors	Collector Number	Collection Day	Collection Month	Collection Yes	ar <u>Family</u>			
- -			FHO	Wood, J.R.I.	26404	12	11	2009	Asterace	_		rge To Select
-			FHO	Wood, J.R.I.	26467	18	11	2009	Asterace		Family Convolvulaceae	Count 81
•			FHO	Wood, J.R.I.	26602	1	12	2009	Asterace	e 🗌	Leguminosae	71
_			FHO	Wood, J.R.I.	26627	9	12	2009	Asterace	e 🗌	Poaceae	48
-			FHO	Wood, J.R.I.	26686	2	5	2010	Asterace	e 🗌	Asteraceae	39
_			FHO	Wood, J.R.I.	26712	14	5	2010	Asterace	e 🗌	Euphorbiaceae	31
-			FHO	Wood, J.R.I.	26717	14	5	2010	Asterace	e 🗌	Myrtaceae	24
-			FHO	Wood, J.R.I.	26749	14	5	2010	Asterace	e 🗌	Malvaceae	23
-			FHO	Wood, J.R.I.	26754	14	5	2010	Asterace	e 🗆	Rubiaceae	19
-			FHO	Wood, J.R.I.	26776	15	5	2010	Asterace	e 🗌	Cyperaceae	16
-			FHO	Wood, J.R.I.	26784	15	5	2010	Asterace	e 🗆	Melastomataceae	10
											Bignoniaceae	

An RDE opened with a column summary in the Family field. The summary shows the number of records per different family. Clicking in a different column will update the summary.

### **RDE folders**

All users, regardless of their database role, have access to their default Documents\BRAHMS\RDE folder. Beyond this, non-admin and non-manager users need to be given access to folder(s) by the system administrator or database manager.



RDE files can be stored in any registered folder. New folders are added using the **Add** option of the left panel. Administrators can register new RDE folders and assign access permissions to one or more non-admin level users.

## Task 22: Import from Excel to RDE

Data and images can be imported from .xlsx tables into RDE using the *Excel Data Import Wizard*. This allows you to match the columns in the Excel file to your RDE file. The matching between Excel and RDE columns can be adjusted as necessary to pull in as many fields as possible. This process also allows you to import data from <u>custom fields</u> – assuming the custom fields have been added to your RDE file. Fields in foreign languages can be mapped to the standard names. For example, your Excel table may store country names in a column with heading PAÍS or 国家 or PAYS. The task is to align this with the standard RDE field COUNTRY.

This example uses collection data (species x locality) taken from museum specimens. But you could work with other data, for example, just a list of taxon names. If you do not have your own data to experiment with, download the sample Excel:

https://herbaria.plants.ox.ac.uk/bol/Content/Software/v8/SampleExcel\_RDE\_Import.xlsx.

- Select **Rapid Data Entry > RDE File Manager** then use the **Add** option on the **Data Tools** toolbar to create a new RDE file. Choose the Category '*Specimens*' and provide a file title. Enter Next.
- If you want to add some custom columns to the RDE, use the options provided in the right-side panel. Knowing whether to add custom data fields requires some knowledge of what the default fields are.
- When you Finish, the new RDE will be created and registered in your RDE manager.
- Open the file by double-clicking on the record. Then choose Rapid Data Entry > Import from Excel...
- Follow the Excel Data Importer steps as prompted.

Column Matching:	X Remove All												
RDE Column	Matching Excel Colu	mn	Remove										
Specimen Category			×										
Institute/Museum Code	MUSEUM CODE		×		5								
Accession #		*	×	Excel Data Importe	No. of Concession, Name	1 40	-	-	310	and the second	1000	THE OWNER WATER	
larcode		*	×	test excel table	ulix -	10	1			11 2	1.00		
Collectors	COLLECTOR	*	×	S 11	N	2.4.	- <i>A</i> E	13-	11.00	12		1	Č.
Team	TEAM COLLECTORS		×		×		A85 885	1000	State State			12	
Prefix		w	×	Import Status	Leaf Margin	Collectors	FieldNumber	CollectionDay	CollectionMonth	CollectionYear	FamilyName	GenusName	s
	FIELD NUMBER		×	Import Status Ready	Leaf Margin Entire	Collectors Wood, J.R.I.		CollectionDay 28		1		GenusName Macroptilium	1
Field Number			×				25909				Leguminosae	Macroptilium	1
Field Number Suffix			×	Ready	Entire	Wood, J.R.I.	25909 25913	28		2010	Leguminosae	Macroptilium Stylosanthes	9
Field Number Suffix Collection Day	FIELD NUMBER		x	Ready Ready	Entire	Wood, J.R.I. Wood, J.R.I.	25909 25913 25914	28 29	3 3 3	2010 2009 2009	Leguminosae Leguminosae	Macroptilium Stylosanthes Dalechampia	9
Prefix Field Number Suffie Collection Day Collection Month Collection Year	FIELD NUMBER		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Ready Ready Ready	Entire	Wood, J.R.I. Wood, J.R.I. Wood, J.R.I.	25909 25913 25914	28 29 29	3 3 3	2010 2009 2009	Leguminosae Leguminosae Euphorbiaceae	Macroptilium Stylosanthes Dalechampia	9 5

These screens show the matching process (left) and the data processed and ready to import to RDE. This may not be fully possible if the data are in the wrong format – but you will probably be able to get close. Data in different formats can be adjusted in Excel or processed after transfer to a <u>custom field</u> in RDE.



If your Excel file includes image references as physical file names (path + file name) or URLs, these can be imported to and viewed in the RDE file. If there is more than one image cited in the same field, the entries should be comma or semi-colon separated or on different lines.

									>
Ready	9234	FHC0004654	wood, J.K.I.	25957	Poaceae	sorgnastrum	minarum	DOIIVIA	Sal
Ready	9234	FHO0004654	Wood IRI	25957	Poaceae	Sorghastrum	minarum	Bolivia	Sa
Ready	588122	FHO0231122	Wood, J.R.I.	25934	Poaceae	Sorghastrum	grandifolium	Bolivia	Sar
Ready	5655	FHO0231412	Wood, J.R.I.	25895	Bignoniaceae	Setilobus	bracteatus	Bolivia	Sa
Ready	5433	FHO0002155	Wood, J.R.I.	25958	Asteraceae	Viguiera		Bolivia	Sai

Once the data have been processed by the Excel Wizard, you can then choose to transfer selected records or all the data into your new RDE file.

## Task 23: Transfer RDE data to BRAHMS

### Introduction

Data in RDE files can be easily transferred into BRAHMS. The transfer process starts with an analysis of the RDE data and will tell you about the new data you are about to import. Obvious errors will stop the process. The analysis phase does a lot of checking and in large files, it can take a while.

### Transferring from RDE into BRAHMS

- On the main menu, select **Rapid Data Entry** and open the RDE table you wish to transfer to BRAHMS. You can optionally restrict the transfer to tagged records and if you wish to do that, tag the records to transfer. Otherwise, this is not necessary.
- Back on the **Rapid Data Entry** menu, select **Transfer RDE to BRAHMS....** and on the 'Step 1: Run data analysis' page, you can restrict to tagged if necessary.
- Select **Run Analysis** this will list the data that are new to BRAHMS and those that already exist. The report enables you to review the quality of the data.



A part of an analysis report.

• Now select Next to go to Step 2: Import the Data and select Import Data



The data transfer from RDE to BRAHMS adds new records to your database as needed.

## Task 24: Adding and editing map points

You need to be online to use this feature. The map location editor can be used in RDE and in the main tables for any table with map points. You can use the map location editor to add a new map point or edit an existing one. The editor opens a map form which updates as you move through the data grid. A **right-click** on the map resets the point position and either auto-saves this to the grid or awaits confirmation *via* the **Save** option.

#### Select Collections > Collection events.

• In the opened RDE file, select the **Map point editor** option on the map toolbar. In Edit mode, you can also use the standard F9 lookup from the latitude or longitude fields.

System	Rapid Data E	Entry Tax	Geo Co	ollections	Management	Biblio	Publish	n Online	Images	Grid Tools	Data Tools	Maps
ArcGIS in BRAHMS	Google Earth	DIVA-GIS	Display E	raticule Cle	aw search area ear search areas arch drawn areas	Map Screens	shot	Coord Excluse	dinate conve de cultivatec ed only	rsions Mag	from Gazetteer p point editor	)
	GIS			A	ArcGIS options				D	ata options		

Once opened, the location editor can be used to edit points and altitude in your data grid.



The map location editor displaying the current point, set to Auto-save. In this mode, a right-click on the map will update the Latitude and Longitude values in the data grid without using the Save option. This example screen has no zoom and is displaying the entire globe.



The same point displayed at a very different zoom level. **Right-click** the map to edit point location.

#### Location editor settings

Setting	Notes
Base map	Choose base map that best suits the editing task in hand.
Auto-zoom on/off	If selected, as you move to different records, the map zooms to the current point using your zoom scale setting.
Zoom to marker	Zoom to current point based on your Zoom Scale setting.
Zoom Scale	Choose the optimal zoom setting. Maximum shows a world map.
Reset Zoom	Reset the zoom, if adjusted, to your current setting.
Map units	Select the entry mode for manually editing data.
Lat Long checked	Mark a record as 'map checked'.
Auto-save	If selected, a right-click on the map will adjust the point and save the map point change.

### Location searching

The internal Map Point Editor, dynamically connected to your data grids, has a location search tool. Localities can be searched for by name or part of a name, adding a region or country to help improve the results listed. Clicking on the suggested locations list adds a blue suggestion marker to the map. A **right-click** on the map adds the map reference to the data grid.

	Sant a Catalina		Dumaguet	e
			City	
		AN AN	STP 1	Si qui jor
		一位 出生 电比		
Earthstar Geograph	ics, Esri, HERE, Garmin			Powe
Earthstar Geograph Lat./Long./Elev.	ics, Esri, HERE, Garmin Additional Notes	Location Search	Distance Measurements	Powe
		1	Distance Measurements	Powe
Lat./Long./Elev.		Location Search		

Using the location search option with the Map Editor.

## Task 25: Reporting example

NB: Before running the report sample, be sure to run through the task on #Calc Fields as it uses a calculated field.

You can print reports directly from any table in BRAHMS – also from RDE files. Report design is covered in detail in the BRAHMS manual: <u>https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS\_Manual.pdf</u>.

This report example, included with the demo conifer database, introduces a number of features. These may look complex but the template only took a minutes to prepare. These features are described in detail in the manual.

- Title band: printed once at the start. It includes a text box; a transparent image; the print date; and a line feature.
- A Group Header band: this has a data source Species.FamilyName with a text box for the family name; and a total count of species printed per family. Group headers automatically sort entries based on the data source.
- A Data Band: this has a data source set to the Species table and it has a text box for the species name (calculated HTML format); and the IUCN category. The IUCN category has conditional formatting to only print when non-null. This band has a Sort set on the species name.
- A Data Band: this has a data source set to the Species Texts and it has a text box for the text title and the actual text. This band is set as a Master Component band relating to species. It has a filter set to only print records where the text title is "Conservation".
- A Page Footer band: this has a text box entry and also includes page number/page total.
- A page Watermark with transparency set to 65%.

	Martin States	
Sample report printed on 16/11/2023 This report lists tagged species together with their IUCN Red list status and conserva given. The Family grouping notacides a count of the of taxa per family as included in		Conservation: Historically, this species has been seriously overesploted for both limber and resin. Some populations are now prot in several reserves, including major reserves, across the southern part of the county, but ongoing decline is projected to or observations.
given. The Parmy grouping includes a count of the # of taxa per tarmy as included in	aus report.	Agathis lenticula de Laub. [VU]
		Conservation: This species has been assessed as Vulnerable primarily on the basis of a limited distribution (area of occupancy
Araucariaceae	Taxa total: 38	then 100 km² under LICM 1984 criterini because it swar difficult evidence its decime due to reportantion. More letrature context K from the Cricker fragment of lower space and sideope of MK. Katabala in Sabaha have been deminding at A simple shorts, be AA bare dees occur in the region and betweet space of datagraph them. Exploitation of obm, being tail tesse with lowg, there looks dees occur in the region and betweet space of datagraph them. Exploitation of obm, being tail tesse with lowg, there looks and a start of the region and betweet space of the more spacedly threaded than the more designed appears. A bomenents it could with be hard, hericotati turs out to be more spacedly threaded than the more designed appears. A bomenents
Agathis atropurpurea B. Hyland [NT]		
Conservation: Wherever logging is/was allowed exploitation has been heavy and s	ubpopulations have declined as a result. The extent	Agathis macrophylla (Lindl.) Mast. [EN]
of the decline is not accurately recorded, it this were better quantified this species. Red List Categories and Criteria version 3.1, 2001). A large percentage of the remain A atropurpose is protected in Wurumuru National Park. Agathis australis (D. Don) Lindli. [NT]	could meet criterion A1c,d under Vulnerable (IUCN	Conservation: Overall, this speciois was listed as Near Threatened (UCLN Redict; 1099). However, individual loand populations me be serving threatened or § mit or (Utigan the Satish Car / Car Octo Dyole (in Flagor), Frage, 1099) assessed the speciois segurities on current exploration levels) and Ear (continuing decline in the number of matters individual). Sent Carc Bards - nd evalu Varianti. VU - Valence, UCLN 1995-Cartonic Ad and 25A - Agricuits matcriphils in orage are evaluating interfacts in the Satish Carc Declines.
Conservation: Since the arrival of Europeans in New Zealand, the estimated 1,215.	100 ha once covered by primeaval kauri forests have	Group, though an unlogged population apparently survives on the upper Lawrence River on Vanikoro. A re-assessment using versio of the IUCN criteria (IUCN, 2000) in 2011 concluded that the entire known population is seriously threatened.
been reduced to ca. 7, 500 ha. These remnants are now strictly protected; the large (not all of it is dominated by A. australis) created in 1952. However, natural regener.	st reserve is the Waipoua Forest covering 9,105 ha	
has not changed, is abundant in many places because the species of course do		Agathis microstachya J.F. Bailey & C. T. White [NT]
distubance events. This regeneration is possible, in ecologically suitable locations The Department of Conservation in New Zealand has plants to establish a Kauth N forests. IFUCN Red List criteria were strictly applied to this history of reduction of po- criteria for a listing as (alteras) Ecologications (of mature trees). Conservational to more than 70% over the last three generations (of mature trees). Conservational them it would appear to be a denial of ther successful efforts to curb the destruct	ational Park in order to give full protection to these pulsition size (A criterion). A australis would full the e have now ceased, because the reduction amounts is in New Zeeland object to such a rating because to	Conservation: Before 1985 the population of A morostachya haf nearly been halved by logging but 70% of the forests are protected. The remaining population is estimated to consol of even than 10,000 metanetises. Under IUCA table table transmission 2001) hits species would therefore quality for the status VU, but due to essation of targe-scale logging and effective protection National Park and other protected areas, to there with extinction has been greatly reduced. Logging continues in unprotected areas the decline appears to have been halted.
other hand one could observe that most of the historical reduction will be perman-	ant under human occupation and land use and that	Agathis montana de Laub. [CR]
while the reduction has ceased (and is even being reversed) no one can guarantee be. Taken from another IUCN approach, this species can be assessed as NT for ne degradation is threatened by the spread of a species of Phytophora which affects Ap	arty meeting criterion B2a, b for EN whereby habitat	Conservation: Population decime (dia back) among monitored there was observed to be 5% between October 202 and Feiturey, and a projected the abmonth to 60% within the next 21 years. The activities of their logs causing econon of thin topsoil and not dat combined with an introduced spaces of Phytophetra with efficience is a species causing de back in New Zeaback and (A anstituti enorging the supported causes of their record tection of themate Testes on Mit. Philamic Tha AOD is likely to be between 1200 ha 1
Agathis borneensis Warb. [EN]		population) and 5000 ha (outliers) based on ecology and range modelling. The total population may be ca. 100,000 mature trees. De
Conservation: This species has been very heavily over-explorted in many areas a estimated to have at least been reduced by half and this is still ongoing. Stands co		was not apparent before 2009 but may have commenced some years earlier.
Kalimantan in the 1930s had effectively been logged out by the mid 1960s. Most st	ands outside the few well protected nature reserves	Agathis moorei (Lindl.) Mast. [VU]
(mostly situated in the Malay Peninsula and in Sabah) have been seriously deplete to restore the losses. Habitat degradation has caused further reductions in recruitment		Conservation: This species has been heavily exploited for its limber in the past and consequently it has disappeared or become score in many parts of the forest, especially in more accessible localities. Even in pre-European times its wood was preferred for making of outprogre caroles. Substantial decline has occurred also within recent views and may continue because liegal logalo
Agathis dammara (Lamb.) Rich. & A. Rich. [VU]		making of ouringer cances. Substantial decine has occurred also within recent years and may continue because inegal logging particular concern (Watt in Farlios & Page 1999). However the species still occurs over much of the sland of Grande Terre and o

- Select Taxa > Species. Select Tag > Clear tags > from records in the current grid.
- In the filter row, add "acc" to Taxon Status and "Arau" to family.

Spe	ecies 垣	×			
	Tag	Del	Taxon Status	Family	# Full Name
7			acc X	arau X	
			acc	Araucariaceae	Araucaria araucana
			acc	Araucariaceae	Agathis flavescens
—				A	A47-10-001-00-001-

Setting filters in the main species table.

- Select **Tag > Tag All** to tag all accepted species in the Auracariaceae.
- Select **Reports**. Highlight the report "Species list with conservation data" and then choose **Run**.
- To view or edit the report template, select Reports > Edit Template.

As the report is "Shared", other users logged into this database will also see this report template.

## Task 26: Dynamic weblinks

### Weblink toolbar

You can dynamically link your data records in any table to external websites as provided on the **WebLinks** toolbar. From BRAHMS v8.6 onwards, WebLink options are configurable, allowing you to add websites that you find most useful. As an ornithologist, mycologist, plant taxonomist or a researcher with another interest, you can select personal Web Link connections as well as use sites that are shared across your BRAHMS project.

System	Rapid Data Entry	Taxa Geo	Collections	Biblio Ima	ges/Documents	Management	Publish Online	Grid Tools	Data Tools	Web Links
💃 GBIF 😼 World Flora	JSTOR	CRIA	🚯 iSpot 餐 African Plants	BHL	G Google		y with default Brow nic Updates	ser		
Catalogue of L	ife <i>SP</i> SpeciesLink	uCN Redlis	t iPNI roject	The Plant	List M0 TROPICOS	belowed a set of the s	Link Descriptions arch Link Options			

An example of the weblinks toolbar, edited to show the required website links.

### Add your own weblinks

Web Links can be configured to include search parameters that enable dynamic searching as you move through your data grid records. The Web Links editor on the Management menu includes options to select icons and toolbar text; add the URL with the appropriate search parameters utilizing any BRAHMS data field from the relevant table; set whether the link is personal or shared; choose the BRAHMS tables your weblinks are associated with; and set the order in which they appear. The ability to edit Web Links is permission controlled.

In the following example, a dynamic link to INaturalist is added:

- Select Management > Manage Weblinks and then New Link.
- Enter the data as provided in the below screen.



You can download the logo by searching for 'iNaturalist' logo. Then upload this to the Weblink Editor using the icon lookup. Keep the toolbar label as short as possible. The description is optional. The entry in the URL text field is: <a href="https://www.inaturalist.org/observations?place\_id=any&taxon\_name=<GenusName>+<SpeciesName>">https://www.inaturalist.org/observations?place\_id=any&taxon\_name=<GenusName>+<SpeciesName>></a> but you could also use e.g.

<u>https://www.inaturalist.org/observations/<Int06</u>> where <Int06> is a BRAHMS custom field name holding the iNaturalist ID code.

The field names inside <> are interpreted when you use the weblink, replacing these field names with the actual data values. You can ignore the Parameter Search and Property options as these are to help locate the correct search field names (which in this case we already have).

Setting the availability using the multi-value lookup button is important as this dictates which tables the weblink option will be available for. Thus, if you want this toolbar to appear in the species table, make sure "Species" is added to the availability list.

- Select Taxa > Species to open the main species table.
- Select WebLinks and choose your newly added weblink option.



An example using the above added WebLink

	ist 🛛 😹 World Flora			scriptions	Data Tools Web Links
Species ⇔ ×				GBIF URL: https://www.gbif.org/species/search?q=Neohymenopogon%20parasiticus	
Tag C	Del Taxon Status	Family	# Full Name	Genus	
<u> </u>		Caryophyllaceae	Silene dianthoides Pers.	Silene	- 【 ・ 本 Q ■ 目
		Asteraceae	Echinops knorringianus Iljin	Echinop	
		Fabaceae	Vicia basaltica Plitmann	Vicia	SPECIES ACCEPTED
		Ericaceae	Erica sicula Guss.	Erica	Neohymenopogon parasiticus (Wall.) Bennet
		Rubiaceae	Galium libanoticum Ehrend.	Galium	
•		Rubiaceae	Neohymenopogon parasiticus (Wall.) Bennet	Neohym	Published in: Indian Forester 107: 436 (1981) source: Catalogue of Life Checklist Basionym: Hymenopogon parasiticus Wall.
		Fabaceae	Trifolium cyathiferum Lindl.	Trifoliun	basionym. Hymenopogon parasineus wan.
		Rosaceae	Docynia doumeri (Bois) C.K.Schneid.	Docynia	260 OCCURRENCES 1 INFRASPECIES
		Poaceae	Chloris robusta Stapf.	Chloris	OVERVIEW METRICS
		Apiaceae	Athamanta vestita A.Kern.	Athamai	
		Malvaceae	Hibiscus squamosus Hochr.	Hibiscus	103 OCCURRENCES WITH IMAGES
		Asteraceae	Tephroseris cladobotrys (Ledeb.) Griseb. & Schenk	Tephros	
		Caryophyllaceae	Eremogone congesta (Nutt.) Ikonn. var. congesta	Eremog	
		Anacardiaceae	Abrahamia deflexa (H.Perrier) Randrianasolo & Lowry	Abrahan	
		Proteaceae	Grevillea granulifera (McGill.) Olde & Marriott	Grevillea	
		Caryophyllaceae	Scleranthus fasciculatus (R.Br.) Hook.f.	Sclerant	SEE GALLERY
		Asteraceae	Centaurea varnensis Velen.	Centaur	72 GEOREFERENCED RECORDS
		Lamiaceae	Prostanthera eurybioides F.Muell.	Prostant	
		Primulaceae	Lysimachia nemorum L.	Lysimacl	
		Brassicaceae	Solms-laubachia flabellata (Regel) J.P.Yue, Al-Shehbaz & H.Sun	Solms-L	
		Brassicaceae	Heliophila hurkana Al-Shehbaz & Mummenhoff	Helioph	a attended and the
	acc	Fabaceae	Gompholobium grandiflorum Sm.	Gomphe	
		Simaroubaceae	Castela tortuosa Liebm.	Castela	

Another example using a dynamic link to GBIF.

## Task 27: Creating your own database

You can create a new and separate database project in the same SQLite file that includes the conifer demo. This is done with a few simple steps. When you are logged into the conifer demo database:

- Select System > Manage Database Projects > New.
- Enter the Project Title and any other details as prompted on the Manager form.
- Select **Save**. Highlight your newly named project on the left and select **Load Project**. You will find that this project has no data.

Database Projects New	Import		
Conifer DB October 2021	ID	a2f45ed5-c1f7-4c5b-a7d4-1855c9e1867d	
My new project	Project Title	My new project	
	Description	New Database Project Description	
	Terms of Use	Copyright © 2023 my project	
	Created By	John Smith	
	Created On	01/10/2023	
	Comments		

Adding a new database project to the same store as the conifer database.

You can return to the Conifer demo database by selecting **System > Manage Database Projects** and then load the conifer project. Alternatively, you can select **System > Sign Out** and then log in again, selecting Conifers.

#### Moving up to MSSQL Server or PostgreSQL

In most cases, you will want to create an entirely separate data store which does not include the conifer demo database. As discussed below, for larger projects, especially multiple-user systems, you will use MSSQL Server or PostgreSQL as the data stores.

This guide cannot cover these steps in detail – however the procedures to create such data store are covered in the main guide: <u>https://herbaria.plants.ox.ac.uk/bol/content/software/v8/BRAHMS\_Manual.pdf</u>

Please refer to the guide sections:

- Data stores and databases.
- Data Connections > Creating a PostgreSQL connection and database.
- Data Connections > Creating a MSSQL Server connection and database.

## Task 28: Some challenges

1. Create a view in Collection Events to show the fields Tag, Collectors, Number, Collection Year, Full species name, Country and Major Area. Tag all collections from New Zealand that were collected in 1982. Map these using ArcGIS and export the collection data to Excel.

S) V Taç		Rapid Data Entry 21 Sort - ∰∔Last Mo X NoSort 21 Natural 3 [:: Grouping Ø Multi-Se Sort	5p. Sort	Collections E NoFilter	Biblio Images/Documents Management	Publish O & Images Docum Literate	ents 🔍 Zoom 🔹	*☆ Refresh Data *∄ #Calc Fields	Maps Web Links Σ Summary Σ Summary (+) Calculate	Export Tagged - I Match/Update View View Reports - Import/Export	0
:oll	lection	Events ⊰≅ ×							Â	vrcGIS Map	
1	Tag	Collectors	Collector Number	Collection Year	<u># Full Name</u>		Country	Major Admin Name	^	Satellite Base v	•
				1982 ×			new zeal" 🛛 🗙			Enable/disable map point selection ( 0 selections)	7
	•	Schofield, R.P.	35	1982	Dacrycarpus dacrydioides (A. Rich.) de Laub.		New Zealand	North Island			
	*	West, C.J.	s.n.	1982	Podocarpus totara G. Benn. ex D. Don		New Zealand	North Island			
	*	Druce, A.P.	s.n.	1982	Lepidothamnus intermedius (Kirk) Quinn		New Zealand	North Island			
1	*	Scott, L.	s.n.	1982	Podocarpus totara G. Benn. ex D. Don		New Zealand	North Island			
	*	Scott, L.	s.n.	1982	Agathis australis (D. Don) Lindl.		New Zealand	North Island			
1	•	Smith-Dodsworth, J.C.	s.n.	1982	Phyllocladus toatoa Molloy		New Zealand	North Island		and the second se	
1	*	Druce, A.P.	s.n.	1982	Libocedrus bidwillii Hook. f.		New Zealand	North Island			
1	*	Cameron, E.K.	1286	1982	Halocarpus bidwillii (Hook. f. ex Kirk) Quinn		New Zealand	North Island			
	*	Wright, A.E.	4626	1982	Prumnopitys taxifolia (Banks & Sol. ex D. Don) de	Laub.	New Zealand	North Island		BA BALL	

 Using the ArcGIS mapper, from the Collection Events table, draw a map of all conifer collections. Use the Draw Search Area and then Search Map Area tools for any region in West coast USA. In the updated data grid, use the Summary Tool to check the # collections per species in your selected area. Dock the summary tool next to the Map window.

	NoSort	Modified •	Collections	Biblio Images/Documents Manageme Add - Comments Edit Edit Form Clockup Edit	🖓 Images 🛛 🖓 Legal 🛛 🏷 Refresh Data 🔹	Σ Summary Σ+ Summary (+)	Export Tagged • If Match/Update     View     Import/Link images     Reports •     Import/Export
llection	Events = X			5	Column Summary and Value Merging	+ ↓ X Arco	GIS Map
Tag	Collectors	Collector Number	Collection Year	# Full Name	Column Summary and Value	e wiergi	Satellite Base
	Steward, A.N.	7281	1957	Pinus contorta Douglas ex Loudon var.	Export Construction		Enable/disable map point selection (0 selections) X
	Jepson, W.L.	2217	1903	Picea sitchensis (Bong.) Carrière [1]			
	Howell, J.T.	2279	1927	Sequoia sempervirens (D. Don) Endl.	Y # Full Name	Count	
	Purpus, C.A.	1057	1894	Pinus sabiniana Douglas ex D. Don	Calocedrus decurrens (Torr.) Florin	77 ^	
		6605	1930	Chamaecyparis lawsoniana (A. Murray b	Sequoia sempervirens (D. Don) Endl.	76	
	Applegate, E.I.		1930		Cupressus sargentii Jeps.	63	
	Martineau, R.	417	1974	Sequoia sempervirens (D. Don) Endl.	Pseudotsuga menziesii (Mirb.) Franco var. menziesii	51	
	Farjon, A.	241	1992	Juniperus californica Carrière	Pinus monticola Douglas ex D. Don	49	
	Hooker, J.D.	5.0.	1877	Abies magnifica A. Murray bis var. mag			
	Radcliffe, M.A.	s.n.	1943	Pinus ponderosa Douglas ex C. Lawson	Pinus attenuata Lemmon Pinus lambertiana Douglas	49 48	

3. In the main species table, create a field view to show the fields as shown below. Set a filter to include taxa with IUCN status = CR OR VU. Tag these taxa and export to Excel.

s	ystem	Rapid Data Entry	Taxa Geo Colle	ections Biblio Images/Documents Management	t Publish Online Grid	d Tools	Data Tools	Web Links		
Ta		21 Sort - ≧∔ Last Mo × NoSort 21 Natural [[≣ Grouping ♀ Multi-Se Sor	Sp. Sort	NoFilter     Tree View     Edit     Find     Hadd      Comments     Delete     Inecord Check     Inecord Check	CLiterature C Cop	om •	*☆ Refresh Data *〗 #Calc Fields	<ul> <li>Σ Summary</li> <li>Σ Summary (</li> <li>Calculate</li> </ul>	Export Tagged      Off Match/Update     View     Off Import/Link images     Reports      Import/Export	
Col	lection	Events Species	ч X				AutoSave 🔘 C		× ⊽ E × 🔎 Denis Filer 🔴	- 0
7	Tag	Taxon Status	Family		IUCN Red List	File	Home Inse	ert Draw Page La	yout Formulas Data Review View Automate	Help 🖵 🛃
•	•	acc	Araucariaceae	Agathis montana de Laub.	CR	Ľ	A	$\equiv$ %		
_	•	acc	Araucariaceae	Agathis moorei (Lindl.) Mast.	VU CR	Clipt	board Font	Alignment Num	ber 😿 Format as Table * Cells Ed	ting Add-ins >
-	•	acc	Araucariaceae	Araucaria angustifolia (Bertol.) Kuntze Araucaria bernieri J.T. Buchholz	VU				Styles	Add-ins
-	•	acc	Araucariaceae	Araucaria biramulata J.T. Buchholz	vu	E1	A B	$\times \checkmark f_x$ IUCN C	D	
	•	acc	Araucariaceae	Araucaria heterophylla (Salisb.) Franco	VU	2 T	Fag TaxStatus	Araucariaceae	CalcFullName Agathis dammara (Lamb.) Rich. & A. Rich.	VU
_	•	acc	Araucariaceae	Araucaria montana Brongn. & Gris	VU	3 *	acc	Araucariaceae Araucariaceae	Agathis flavescens Ridl. Agathis lanceolata Warb.	VU VU
_		acc	Araucariaceae	Araucaria nemorosa de Laub. Araucaria schmidii de Laub.	CR VU	5 *	acc acc	Araucariaceae Araucariaceae Araucariaceae	Agathis lenticula de Laub. Agathis montana de Laub. Agathis moorei (Lindl.) Mast.	VU CR VU
-	•	acc	Araucariaceae	Wollemia nobilis W.G. Jones, et al.	CR	8 *	acc	Araucariaceae Araucariaceae	Araucaria angustifolia (Bertol.) Kuntze Araucaria bernieri J.T. Buchholz	CR
-		arr	Cenhalotavareae	Cenhalotaxus mannii Hook f [1]	VU	10 *	acc	Araucariaceae	Araucaria biramulata J.T. Buchholz	VU