

# How to access the BioNet Web Service using Excel Power Query

A BioNet quick guide

Department of Climate Change, Energy, the Environment and Water



## Acknowledgement of Country

Department of Climate Change, Energy, the Environment and Water acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.



© 2025 State of NSW and Department of Climate Change, Energy, the Environment and Water

With the exception of photographs, the State of NSW and Department of Climate Change, Energy, the Environment and Water (the department) are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged. Specific permission is required to reproduce photographs.

Learn more about our copyright and disclaimer at www.environment.nsw.gov.au/copyright

Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Cover photo: Melaleuca forest. Barry Collier/DCCEEW

Published by: Environment and Heritage Department of Climate Change, Energy, the Environment and Water Locked Bag 5022, Parramatta NSW 2124 Phone: +61 2 9995 5000 (switchboard) Phone: 1300 361 967 (Environment and Heritage enquiries) TTY users: phone 133 677, then ask for 1300 361 967 Speak and listen users: phone 1300 555 727, then ask for 1300 361 967 Email <u>info@environment.nsw.gov.au</u> Website www.environment.nsw.gov.au

ISBN 978-1-923357-49-5 EH 2025/0024 First published in July 2016; reissued February 2025

Find out more at:

environment.nsw.gov.au

### Contents

Нον	w to A	ccess the BioNet Web Service using Power Query	1					
	Who is this guide for?							
1.	Before you begin							
2.	Connect to the BioNet Web Service							
3.	3. Guidance for extracting data							
	3.1 Apply a filter							
	3.2	Reduce the number of columns returned	10					
	3.3 Extract the data to the Excel spreadsheet 10							
	3.4How to refresh your extracted data1							

# How to Access the BioNet Web Service using Power Query

This document provides a quick guide on how to extract data from the BioNet Web Service using Excel with Power Query. It is intended to get you started and does not provide exhaustive guidance on using Power Query. Additional Information on using Power Query is available at: <u>Microsoft Power Query resources</u>.

#### Who is this guide for?

This guide is intended for users who need to construct customised queries of data held in BioNet Atlas and BioNet Vegetation Classification.

## 1. Before you begin

The Power Query experience is available in all Excel 2016 or later Windows stand-alone versions and Microsoft 365 subscription plans on the Data tab in the Get & Transform group.

Before you start, ensure that you are using one of the supported versions of Excel.

Data from BioNet Atlas and BioNet Vegetation Classification have been compiled into entity sets which are defined by the following data standards:

- Species Sighting Data Standard
- Flora Survey Data Standard
- Vegetation Classification Data Standard
- NSW Landscapes Data Standard
- Threatened Biodiversity Data Standard
- Species Names Data Standard
- Thesaurus Data Standard

Access the data standards on the BioNet web services page.

You accept the <u>Terms and conditions of use</u> when extracting data via the BioNet Web Service.



If you see a box like this, it contains important information to stop problems or errors occurring. Make sure you read box information and read the whole document before you start.

## 2. Connect to the BioNet Web Service

#### Step 1: Open the Data tab in Excel.

File Home Insert Page Layout Fo	rmulas Data Review View	Automate Developer	Help Content Manager		Comment	ts 🖻 Share ~
Get From Text/CSV From Picture ~	Refresh Workbook Links	Organization Stocks	L     L     L     Clear       L     Sort     Filter     Seepply       K     K     K     K	Text to Columns 🕉 🗸 🔞	What-If Forecast Analysis ~ Sheet	回 Outline v
Get & Transform Data	Queries & Connections	Data Types	Sort & Filter	Data Tools	Forecast	_

**Step 2:** In the **'Get Data'** section of the Data ribbon, select **'From Other Sources'** and click on **'From OData Feed'**.

File	Home	Insert	Page	e Layout	Formulas	Data	Review	View	Automat	te Deve	loper	Help Co	ontent Mar	nager			P	Comment	ts 🖻 Share
Get Data	From	Text/CSV Web Table/Range	From	n Picture ¥ nt Sources ing Connect	ions All	A Que	ries & Conne perties kbook Links	ections	Organizatio	n Stocks	<ul><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li></ul>	2↓ ZA Z↓ Sort	Filter Te	Clear Reapply Advanced	Text to Columns		What-If Analysis Y	Forecast Sheet	回 Outline ~
	From Eil	e	+			Queries 8	Connections		E	ata Types			Sort & Filter		Data	Tools	Fore	zast	
				f <sub>x</sub>															
ļ L	From Da	tabase	•	D	E	F	G	н	1	J	к	L	М	N	0	Р	Q	R	S
	From A	ure	•																
Ģ	From Po	wer Platforn	n )																
	From O	ıline S <u>e</u> rvice	s ►	Fr	om <u>T</u> able/Ra	ange													
	Rrom Ot	her Sources	•	Fr	om <u>W</u> eb														
野	Combin	e Queries	•	Fr	om SharePo	int <u>L</u> ist													
F	Launch Po	ver Query Ed	itor	Fr	om <u>O</u> Data F	eed													

Step 3: In the OData Feed URL dialogue box enter

https://data.bionet.nsw.gov.au/biosvcapp/odata and click 'OK'.

	$\times$
OData feed	
● Basic ○ Advanced	
URL	_
https://data.bionet.nsw.gov.au/biosvcapp/odata	
	OK Cancel

**Step 4:** The first time you connect to the service a window will appear asking how you would like to access the data.

For registered users of BioNet Atlas, select the Basic option, enter the User name and Password associated with your account, and click **'Connect'**.

Your subsequent queries will return data at the level determined by your BioNet Atlas account credentials.

	OData feed
Anonymous	🗄 https://data.bionet.nsw.gov.au/biosvcapp/odata
Vindows	User name
asic	Password
Neb API	Select which level to apply these settings to
Organizational account	https://data.bionet.nsw.gov.au/

If you are not a registered user of BioNet Atlas, you can access the public level data by selecting Anonymous and clicking '**Connect**'.

	OData feed	$\times$
Anonymous	🗄 https://data.bionet.nsw.gov.au/biosvcapp/odata	
Windows	Use anonymous access for this OData feed.	
	Select which level to apply these settings to	
Basic	https://data.bionet.nsw.gov.au/	
Web API		
Organizational account		
	Back Connect Cancel	

All subsequent queries will be configured against these credential settings. If at any stage you wish to change which credentials you have provided to access the BioNet Web Service, you can do so from the Query Builder Editor (Step 6) by selecting Data Source Settings > Edit Permissions > Edit and updating your credentials.

Close & Load Close	Image: Properties Refresh       Image: Properties Choose Remove	Data Type: Text • Use First Row as Headers Split Group 1	Append Queries •	Manage Data source meters Data source ameters Data Sources New Yource Recent Sources New Query New Query Net Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:0' vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:0'	Query
ð	Search data source settings	dit Permissions https://data.bionet.nsw.gov.au/biosvcapp iredentials //pe: Basic Edit Delete	/odata	Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00           Vet Atlas of NSW Wildlife 5/01/2025 1:00 AM +11:00	Name SpeciesS All Prope APPLIED Sourc Navig
95 00118	Change Source. Edit Permissions. Clear Permissions Clear Permissi	Tivacy None Anonymous Windows Basic Web API Organizational account	Https://data.	OData feed .bionet.nsw.gov.au/biosvcapp/odat s for this OData feed. Save	X ta Cancel

**Step 5:** Select the entity set (data table) that you want to access and click **'Transform Data'**.

	2	SpeciesSighting	gs_CoreData	
Select multiple items		Preview downloaded	on Wednesday	
splay Options 👻	là	basisOfRecord	collectionCode	
https://data.bionet.nsw.gov.au/biosvcapp/odata [18]		HumanObservation	BioNet Atlas of NSW Wildli	ife
NSWLandscapes MitchellLandscapes		HumanObservation	BioNet Atlas of NSW Wildli	ife
SpeciesNames		HumanObservation	BioNet Atlas of NSW Wildli BioNet Atlas of NSW Wildli	ife
SpeciesSightings_AdditionalMeasurementsOrFacts		HumanObservation	BioNet Atlas of NSW Wildli	ife
SpeciesSightings_CoreData		1 The data in the	preview has been truncate	d due
SpeciesSightings_DeletedRecords		to size limits.		
SystematicFloraSurvey_SiteData				
III Thesaurus				
ThreatenedBiodiversity_EcologicalCommunities				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> <li>ThreatenedBiodiversity_Species</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> <li>ThreatenedBiodiversity_Species</li> <li>ThreatenedBiodiversity_TECGeographicData</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> <li>ThreatenedBiodiversity_Species</li> <li>ThreatenedBiodiversity_TECGeographicData</li> <li>ThreatenedBiodiversity_TPGeographicData</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> <li>ThreatenedBiodiversity_Species</li> <li>ThreatenedBiodiversity_TECGeographicData</li> <li>ThreatenedBiodiversity_TPGeographicData</li> <li>ThreatenedBiodiversity_TSGeographicData</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> <li>ThreatenedBiodiversity_Species</li> <li>ThreatenedBiodiversity_TECGeographicData</li> <li>ThreatenedBiodiversity_TPGeographicData</li> <li>ThreatenedBiodiversity_TSGeographicData</li> <li>VegetationClassification_PCTBenchmarks</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> <li>ThreatenedBiodiversity_Species</li> <li>ThreatenedBiodiversity_TECGeographicData</li> <li>ThreatenedBiodiversity_TSGeographicData</li> <li>ThreatenedBiodiversity_TSGeographicData</li> <li>VegetationClassification_PCTBenchmarks</li> <li>VegetationClassification_PCTDefinition</li> </ul>				
<ul> <li>ThreatenedBiodiversity_EcologicalCommunities</li> <li>ThreatenedBiodiversity_KeyThreateningProcesses</li> <li>ThreatenedBiodiversity_Populations</li> <li>ThreatenedBiodiversity_Species</li> <li>ThreatenedBiodiversity_TECGeographicData</li> <li>ThreatenedBiodiversity_TPGeographicData</li> <li>ThreatenedBiodiversity_TSGeographicData</li> <li>ThreatenedBiodiversity_TSGeographicData</li> <li>VegetationClassification_PCTBenchmarks</li> <li>VegetationClassification_PCTDefinition</li> <li>VegetationClassification_PCTGrowthForm</li> </ul>				



If you click 'Load' at this stage, Power Query will try to extract all records to Excel and if the record count in the selected entity set exceeds the Excel row limit the query will fail.

**Step 6:** You will now see the Power Query Editor window and be able to create your query. See Section 3 of this guide for help on creating a simple query.

File Home Trans	form	Add Column View						~ ?
Close & Load + Preview + Mana	erties noed Eo age •	ditor Choose Remove Columns • Columns •	Keep Remove Rows * Rows *	Data Type: Text • Use First Row as Headers • Type Replace Values Transform	Merge Queries • Append Queries • Combine Files Combine	Manage ameters • Data source settings Inter-	Source • nt Sources • Data	
close Query		The state of the s		Turistorni	combine	initiality but sources inter	cauty	
Queries [1]	U	This preview may be up to	z days old. Refresh			^	Ouery Settings	×
SpeciesSighting	$\mathbf{X}$	$\sqrt{f_x}$ = Source	{[Name="SpeciesSightings Cor	eData",Signature="table"]}[	Data]	~		
		AB L COTO L	AB U U O L		2. 1	4B 1	▲ PROPERTIES	
		A°C basisUtkecord	• Arc collectionLode	Arc dataGeneralizations	*3 datasetiD	A°C datasetName	Name	
	1	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice	SpeciesSightings_CoreData	
	2	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice	All Properties	
	3	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	4	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice	APPLIED STEPS	
	5	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice	Source	*
	6	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice	× Navigation	*
	1	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	8	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	9	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	10	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	11	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	12	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	13	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	14	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	15	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	16	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	17	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	18	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	19	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	20	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	21	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	22	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	23	HumanObservation	BioNet Atlas of NSW Wildlife	null	1155	DPIE Data from Scientific Lice		
	24	<				>		

## 3. Guidance for extracting data

This guidance is intended to help get you started with a simple query. It is not exhaustive and serves to illustrate some important limitations and considerations in creating a query.



Keep your queries as simple as possible. Power Query allows very complex queries to be constructed, but when applied to large datasets performance can be an issue. The best approach is to apply one or 2 filters, select only the columns you want to retain, and download the data. Complete further data processing on your own machine.

#### 3.1 Apply a filter



You must apply a filter to the columns to reduce the data you extract for some entity sets. If you do not apply a filter, Power Query will try to extract all records and may exceed the row limit in Excel.

**Step 1:** Click on the header of the column you would like to apply your filter to. In many cases the filter item you are looking for will appear in the drop-down list. Select the item(s) you will filter on and click **'OK'**.





If what you are searching for does not appear in the filter list, do not click on Load more. This will try to download all records from BioNet to complete the list. Use the text filter (see screen shots below).

**Step 2:** If the item is not displayed in the drop-down menu by default, click on **'Text Filters'** and use the **'Equals'** option.





Using options other than 'Equals' may cause very long running queries and time-outs. Do not use the 'Contains' option as this type of search is not supported by the BioNet Web Service and the query may time out. **Step 3:** In the dialogue box that appears, enter what you are searching for. You can include more than one item. Then click **'OK'**.

Filter Rows		
Apply one or mo	re filter conditions to the rows in this table.	
● Basic ○ Adv	anced	
Keep rows where	e 'scientificName'	
equals	▼ Eulamprus leuraensis ▼	
● And O Or		
	▼ Enter or select a value ▼	
		OK Cancel

**Step 4:** The preview will then display up to the first 1,000 records matching your query. Note that in the Query Editor you may not see all records if they exceed 1,000.

▼       SpeciesSightings_C       File     Home       Transfe	oreData - Powe orm Add Col	er Query Editor Jumn View					— ć	) × ~ (?)
Close & Close & Query	rties need Editor ge • Colu	hoose Remove umns * Columns * Aanage Columns	xve s Sort Split Group Column ▼ By	Data Type: Text ▼ Use First Row as Headers ▼ 1→2 Replace Values Transform	Append Queries *     Append Queries *     Combine Files     Combine Parameters *	Data source settings Data Sources New Sources New Qu	urce • ources • ta iery	
Queries [1]	× ✓	fx = Table.SelectRows( A <sup>B</sup> <sub>C</sub> nomenclaturalCode ▼	SpeciesSightings_CoreD	ata_table, each [scient:	ificName] = "Eulamprus leuraens	(is")	Query Settings	×
	1         2           3         4           5         5           6         7           8         9           10         111           12         13           14         15           16         16           17         18           19         20           21         22           23         24           25	I (2N I (2N) I (2N I (2N I (2N) I (2N I (2N) I (2N I (2N) I (2N) I (2N I (2N) I	Squamata Squ	Eulamprus leuraensis Eulamprus leuraensis	vells & Wellington, 1984           vells & We	2215 2215 2215 2215 2215 2215 2215 2215	PROPERTIES Name SpeciesSightings_CoreData All Properties Source Navigation ➤ Filtered Rows	8 8 8
95 COLUMNS, 199+ ROWS	oiumn protiling.	based on top 1000 rows					PREVIEW DOWNLOADED ON	WEDNESDAY

#### 3.2 Reduce the number of columns returned

Selecting only the columns of data you are interested in makes the download quicker and more efficient. This is not a mandatory step.

Step 1: Click on the 'Choose Columns' button.



Step 2: Choose your columns from the Choose columns window and click 'OK'.

#### 3.3 Extract the data to the Excel spreadsheet

Step 1: Click on the 'Close & Load' button to load your data to your spreadsheet.



**Step 2:** You will be returned to the spreadsheet table. Your data will now commence loading. Note, in the Workbook Queries side bar you will see the query executing and should see the number of rows increasing until it is finished. If you would like to stop it, right click on the query and select **'Cancel'**.

Queries & Connections $\checkmark \times$						
Queries Connections						
1 query						
• SpeciesSightings_CoreE	Data					
58 KB from data.bione	Copy Paste Edit Delete Rename Cancel Load To Duplicate					
	ReferenceMergeAppendExport Connection FileMove To GroupMove UpMove DownShow the peekProperties					

#### 3.4 How to refresh your extracted data

When you save your workbook, the queries that you have created will be saved with it. The next time you open the workbook you can refresh your queries to extract the most up to date data from the Data ribbon by clicking 'Refresh All'.

File	Home	Insert	Page Layout	Formulas	Data	Review V
Get Data *	From Tex From We	t/CSV b ile/Range	From Picture ~	ns All ~	h Dueri	erties book Links

For further information: Contact the BioNet team.