# BioNet Web Services 2.0

## Release notes
## version 1

© 2016 State of NSW and Office of Environment and Heritage

The State of NSW and the Office of Environment and Heritage 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.

The Office of Environment and Heritage has compiled this user manual in good faith, exercising all due care and attention. No representation is made about the accuracy, completeness or suitability of the information in this publication for any particular purpose. OEH shall not be liable for any damage which may occur to any person or organisation taking action or not on the basis of this publication. This document is subject to revision without notice and it is up to the reader to ensure that the latest version is being used. Readers should seek appropriate advice when applying the information to their specific needs.

All content in this publication is owned by OEH and is protected by Crown Copyright. It is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0), subject to the exemptions contained in the licence. The legal code for the licence is available at Creative Commons.

OEH asserts the right to be attributed as author of the original material in the following manner:
© State of New South Wales and Office of Environment and Heritage 2016.

Published by:
Office of Environment and Heritage
59–61 Goulburn Street, Sydney South 1232
Phone: 131 555 (environment information and publications requests)
Phone: 1300 361 967 (national parks, climate change and energy efficiency information and publications requests) where content relates to these areas]
TTY users: phone 133 677, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

**Report pollution and environmental incidents:**
Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.environment.nsw.gov.au

ISBN 978-1-76039-429-5
OEH 2016/0440
July 2016

# Contents

**Background** ..... **1**
**New features** ..... **2**
Vegetation classification ..... 2
NSW landscapes ..... 2
**Enhancements and fixes** ..... **2**
SpeciesSightings_CoreData entity set ..... 2
dynamicProperties ..... 2
TSprofileID ..... 3
SpeciesSightings_DeletedRecords entity set ..... 3
OData enhancements ..... 3
Custom attributes added to the OData metadata statement ..... 3
Pagination increased to 100,000 ..... 4
Aggregation implemented ..... 4
**Documentation** ..... **4**
**Warnings and known issues** ..... **5**
SpeciesSightings_CoreData dcterms_modified field ..... 5

# Background

The BioNet Web Services initiative is a program of work conducted by the Office of Environment and Heritage (OEH). It will progressively make the data held in BioNet open and available to developers via Open Application Programming Interfaces (Open APIs). BioNet is the repository of biodiversity data maintained by OEH and contains species sightings and systematic survey, vegetation classification and threatened entity data used by a wide range of organisations.

BioNet Web Services will enable organisations and individuals to directly integrate biodiversity data into their software systems and unlock the innovation potential of this valuable community-owned data asset. By delivering these data via Open APIs, we are aiming to improve environmental decision-making by integrating up-to-date, consistent and reliable biodiversity data into planning and assessment systems.

This release adds Vegetation Classification and NSW Landscapes data to BioNet Web Services, as well as introducing a number of enhancements to the existing data and API. Figure 1 gives an overview of the current and planned web services.

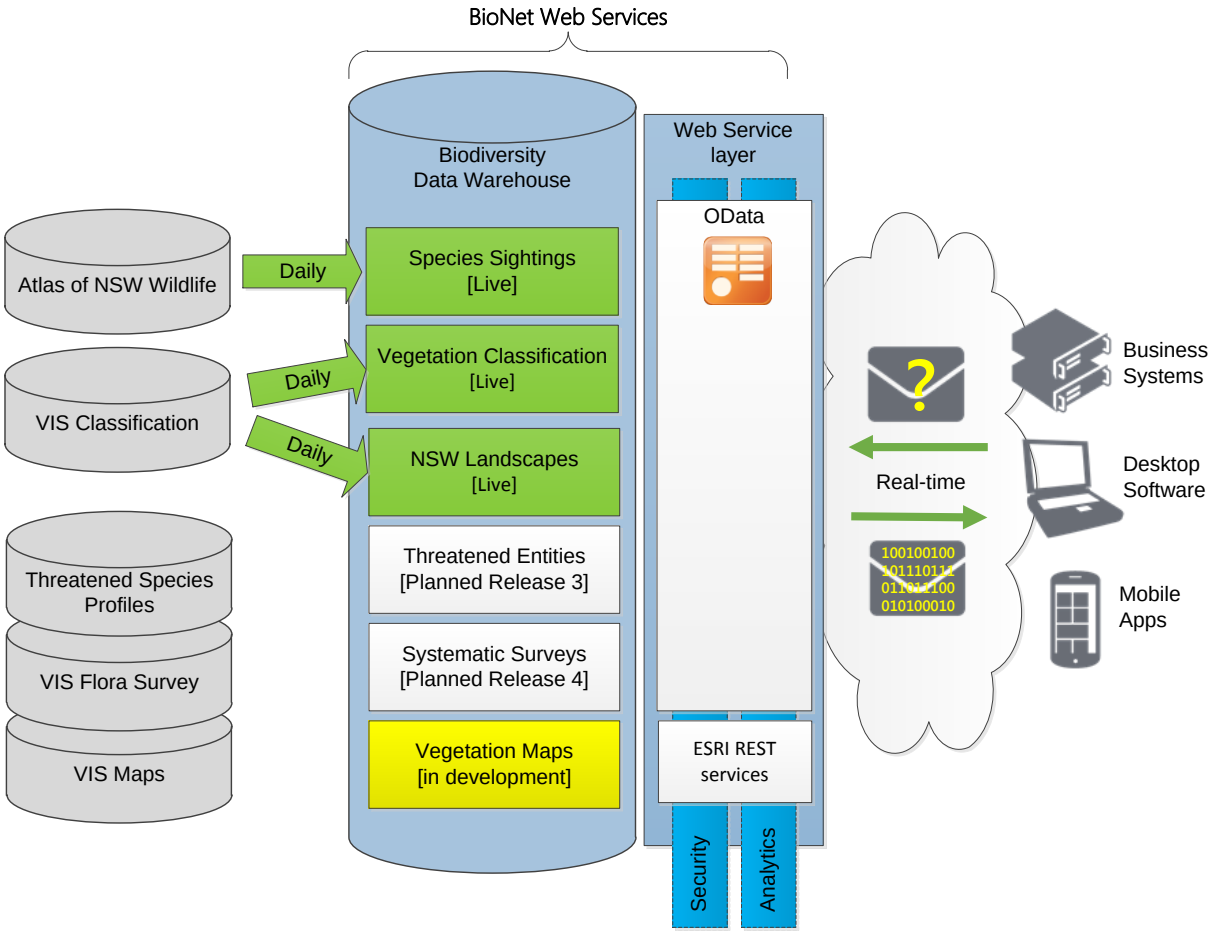


**Figure 1: Overview of BioNet Web Services implementation. VIS, Vegetation Information System; OData, OASIS OData standard; ESRI REST, Environmental Systems Research Institute Representational State Transfer**

# New features

## Vegetation classification

Data from the Vegetation Information System (VIS) Classification database relating to Plant Community Type (PCT) have been added to BioNet Web Services. These data are organised into two ‘entity sets’ (data tables):

- **VegetationClassification_PCTDefinition** provides the data that would be used by a software application to help people identify PCTs in the field or office. It has a clear focus on structural and floristic data.
- **VegetationClassification_PCTAssessmentData** provides the data that business applications would use to evaluate the value of the PCT once it has been identified. It has a clear focus on vegetation extent, condition and associated threatened entities.

Detailed information on the data in these new entity sets is given in the associated data standard. See the ‘Documentation’ section below.

## NSW Landscapes

Data from the VIS Classification database relating to NSW Landscapes have been added to BioNet Web Services. These data are shared via a single entity set (NSWLandscapes_MitchellLandscapes) and provide information on the landscape and its extent.

Detailed information on the data in this new entity set is given in the associated data standard. See the ‘Documentation’ section below.

# Enhancements and fixes

## SpeciesSightings_CoreData entity set

The following enhancements have been applied to the SpeciesSightings_CoreData entity set.

### dynamicProperties

Users asked for the data in the dynamicProperties field to be made available so that they could use the data to apply filtering when constructing queries. In response to this request, the data previously concatenated into the dynamicProperties field have been split into their constituent fields. As a result of this change the following field modifications have been made (refer to the BioNet Species Sightings Web Service Data Standard for field definitions):

Removed fields:

- dynamicProperties

Added fields:

- BFMCS
- botanicalDivision
- CMA
- CMAsubregion
- floraReserve

- geogExtent
- IBRA
- mechanicalHRDescription
- potentialImpact
- TSprofileID
- reserve
- speciesFireDescription
- stateForest
- vulnerability.

### TSprofileID

The profileID field that was previously concatenated into the dynamicProperties field has been renamed and moved to its own dedicated field. It is now named TSProfileID to indicate that the profile ID (identification) is for Threatened Species. This change was made because threatened ecological community profile IDs are now also shared in the Vegetation Classification web service.

## SpeciesSightings_DeletedRecords entity set

A new entity set (SpeciesSightings_DeletedRecords) was implemented to support data aggregators seeking to keep local copies of all species sightings in sync with the records held by OEH and available in BioNet Web Services.

In the unlikely event that a record is removed from the SpeciesSightings_CoreData or SpeciesSightings_AdditionalMeasurementsOrFacts entity sets, the date of removal and associated catalogNumber of the record will be recorded in the SpeciesSightings_DeletedRecords entity set.

This will be used by aggregators running daily delta processes that download daily changes rather than syncing the entire database. The SpeciesSightings_DeletedRecords table will be reset if ever there is a resync of all data to the web service from the source BioNet Atlas of NSW Wildlife database. Users are notified of a resync through the dateLastBulkUpdate field introduced into the BioNet Web Services metadata statement. (See ‘Custom attributes added to the metadata statement’ in the section below.)

## OData enhancements

The following enhancements were made to the web service itself to support additional OData features and improve performance and usability. They apply to all entity sets shared via BioNet Web Services.

### Custom attributes added to the OData metadata statement

The custom attributes in the table below have been added to the OData metadata statement for the web services (https://data.bionet.nsw.gov.au/biosvcapp/odata/$metadata) to communicate service changes in a machine readable format. They enable applications and data aggregators to automate the checking of versions to ensure consistency, and to know when the last full refresh of the data warehouse was undertaken to trigger a full sync with BioNet Web Services.

**Custom attributes added to the OData metadata statement**

| Attribute name | Definition |
|---|---|
| **bioNet:dateLastBulkUpdate** | The date that the bulk update process was last run (DD/MM/YYYY) |
| **bioNet:dataStandardVersion** | The version of the data standard (PDF) associated with the entity set. This will vary per entity set. For Release 2 of the Open API (BioNet Web Services) it will be as follows:<br>• Species Sightings = 5.0<br>• Vegetation Classification = 1.0<br>• NSW Landscapes = 1.0 |
| **bioNet:bioNetOpenAPIVersion** | The version of the web services themselves in the format: major version.minorversion.patch.build (e.g. 2.0.0.1) |

### Pagination increased to 100,000

The maximum number of records returned in a single request has been increased from 1000 to 100,000. Performance testing indicated that this will decrease the time taken to download large datasets (500,000 records or more) by a factor of 10 and will better meet the needs of data aggregators and users working with large datasets.

### Aggregation implemented

The aggregation feature of OData (?$apply=groupby…) has been implemented. See OData Extension for Data Aggregation Version 4.0 for details of this feature.

This enables applications to generate lists of distinct names from large numbers of records. For instance, a list of the species observed in Yuraygir National Park can now be generated by using the following query:

https://datatest.bionet.nsw.gov.au/biosvcapp/odata/SpeciesSightings_CoreData ?$filter=reserve eq 'yuraygir np'&$apply=groupby((reserve,scientificName,vernacularName))

# Documentation

Documentation for BioNet Web Services, including a standards guide and developer guide, is available via data.bionet.nsw.gov.au.

The following documents have been created or updated as a result of changes implemented in Release 2.0:

- BioNet Web Services Species Sightings Web Service Data Standard is now at Version 5.0.
- BioNet Web Services Vegetation Classification Web Service Data Standard Version 1 has been published.
- BioNet Web Services NSW Landscapes Web Service Data Standard Version 1 has been published.

# Warnings and known issues

## SpeciesSightings_CoreData dcterms_modified field

The date in dcterms_modified will not be updated when data in the following fields change during the daily delta updates from the source BioNet Atlas of NSW Wildlife:

- county
- mapSheetNumber
- dynamicProperties; botanicalDivision
- dynamicProperties; CMA
- dynamicProperties; CMAsubregion
- dynamicProperties; floraReserve
- dynamicProperties; IBRA
- dynamicProperties; reserve
- dynamicProperties; stateForest.