

# Creating metadata

## NRM Climate Change Adaptation Information Management Support Project



**This guide provides a basic overview of metadata. It will help you to create metadata for outputs destined for a repository such as the TerraNova Climate Change Adaptation Information Hub.**

### Metadata: what is it and why create it?

Metadata is structured information which describes items. It can be used to describe physical items (e.g. photographs, scientific samples) as well as digital items (e.g. files, documents, images, datasets, databases).

Metadata can describe individual items (e.g. an individual image), or aggregations of similar items (e.g. a collection of images).

In essence, metadata answers the “who, what, when, where, why and how” about every facet of the item that is being documented.

Metadata enables research outputs to be more easily discovered, associated with their owners and creators, linked to other related data or publications, contextualised in time and space, and to have the quality of the item assessed and research results validated. Metadata should also allow a user to acquire enough information about an item to use it without contacting the owner.

### Metadata standards and profiles

In many disciplines there are existing standards specifically designed for describing and sharing information. These standards form the basis of metadata “schemas” or profiles. For example, the ANZLIC Metadata Profile adopts established Australian / New Zealand and International Standards for the description of spatial data. The ANZLIC Metadata Profile is commonly used when geospatial location is an important feature of the material being described.

Some discipline-specific repositories (such as TerraNova) have created a customised metadata profile by combining parts of different metadata standards and adding local fields. Terra Nova includes metadata fields that ‘map’ to the ANZLIC

profile, so it can accommodate rich information about geospatial locations which is important for NRM planning.

### Hints for writing good metadata

**To create quality metadata, you need to include all the descriptive information necessary to locate, understand, and use a dataset or other item.**

**Create a meaningful title.** Your title should provide meaning and convey as much information as possible using the least number of words. It should summarise important features of your data (e.g. “who, what, where, when and scale”). Include as many details as you can so readers can surmise what is in your data before they go further.

**State data potential.** Establish the relevance and usage potential of your dataset. Are there any limitations on usage? (e.g. “*not to be used for navigational purposes*”).

**Select descriptive keywords.** Convey the subject matter of your data. Think of a few terms that describe your item, then look those terms up in a relevant controlled vocabulary (a list of predefined, authorised terms such as a thesaurus). Using a controlled vocabulary will ensure consistency and increase the chance your item will be discovered. Choose both “topic” keywords and “place” keywords. The ANZLIC [theme keywords](#) and [qualifiers](#) are a good source of controlled topic keywords for NRM researchers.

**Create good file names.** File names should be meaningful but brief, and should provide clues to the file’s content. Avoid the use of spaces, and symbols or characters that might be misinterpreted by a computer, e.g. !, @, <, >, (, ).

File names might contain project codes, researchers’ initials, a version number, file status and date.

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## Metadata elements

Metadata profiles are made up of individual fields or “elements”. Not every output will have or need every type of metadata. The goal should be to provide as much information as possible, to facilitate future discovery and use of the material.

If you deposit your outputs in an institutional or domain-specific repository you will probably be asked to fill out an online form or series of metadata fields or elements which describe your item or collection.

## Capturing and recording metadata

Metadata can be created in many different ways.

Some metadata is created automatically and embedded within files, e.g. by instruments such as digital cameras, microscopes, telescopes etc. Files created in programs such as Word and Excel also contain embedded metadata.

Some metadata must be created manually. For complex outputs such as datasets, you may like to include metadata within your output (e.g. an extra worksheet within an Excel file). Extra metadata can also be added to the File Properties of text-based files (e.g. Word, PDF). A benefit of storing metadata inside a file is that it automatically moves with the file. A slightly different model is to write the metadata into a separate, well-structured file, perhaps TXT or XML, and associate that with the data file.

A metadata template can be a useful way to record metadata for your outputs, particularly if you know in advance where you are going to deposit your outputs and what metadata you will be required to provide. A metadata template can be set up using a spreadsheet or database. The Griffith CCAIMS project has created a Terra Nova metadata template, which can be accessed at: <https://www.terranova.org.au/repository/managing-climate-change-adaptation-data-and-information/terranova-metadata-inventory-1>.

Creating and managing metadata can take time and effort. Plan upfront to capture all useful contextual information about your outputs throughout your project.

## Main categories of metadata

Metadata is commonly arranged into broad, purpose-based categories.

**Descriptive metadata:** basic information used to find, identify and understand a resource, e.g. title, author, abstract, subject keywords, resource type.

**Provenance metadata:** information about the origin of the data, e.g.

- Where did the data come from? Why was it collected? Who collected it, when and where? What instruments/technologies were used to collect the data, and how were they set up? What has been done to the data since it was collected?

**Rights and access metadata:** information about access and usage rules, e.g.

- Who is allowed to view, edit, or modify the data or metadata, and under what conditions? Who has authority over the data? Who has accessed the data, and what have they done with it? Under what licence is the data being made available?

**Technical metadata:** fundamental information for a person or a computer to read the data, e.g.

- How is the data set up? What formats, and versions of formats, are used? How is the database configured?

**Preservation metadata:** includes information to help build a sense of trust in the data, and allow for the data to be used long into the future, e.g.

- Is the data authentic, authoritative, and original? Has there been any restructuring, e.g. due to software and file-formats changing? What software has been used to access the data in the past?

**Structural metadata:** information about relationships between or within digital resources, e.g. how separately digitised chapters of a report should go together.

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## Best practice metadata example (dataset)

<b>Title</b>	<b>Bird surveys in Karawatha Forest Park 2007 - 2008</b>
<b>Content type</b>	Dataset
<b>Brief description</b>	<p>This dataset is part of a study examining the influence of habitat complexity measured using a combination of floristic and physiognomic vegetation parameters on avian communities at a mesoscale within Karawatha Forest Park, Southeast Queensland. Five repeat bird surveys were completed for 33 one-hectare plots in Karawatha Forest Park during the period August 2007 to January 2008.</p>
<b>Detailed summary</b>	<p>Between January and September of 2007 a Program for Planned Biodiversity and Ecosystem Research (PPBio) grid was established as a long-term ecological research site (LTER) in Eucalypt forest at Karawatha Forest Park in Brisbane, Queensland Australia. Karawatha Forest is on the southern peri-urban edge of Brisbane and is managed by the Brisbane City Council. It contains a variety of habitats from freshwater lagoons and sandstone ridges, to dry eucalypt forests and wet heath. The grid was arbitrarily placed to cover the reserve and includes approximately 33 km of fixed transects and 33 fixed plots. Bird surveys were completed for 33 one-hectare plots in Karawatha Forest Park. The plots are at 500 m intervals in a grid that covers the entire Park. Each plot follows the elevational contour and is 250 m long x 40 m wide. Five repeat surveys were completed during the period August 2007 to January 2008.</p>
<b>Owning organisation</b>	Griffith University
<b>Logo</b>	
<b>External identifier</b>	<a href="http://www.tern-supersites.net.au/knb/metacat/shuker.14.16/html">http://www.tern-supersites.net.au/knb/metacat/shuker.14.16/html</a>
<b>Sector focus</b>	Terrestrial biodiversity
<b>Thematic Tags</b>	birds; ecology – habitat; fauna – vertebrate; flora; Karawatha Forest
<b>Fields of Research</b>	060207 Population Ecology; 060208 Terrestrial Ecology
<b>Related Websites</b>	<a href="http://www.tern-supersites.net.au/index.php/seq">http://www.tern-supersites.net.au/index.php/seq</a>
<b>Geographic Coverage</b>	Karawatha Forest Park bounding coordinates: W 153.06 degrees, E 153.1 degrees, N - 27.61 degrees, S -27.65 degrees
<b>Local Govt Areas</b>	Brisbane
<b>NRM Regions</b>	South East Queensland
<b>Bioregions (IBRA)</b>	SEQ South Eastern Queensland
<b>Temporal Coverage</b>	01/08/2007 to 31/01/2008
<b>Rights</b>	 This work is licensed under a <a href="https://creativecommons.org/licenses/by-sa/4.0/">TERN Attribution-Share Alike licence</a>
<b>Contributors</b>	Ryan Hughes; Guy Castley; Jean-Marc Hero
<b>Citation</b>	R. Hughes (2008): Bird surveys in Karawatha Forest Park. SEQ Peri-Urban Supersite. <a href="http://www.tern-supersites.net.au/knb/metacat/shuker.14.16/html">http://www.tern-supersites.net.au/knb/metacat/shuker.14.16/html</a> .
<b>Custodian</b>	Jean-Marc Hero, Environmental Futures Centre, Griffith University. Email: <a href="mailto:m.hero@griffith.edu.au">m.hero@griffith.edu.au</a>

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This fact sheet is informed by information provided under open licences by other organisations, including:

*Best practices for writing metadata*, courtesy of the U.S. Geological Survey, available at [http://www.usgs.gov/core\\_science\\_systems/csas/metadata/best\\_practices.html#](http://www.usgs.gov/core_science_systems/csas/metadata/best_practices.html#)

Isenor, A., Bermudez, L., Watson, S. 2010. "Writing Good Metadata." In *The MMI Guides: Navigating the World of Marine Metadata*. Available at <http://marinemetadata.org/guides/mdataintro/writegoodmdata>.

Australian National Data Service. *Metadata (awareness level) and Metadata (working level)*. Available at: <http://ands.org.au/guides/index.html>

Griffith University 2013. *Managing Climate Change Adaptation Data and Information: A Reference Guide for Element 2, Stream 2 Projects*. Available at: <http://www.terranova.org.au>

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