Australian Government

Department of the Environment and Heritage

Guidelines for Biological Survey Data

Introduction

The Department of the Environment and Heritage (DEH) uses point-based fauna and flora survey data to support decision making on referral applications, assessments and approvals under the *Environment Protection and Biodiversity Protection Act 1999* and to assist in the protection and recovery of species and communities

This document outlines data and information requirements for threatened species, migratory species, listed marine species, cetaceans and invasive species to support DEH decision making.

DEH data requirements

For species listed under the EPBC Act the following data and information should be provided with referral applications and environmental impact assessments undertaken by proponents. Provision of data and the related information indicated will help facilitate decision making by DEH. The information derived from data provided will be used more widely by DEH for the ongoing protection of species and communities listed under the EPBC Act:

- Incidental records of listed species in the project area;
- Records of listed species from systematic flora/fauna surveys relevant to the project area;
- Details of all systematic flora/fauna surveys (site/survey details only) relevant to the project area;
- Records of non-listed species where the matter protected by the Commonwealth legislation is the environment;
- Documentation describing the data. The documentation should include information about the taxonomy used and a description of the survey methods.

The core data for biological observations are:

- Scientific name of species;
- Geocode of observation - preferably latitude and longitude, although AMG/MGA coordinates in the form zone/easting/northing are acceptable;
- Datum of the geocode, e.g. GDA 94, WGS 84, AGD/66/84. If uniform for dataset include in basic metadata.
- Precision of the geocode, typically radius in metres, may be a grid block; GPS co-ordinates have a precision of 15 – 100 metres;
- Date range of the observation;

The following supplementary information is also required (where applicable):

- Written Locality;
- Common name;
- Name of the collector/observer;
- Survey method and survey effort;
- Number of individuals counted;
- Reliability of the observation, e.g. confirmed, doubtful, backed by voucher specimen collected under permit (include voucher number);
- Data source and record identifier - to distinguish data collated from other sources;

The preferred formats for providing data are shown in Attachments 2 and 3. Basic metadata should be provided for incidental records and small amounts of project data (see Attachment 1). Large datasets should be documented following the *ANZLIC Metadata Guidelines* Version 1, July 1996.

Data provided to DEH undergoes a number of validation checks before it is used. DEH may need to approach the custodian for further checking and verification where records do not meet all checks.

Data Format and File Specifications

Database point records

Data should be supplied as ASCII delimited text, MS Excel, MS ACCESS or Oracle export format files in the formats indicated below. Where delimitation is by commas, quotes should be placed around text fields as these may already include commas.

Often it is easiest to supply a dump of data as it is stored in a database. If the data requires reformatting a suggested model is presented in Attachment 3.

The following records are not required:

- Records of cultivated specimens, escapees or of doubtful status (unless specifically requested);
- Records with a geocode precision of more than 10,000 metres.

Fields with unknown or null values should be set to blank or ‘null’, never zero.

Spatial Data

Spatial data should be supplied in an electronic format that can be read by the ESRI ArcGIS, ArcInfo or ArcView geographic information system software. The preferred format is as ArcInfo export files or ArcView shape files.

All datasets and their attributes should be documented according to the guidelines in Attachment 1.

Spatial information should be supplied in geographic decimal-degree coordinates. The datum must be specified. The preferred datum for data provided is the Geocentric Datum of Australia (GDA94).

If a non geographical projection is used, then information about the projection type and its parameters need to be provided. This includes information about major and minor axes, central meridian, standard parallels, latitude origin and false origin and the datum and spheroid.

Basic metadata should be provided for the spatial data as identified in Attachment 1. Large datasets should be documented following the *ANZLIC Metadata Guidelines* Version 1, July 1996.

Attachment 1
Basic metadata for Biological Survey Data provided to
Australian Government, Department of the Environment and Heritage

Custodian *Person/Organisation responsible for the data; and contact details.*	
Name of Dataset *A name/title for the survey dataset.*	
Project area *Description of the area surveyed*.	
Survey targets and methods *Brief description of species targetted and the survey methods employed.*	
Survey dates *The first and last dates of surveys* *.*	
Spatial data *Type of spatial data, e.g. ESRI Shapefiles, spreadsheet of species records. Also, describe the spatial coordinate system, e.g. geographical, AMG; and datum, e.g. GDA 94, WGS 84, AGD66/84*.	
Limitation on use of data *Outline any constraint on the use of the data.*	
Comments	

DEH Use only	
DEH Contact and Section	
Referral Id/ File number	

Attachment 2

Suggested format for the incidental data

Incidental records (incidental.xls)

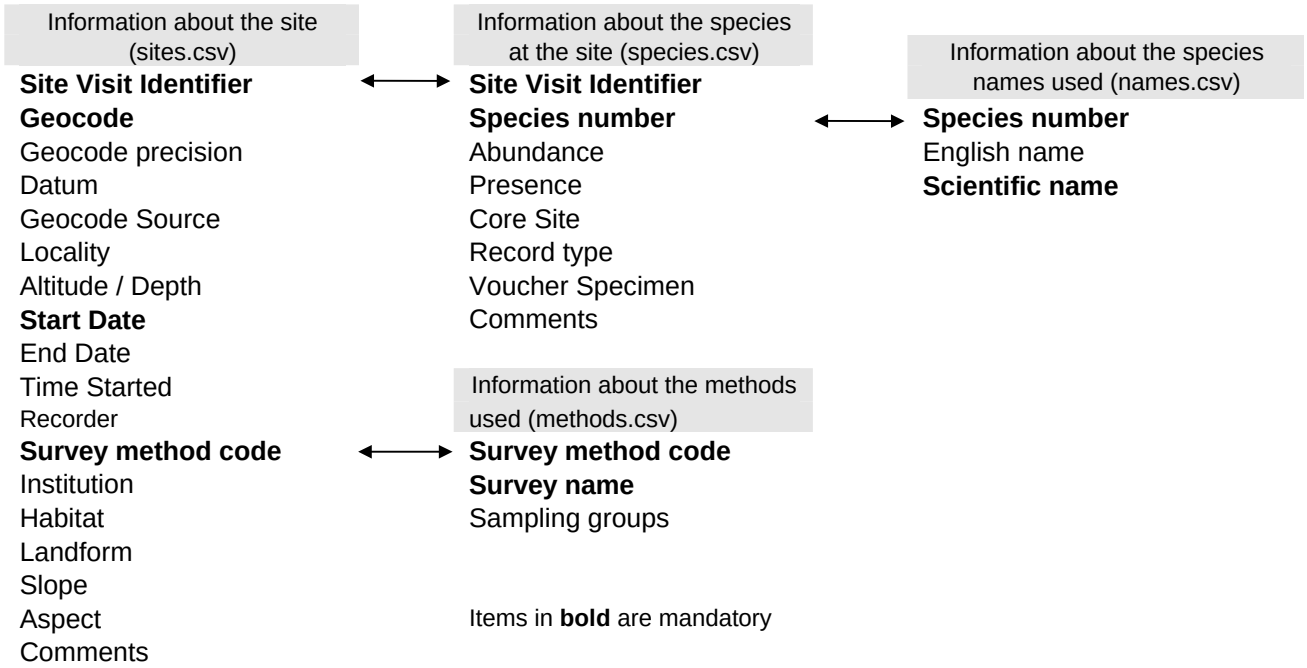
Scientific name	Common name	Latitude	Longitude	Precision	Start date	End date
Xanthomyza phrygia	Regent Honeyeater	36 15 06	145 12 05	25	12/6/2003	14/6/2003
Acacia recurva	Recurved Wattle	36 16 01	145 09 04	1000	15/12/2003	

All data are geographic (dms) in GDA 94 datum

Attachment 3

Suggested format for the detailed survey data

File 1: Information about the site (**sites.csv**)
File 2: Information about the species at the site (**species.csv**)
File 3: Information about the species names used (**names.csv**)
File 4: Information about the survey methods (**methods.csv**)



FIELDs in **bold** are mandatory. *WIDTH* is the maximum width including decimal points. *DEC* is the number of decimal places.

File 1: Information about the site/visit, called ***sites.csv***

FIELD	*TYPE*	*WIDTH*	*DEC*	*COMMENT*	*ALLOWABLE VALUES*
Site/visit Identifier	Alphanumeric	10		Unique identifier for a site/visit	
Geocode				Centre point of site, ***either*** Lat/Long or AMG/MGA:	
** **Latitude**	Numeric	10	6	Decimal degrees, eg –35.500000, South is negative	
Longitude	Numeric	10	6	Decimal degrees, eg 145.500000	
** **Zone**	Numeric			AMG/MGA Zone	
Easting	Numeric	6		AMG/MGA Easting metres	
Northing	Numeric	7		AMG/MGA Northing metres	
Geocode precision	Alphanumeric	6		Error radius around the nominated geocode, in metres. Use these nominal values for Lat/Long cells: 1°≅50000m; 10'≅1000m; 5'≅5000m; 1'≅1000m, 10"≅150m, 1"≅15m.	
Datum	Alphanumeric	6		Datum of the geocode: Australian 66/84 (AMG) or GDA 94=WGS84 (MGA)	Aus 66, Aus 84, GDA 94, WGS 84
Geocode source	Alphanumeric	15		The way in which the geocode was determined, read from map or global positioning system (GPS) or Automatically generated from a stated locality.	Map, GPS, Automatic, Other
Locality	Alphanumeric	255		Plain language description of the locality. A good form is distance and direction from a named placed	e.g. 25 km NW of Gulargambone
Altitude/ depth	Alphanumeric	6		Altitude of the site, in metres above or below sea level (-)	
Start Date				The date the site visit started. Start/end datas should be no more than 31 days apart.	
Year	Numeric	4		Year	
Month	Numeric	2		Month (number), may be zero	0 - 12
Day	Numeric	2		Day, may be zero	0 - 31
End Date				Date the site visit ended, leave blank if visit on one day. Start/end datas should be no more than 31 days apart.	
Year	Numeric	4		Year	
Month	Numeric	2		Month (number), may be zero	0 - 12
Day	Numeric	2		Day of survey, may be zero	0 - 31
Time started	Numeric	4		Time of the day the site visit started, hour and minute using 24 hour clock	0 - 2359
Survey method	Alphanumeric	4		Type of Survey – code	
Survey effort	Alphanumeric	8	3	Effort	
Recorder	Alphanumeric	65		Name of the person who recorded the data.	
Institution	Alphanumeric	65		Institution name or standard code	

FIELD	*TYPE*	*WIDTH*	*DEC*	*COMMENT*	*ALLOWABLE VALUES*
Habitat	Alphanumeric	120		Habitat/vegetation/ecosystem type	
Landform	Alphanumeric	20		Position in landscape:	Ridge, Simple Slope, Upper Slope, Mid Slope, Lower Slope, Open Depression, Closed Depression, Flat, Crest, Hillock, Aquatic (running water, still water), Marine, Island, Beach, Inter-tidal, Benthic
Slope	Alphanumeric	30		Degrees from horizontal: 0 to 90	0 - 90 **or** Level (<1°) Very Gently Inclined (1°-3°) Gently Inclined (3°-10°) Moderately Inclined (10°-23°) Steep (23°-37°) Very Steep (37-60°) Precipitous (60°-80°) Cliff (80°-90°)
Aspect	Alphanumeric	3		Degrees from north *or* cardinal points	0-359 *or* N, NE, E, SE, S, SW, W, NW
Comments	Alphanumeric	255		Any special comments, including on weather, type/frequency of survey, plot size, etc.	

** Geocode may be either Latitude/Longitude or AMG/MGA, but should all be the same in the database.

The formula for converting degrees/minutes./seconds to decimal degrees is:

Degrees + ((Minutes * 60 + Seconds) / 3600)

Latitudes for Australia are negative and should be preceded by a minus.

File 2: Information about the species is recorded in ***species.csv***

FIELD	*TYPE*	*WIDTH*	*DEC*	*COMMENT*	*ALLOWABLE VALUES*
Site/visit identifier	Alphanumeric	10		Unique visit/survey number	
Taxon_id	Alphanumeric	7		Unique species (taxon) code.	
Abundance	Numeric	5		Number of taxa counted or trapped; for presence only leave blank	
Presence	Boolean	1		Recording of an Absence for a species should only be for where a specific search has been conducted for that species	True/False
Core site	Alphanumeric	25		Whether the site is particularly important, i.e. Breeding sites for birds, turtles; Roosting sites for shorebirds and bats	Breeding, Roosting
Record type	Alphanumeric	15		The type of record: Survey, Incidental, Specimen	Survey, Incidental, Specimen
Voucher Specimen	Alphanumeric	25		Cross reference to Institution and number of voucher specimen, use standard institution code and registration number	eg: MV: B657238
Comments	Alphanumeric	255		Comments may include reliability of identification, etc.	

File 3. Information about the name of the species is recorded in ***names.csv***

FIELD	*TYPE*	*WIDTH*	*DEC*	*COMMENT*	*ALLOWABLE VALUES*
Taxon_id	Alphanumeric	7		Unique species (taxon) code	
English name	Alphanumeric	100		English	
Scientific name	Alphanumeric	100		Full scientific name: genus species subspecies or variety	

File 4. Information about the site/visit survey method is recorded in ***methods.csv***
(NB. More details of methods - e.g. plot size, sampling strategy/frequency etc. Should be recorded in the Metadata)

FIELD	*TYPE*	*WIDTH*	*DEC*	*COMMENT*	*ALLOWABLE VALUES*
Survey method	Alphanumeric	10		Survey method code	
Survey name	Alphanumeric	25	0	Name of the type of Survey, e.g. Bird count, Turtle census, Elliot Traps	
Sampling Groups	Alphanumeric	5		The sampling groups this method surveys (see below).	

Recommended sampling groups:

Diurnal birds	Bats	Freshwater invertebrate	Marine invertebrates
Birds	Small ground mammals	Fish	Marine vertebrates
Large forest owls	Large visible mammals	Terrestrial invertebrate	Fungi
Nocturnal birds	Amphibians	Flora	Non-vascular plants
Arboreal mammals	Reptiles	Algae	

These are examples only, other groups may be defined depending on the survey design. Species may be members of a number of sampling group