

Data dictionary for the 2024 Australian Threatened Species Index

Citation

TSX 2024. The Australian Threatened Species Index 2024. Aggregated for the Australian Threatened Species Index, an output of the NESP Threatened Species Recovery Hub and operated by the Terrestrial Ecosystem Research Network, The University of Queensland. Published on 2024-12-09.

Table 1: This table explains each column in the aggregated data downloaded from the Threatened Species Index web-tool accessible at tsx.org.au

Column name	Column number	Description of field
ID	1	Unique identifier of the time series.
Binomial	2	A code compliant version of the scientific name of the taxon, i.e. 'Genus_Species_Subspecies' (subspecies where applicable). This field is required for the code of the Living Planet Index (livingplanetindex.org) software package.
SpNo	3	The unique species identifier following the Working List of Australian Birds (BirdLife Australia, 2023). This field is not available for data on amphibians, mammals or plants.
TaxonID	4	The unique taxonomic identifier. Identifies all species and subspecies and their ultrataxon status (terminal taxonomic units). Identifiers for amphibians, mammals and plants have a consecutive number following an 'a_' for amphibians, 'm_' for mammals or 'p_' for plants in accordance with the TSX 'TaxonList'.
CommonName	5	The common name of the taxon following the Australian Society of Herpetologists Official List of Australian Species (Australian Society of Herpetologists [ASH], 2023) for amphibians, the Working List of Australian Birds (BirdLife Australia, 2023) for birds, the nomenclature of the Australian Faunal Directory (Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2024a) for mammals, and the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999 for plants (DCCEEW, 2024c).

Column name	Column number	Description of field
Class	6	Class is a taxonomic rank used in the classification of organisms and recognised by the nomenclature codes; it is classified between Phylum and Order. Classifications follow the Australian Society of Herpetologists Official List of Australian Species (ASH, 2023) for amphibians, the Working List of Australian Birds (BirdLife Australia, 2023) for birds, the Australian Faunal Directory (DCCEEW, 2024a) for mammals and the Australian Plant Census (Centre for Australian National Biodiversity Research [CANBR], 2024) for plants.
Order	7	Order is a taxonomic rank used in the classification of organisms and recognised by the nomenclature codes; it is classified between Class and Family. Classifications follow the Australian Society of Herpetologists Official List of Australian Species (ASH, 2023) for amphibians, the Working List of Australian Birds (BirdLife Australia, 2023) for birds, the Australian Faunal Directory (DCCEEW, 2024) for mammals, and the Australian Plant Census (CANBR, 2024) for plants.
Family	8	Family is a taxonomic rank used in the classification of organisms and recognised by the nomenclature codes; it is classified between Order and Genus. Classifications follow the Australian Society of Herpetologists Official List of Australian Species (ASH, 2023) for amphibians, the Working List of Australian Birds (BirdLife Australia, 2023) for birds, the Australian Faunal Directory (DCCEEW, 2024) for mammals and the Australian Plant Census (CANBR, 2024) for plants.
FamilyCommonName	9	The Common Name of the Family classification.
Genus	10	Genus is a taxonomic rank used in the classification of organisms and recognised by the nomenclature codes; it is classified between Family and Species. Classifications follow the Australian Society of Herpetologists Official List of Australian Species (ASH, 2023) for amphibians, the Working List of Australian Birds (BirdLife Australia, 2023) for birds, the Australian Faunal Directory (DCCEEW, 2024) for mammals and the Australian Plant Census (CANBR, 2024) for plants.
Species	11	Species is a taxonomic rank used in the classification of organisms and recognised by the nomenclature codes; it is classified between Genus and Subspecies and is represented by a binomial scientific name. Classifications follow the Australian Society of Herpetologists Official List of Australian Species (ASH, 2023) for amphibians, the Working List of Australian Birds (BirdLife Australia, 2023) for birds, the Australian Faunal Directory (DCCEEW, 2024) for mammals and the Australian Plant Census (CANBR, 2024) for plants.
Subspecies	12	Subspecies is a taxonomic rank used in the classification of organisms and recognised by the nomenclature codes; it is below the Rank of species and is represented by a binomial

Column name	Column number	Description of field
		scientific name. Classifications follow the Australian Society of Herpetologists Official List of Australian Species (ASH, 2023) for amphibians, the Working List of Australian Birds (BirdLife Australia, 2023) for birds, the Australian Faunal Directory (DCCEEW, 2024a) for mammals and the Australian Plant Census (CANBR, 2024) for plants.
FunctionalGroup	13	Broad categorisation of species groups. Birds are grouped into 'Terrestrial', 'Marine', 'Shoreline' and 'Wetland' as well as sub-grouped based primarily on feeding/breeding habitat associations drawn from Garnett et al. (2015). Mammals are grouped into 'Marine', 'Terrestrial', or a weight category (<50g; 50-5000g; >5000g) and sub-grouped into 'Arboreal' or 'Volant' taxa. Plants are grouped into 'Herbaceous', 'Orchid', 'Shrub' and 'Tree'. Amphibians are grouped into 'Chytrid-impacted', 'Chytrid non-impacted', 'Terrestrial breeding', 'Wetland breeding' and 'Stream breeding'. If a taxon belongs to more than one functional group, this is indicated by providing all functional groups names separated by a comma (,) and without spaces e.g.: 'Shrub,Tree' indicates a plant taxon that belongs to both functional groups: Shrub and Tree.
TaxonomicGroup	14	The Threatened Species Index considers taxonomic groups. Current options include Amphibians, Birds, Mammals and Plants.
EPBCStatus	15	A taxon included in the Vulnerable, Endangered or Critically Endangered category of the list of threatened species under the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999 as of 28 October 2024 (DCCEEW, 2024b, 2024c).
IUCNStatus	16	A taxon included as meeting the IUCN Red List Criteria to be categorised as Near Threatened, Vulnerable, Endangered, and Critically Endangered by the IUCN Red List of Threatened Species as of 16 January 2024 (IUCN, 2024).
BirdActionPlanStatus	17	A taxon included in the Near Threatened, Vulnerable, Endangered, and Critically Endangered category as assessed in The Action Plan for Australian Birds 2020 (Garnett & Baker, 2022).
MaxStatus	18	The maximum listed status among the Australian (EPBC Act 1999 and The Action Plan for Australian Birds 2020) or international (IUCN Red List) conservation authorities.
State	19	This field indicates the jurisdictional subdivisions of Australian States and Territories (6 Australian States, 2 Territories and the Australian Commonwealth area which includes Christmas, Cocos (Keeling) and Heard Islands and the Australian Antarctic Territory).

Column name	Column number	Description of field
Region	20	This field indicates the name of the Interim Biogeographic Regionalisation for Australia (IBRA) subregion in which the monitoring site is located. IBRA Version 7.0 classifies Australia's landscapes into 89 large geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information, and 419 subregions which are more localised and homogenous geomorphological units in each bioregion (DCCEE, 2023). Spatial information of a species population time series is provided to the IBRA Subregion level (i.e. latitude and longitude in WGS84 are given as centroids of IBRA Subregions in which the species was monitored) (Figure 1).
RegionCentroidLatitude	21	The latitude of the centroid of the IBRA subregion in which the monitoring site is located.
RegionCentroidLongitude	22	The longitude of the centroid of the IBRA subregion in which the monitoring site is located.
RegionCentroidAccuracy	23	Because IBRA subregions in Australia have different sizes, this field indicates the accuracy of spatial information provided in metres based on the longest axis of the subregion (Figure 1).
SiteID	24	Unique numbers indicating the site where monitoring data for a taxon was recorded. A site is a discrete spatial entity in which species/subspecies data are collected over time using a consistent monitoring method.
SourceID	25	Unique numbers indicating the Source who provided the data to the Threatened Species Index.
SourceDesc	26	Source Description. This field describes the Source who provided the data to the Threatened Species Index. This text generally follows the following structure: 'State/Territory-Species/Taxon Group(s)-Institution/Organisation'.
MonitoringProgram	27	Field indicating whether monitoring has been carried out within a large national or jurisdictional monitoring program such as the 'Saving our Species' program in NSW or the national 'Regional Land Partnerships' program, for example.
UnitID	28	Unique numbers indicating the Unit of measurement used to quantify the taxon.
Unit	29	Unit of measurement. The units used to quantify the abundance of a taxon at a site using the same monitoring method. Units of measurement can be actual counts of individuals, densities, occurrence rate (rates of presences vs. absences of individuals), or proxies. Different units of measurement cannot be included in the same time series (repeated measures over time).
SearchTypeID	30	Unique numbers indicating different Search Types used to monitor the taxon.

Column name	Column number	Description of field
SearchTypeDesc	31	Search Type Description. The Search Type is a synonym for monitoring method. It describes a consistent, comparable way of collecting data for a Threatened or Near Threatened species.
ResponseVariableType	32	The Response Variable Type indicates how data were aggregated into annual counts per taxon per site and per year. Options include (i) taking the average count, first per month and then per year, (ii) taking the maximum count per year or (iii) calculating a reporting rate by dividing the number of presences by the total number of surveys.
DataType	33	This field indicates the type of data that constituted the time series. Type 1 data feature monitoring data for single species or groups of species. Type 1 data require less processing once imported into the database. They satisfy the following requirements: (i) all taxa are defined to ultrataxon level, (ii) survey methods are clearly defined, (iii) the unit of measurement is defined, (iv) data are recorded to the temporal scale of at least a year, (v) spatial data for pre-defined (fixed) sites have defined accuracy, (vi) consistent survey methods/effort are used within sites, (vii) non-detections of taxa (i.e. absence or 0 counts) are recorded. Type 2 data contain records from large multi- species datasets provided predominantly by state and territory repositories, non-governmental organisations and research institutions. They require a substantial amount of processing. Type 2 data satisfy the following requirements: (i) taxon is defined at least to species level, (ii) survey methods are defined, (iii) unit of measurement is defined, (iv) consistent measure/methods are used through time, (v) data are recorded to the temporal scale of at least a year, (vi) recorded absences of taxa are not required, i.e. presence-only data are allowed, (vii) spatial coordinates are available for all data points.
1950 - 2021	34-105	Abundance values for each year across the entire length of the time series. Zeros indicate absences or non-detections. Note that 1950 and 2021 represent the minimum and maximum year, respectively, to be included in any time series.
TimeSeriesLength	106	Time period between first year of surveys at one site and the last year; may include data gaps. The longer the time series the better it is to track long-term change.
TimeSeriesSampleYears	107	Number of years with a value in a time series. Trend estimates are derived from these values and fit across missing years to produce annual estimates of change per year. The closer this value is to that of TimeSeriesLength the more complete the time series is. Time series with at least two years of surveys are allowed in this database.

Column name	Column number	Description of field
TimeSeriesCompleteness	108	Proportional measure of how many years across the total length of a time series contain samples. A value of 1 indicates all years within a time series are sampled, a value of 0.5 indicates that half the years are sampled (for instance if monitoring is biennial) etc. More complete time series (values closer to 1) are more likely produce more realistic index estimates of long-term change.
TimeSeriesSamplingEvenness	109	Variance in the length of gaps in the time series. Larger numbers indicate less even gaps in sampling across the time series. For example, monitoring conducted biennially will have a TimeSeriesCompleteness value of 0.5 (sampling having been conducted in half the years across the time series), but will have an evenness value of 1 as all gaps are the same. Data suitability: time series with smaller variance in gaps produce more realistic index estimates of long-term change.
AbsencesRecorded	110	This field indicates whether absences of species (species non-detections) were recorded as true zeros. A value of 1 indicates 'yes' and a value of 0 indicates 'no'.
StandardisationOfMethodEffort	111	This field provides a measure on the degree of standardisation of monitoring method and effort. A high number indicates a very standardised monitoring with consistent monitoring effort kept the same over time. The values indicate: 6 = Pre-defined sites/plots surveyed repeatedly through time using a single standardised method and effort across the whole monitoring program 5 = Pre-defined sites/plots surveyed repeatedly through time with methods and effort standardised within site units, but not across program - i.e. different sites surveyed have different survey effort/methods 4 = Pre-defined sites/plots surveyed repeatedly through time with varying methods and effort 3 = Data collection using standardised methods and effort but surveys not site-based (i.e. surveys spatially ad-hoc). Post-hoc site grouping possible - e.g. a lot of fixed area/time searches conducted within a region but not at pre-defined sites 2 = Data collection using standardised methods and effort but surveys not site-based (i.e. surveys spatially ad-hoc). Post-hoc site grouping not possible 1 = Unstandardised methods/effort, surveys not site-based NULL = not defined
ObjectiveOfMonitoring	112	Where information was provided from the data provider, this field indicates the objective of the monitoring with the values: 4 = Monitoring for targeted conservation management 3 = Monitoring for general conservation management – 'surveillance' monitoring

Column name	Column number	Description of field
		2 = Baseline monitoring 1 = Monitoring for community engagement NULL = not defined
SpatialRepresentativeness	113	A proportional measure of the spatial area over which monitoring data included in the index are available in relation to a taxon's overall range (as determined by alpha hulls of monitoring data vs all data available for a taxon where alpha hulls are an appropriate way of generalising range). Data suitability: a number of 1 means that the whole range of a species has been captured by the data; the higher the number, the more representative index estimates will be for a given taxon in a spatial sense. The measure of spatial representativeness is not yet available for all groups.
ConsistencyOfMonitoring	114	This field provides a broad categorisation of how consistent sampling is across sites based on matrices of sites × years plots. Data suitability: datasets with higher scores (i.e. higher consistency) are less subject to statistical confounding. The values indicate: 4 = Balanced; all (or virtually all) sites surveyed in each year sampled (no, or virtually no, site turnover) 3 = Imbalanced (low turnover); sites surveyed consistently through time as established, but new sites are added to program with time 2 = Imbalanced (high turnover); new sites are surveyed with time, but monitoring of older sites is often not maintained 1 = Highly Imbalanced (very high turnover); different sites surveyed in different sampling periods. Sites are generally not surveyed consistently through time (highly biased) NULL = not defined
Management	115	This field indicates whether the monitored population is being actively managed for conservation. These broader categories of management simply indicate whether management is occurring or not (or whether this is unknown). They are: 1) No known management or 2) Actively managed.
ManagementCategory	116	This field provides further categorisation of the type of management that is occurring for the monitored population, based on the 'Management' column. The finer categories of management include: 1) Unknown, 2) No management or 3) Actively managed.
ManagementCategoryComments	117	This free text field describes in further detail the type of management occurring for the monitored population.
SuppressAggregatedData	118	Indicates where aggregated data i.e. the Count value have been suppressed. The value of 1 indicates 'yes' and the value of 0 indicates 'no'.

Column name	Column number	Description of field
SurveyCount	119	The number of individual survey events making up a yearly time series. Values above 1 indicate that count values are aggregates of several survey events.
TimeSeriesID	120	This is a field used for administrative purposes and concatenates: SourceID_UnitID_SearchTypeID_SiteID_TaxonID
NationalPriorityTaxa	121	This field indicates whether the taxon is on the list of national priority taxa as outlined by the Australian Government's Threatened Species Action Plan 2022-2032 (DCCEEW, 2022). The value of 1 indicates 'yes' and the value of 0 indicates 'no'.
Citation	122	This field is a recommendation on how the time series should be cited.

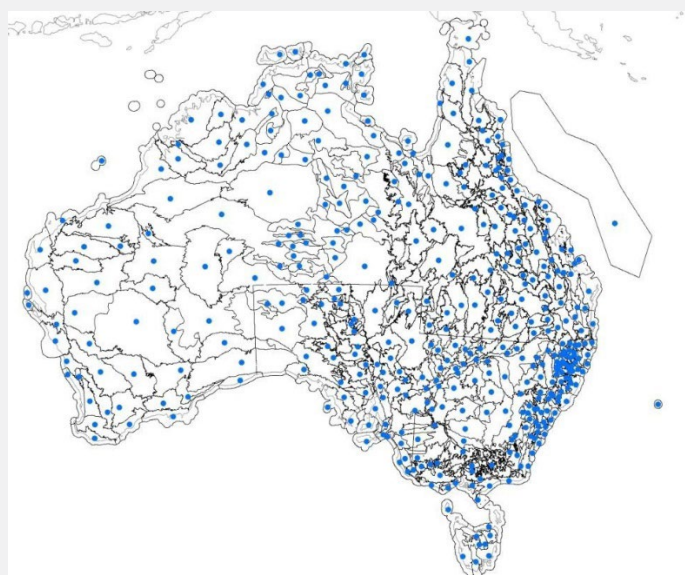


Figure 1. Blue dots indicate the centroids of 419 Interim Biogeographic Regionalisation for Australia (IBRA) subregions which are more localised and homogenous geomorphological units in each bioregion (DCCEEW, 2023). The blue dots indicate the maximum resolution of spatial information shared for TSX data.

References

Australian Society of Herpetologists [ASH]. (2023). *Australian Society of Herpetologists official list of Australian species*. Accessed 30 November 2023. Available at: <http://www.australiansocietyofherpetologists.org/ash-official-list-of-australian-species>.

BirdLife Australia. (2023). *The working list of Australian birds; version 4.3 (last updated 19 October 2023)*. Accessed 12 January 2024. Available at: <https://birddata.birdlife.org.au/whats-in-a-name>.

Centre for Australian National Biodiversity Research [CANBR]. (2024). *Integrated Biodiversity Information System [IBIS], Australian Plant Census*. Accessed 11 January 2024. Available at: <https://biodiversity.org.au/nsl/services/APC>.

Department of Climate Change, Energy, the Environment and Water [DCCEEW]. (2022). *The threatened species action plan 2022–2032*. Available at: <https://www.dcceew.gov.au/environment/biodiversity/threatened/action-plan>.

Department of Climate Change, Energy, the Environment and Water [DCCEEW]. (2023). *Interim Biogeographic Regionalisation for Australia (IBRA) Version 7 (Subregions) - States and Territories*. Available at: <https://fed.dcceew.gov.au/datasets/5b69db6a36f1429a84ea07dd4616eb30/>.

Department of Climate Change, Energy, the Environment and Water [DCCEEW]. (2024a). *Australian Biological Resources Study, Australian Faunal Directory*. Accessed 02 February 2024. Available at: <https://biodiversity.org.au/afd/home>.

Department of Climate Change, Energy, the Environment and Water [DCCEEW]. (2024b). *Species Profile and Threats Database - EPBC Act List of Threatened Fauna*. Accessed 18 October 2024. Available at: <https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna>.

Department of Climate Change, Energy, the Environment and Water [DCCEEW]. (2024c). *Species Profile and Threats Database - EPBC Act List of Threatened Flora*. Accessed 18 October 2024. Available at: <https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora>.

Garnett, S. T. and Baker, G. B. (2022). *The action plan for Australian birds 2020*. 1st edn. Melbourne: CSIRO Publishing.

Garnett, S. T., Duursma, D. E., Ehmke, G., Guay, P.-J., Stewart, A., Szabo, J. K., Weston, M. A., Bennett, S., Crowley, G. M., Drynan, D., Dutson, G., Fitzherbert, K. and Franklin, D. C. (2015). 'Biological, ecological, conservation and legal information for all species and subspecies of Australian birds', *Scientific Data*, 2(1), p. 150061. Available at: <https://doi.org/10.1038/sdata.2015.61>.

International Union for Conservation of Nature [IUCN]. (2024). *The IUCN Red List of Threatened Species 2024(1)*. Accessed 16 January 2024. Available at: <https://www.iucnredlist.org>.