TSX | Threatened Species Index

2022 Threatened Species Index Factsheet: Tasmania

Background

Nearly 2,000 flora and fauna species or subspecies are listed as threatened or extinct in Australia. Monitoring of these species plays a critical role in assessing how populations are changing over time and helps to identify where management actions are and are not working.

In recent decades, hundreds of threatened species have been monitored across Australia by dozens of different government, non-government and community groups. Previously, however, there has been no means of bringing these data together to assess long-term trends, and to assess the status of different groups of species across different regions of Australia.

Australia's Threatened Species Index (TSX) is based on the Living Planet Index, a method developed by World Wildlife Fund and the Zoological Society of London. The LPI method enables trends from different species to be aggregated together at a national scale, as well as across jurisdictional, taxonomic and other groupings (e.g. for each state and territory, and for different functional groups and management categories).

Assembling all of the data is a big job and is being staged. Data and trends for threatened birds, mammals and plants were released in 2018, 2019, and 2020 respectively. In 2021 and 2022, new data was collated and trends for each of these groups were updated.

The TSX allows Australian governments, non-government organisations, stakeholders and the community to better understand and report on how threatened species abundances are changing over time. It will also enable us to better understand the performance of high-level strategies and the return on investment in threatened species recovery efforts.

More data (and species) will be added to the index as they become available each year, increasing the representativeness and robustness of the findings.

How to interpret the index?

The index itself shows the average change in the abundance of threatened species compared to a baseline year. The baseline year of 1985 was chosen for the national index because very few of Australia's monitoring programs originated before 1985. For Tasmania, the baseline year has been set to 2000 due to data limits before this year.

The baseline year has an index value of 1. Changes in the index are proportional—a year with a value of 0.5 indicates that on average the abundance of each taxa has decreased to half the size they were during the baseline year; a value of 1.5 indicates that on average abundance is 50% above the baseline year.

The grey cloud represents variability in the trends of individual species that make up an overall multi-species index. It is created by randomly sampling species trends from all possible trends in the dataset 100 times and dropping the 5 trends that are furthest from the average, resulting in a 95% "confidence limit".

2022 TSX for Tasmania

The 2022 Threatened Species Index for Tasmania includes data for 33 taxa, including 23 birds, 6 mammals and 4 plants.

The overall TSX value for Tasmania in 2019 is 0.72. This means that, on average, the abundance of threatened species populations represented in the index from Tasmania decreased by 28% between 2000 and 2019 (Figure 1).

In the following pages of this factsheet, we will walk you through the separate indices for threatened birds, mammals, and plants for Tasmania.
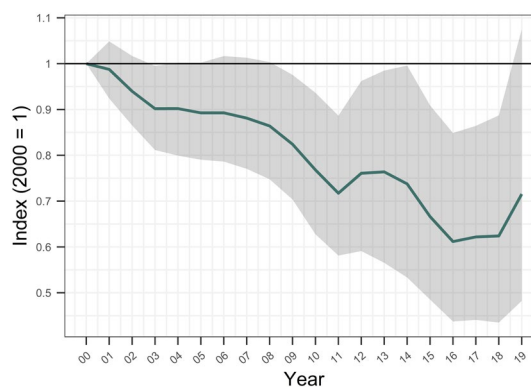

Figure 1:
The Tasmanian 2022 Threatened Species Index based on all data provided on threatened and near-threatened species. The green line shows the change in species abundance relative to the baseline year of 2000, where the index is set to 1.0. The grey cloud shows the confidence limit.

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Australian Government
Department of Climate Change, Energy, the Environment and Water

Threatened Birds in Tasmania

TAS Bird Index - Quick Facts

Ref. year	2000
2019 index value	0.77
% change from 2000	*-23%*
Time-series	437
Taxa	23
Sampling years	5,008
Av. time-series length	17.31

Orange bellied parrot. JJ Harrison CC BY-SA 3.0 Wikimedia

The overall index value for threatened birds in Tasmania in 2019 is 0.77. This suggests an average decline of 23% in population abundances since 2000, for the 23 bird taxa represented (Figure 2A). In the same context, the national threatened bird index reveals a decline of 50% since 2000, which is based on data for 70 taxa.

The overall trend for Tasmania's threatened birds was one of decline from 2000–2011, with some stabilisation since that time (Figure 2A). The most recent time step of 2018–2019 is suggestive of some recovery; however, data are relatively sparse for this time-step (Figure 2C & D). There is considerable interspecific variation, as indicated by the wide confidence intervals in Figure 2A. Trends for marine birds are better than shoreline migratory birds (11% decline vs 25% decline since 2000). Data for terrestrial birds are insufficient to create an index for this group alone in Tasmania.

There is good spatial coverage for Tasmania's bird data (Figure 2B). The number of taxa represented each year and the number of time-series increased in a roughly linear fashion from 1980, but has declined sharply in more recent years (Figure 2C and 2D). You can find a summary of the species and time-series included in this index by clicking "Data summary" on the TSX visualisation tool.
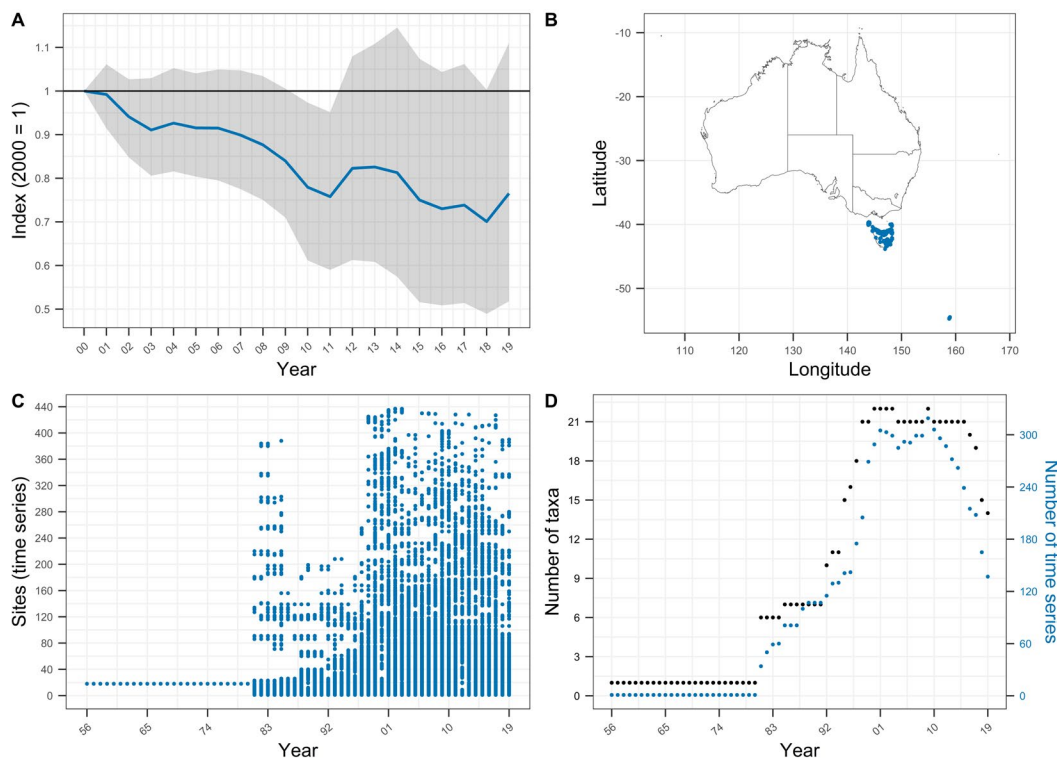

Figure 2:
A) The Tasmanian 2022 Threatened Bird Index based on all data provided on threatened and near-threatened birds. The blue line shows the change in bird abundance relative to the baseline year of 2000, where the index is set to 1.0. The grey cloud shows the confidence limit.
B) A map showing where the threatened bird data, submitted to the index, were recorded in Tasmania. The blue dots indicate repeatedly monitored sites.
C) Dot plot showing the years for which monitoring data were available to compile the index. Each row represents a time series where a species was monitored with a consistent method at a single site in Tasmania.
D) The number of species (in black circles) and number of time series (in blue circles) used to calculate the Tasmanian bird index for each year.

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Threatened **Mammals** in Tasmania

TAS Mammal Index - Quick Facts

Ref. year	2000
2019 index value	1.81
% change from 2000	*+81%*
Time-series	158
Taxa	6
Sampling years	3,103
Av. time-series length	19.85

Eastern barred bandicoot. JJHarrison CC BY-SA 3.0 Wikimedia

The overall index value for threatened mammals in Tasmania in 2019 is 1.81. This suggests an average increase of 81% in population abundances since 2000, for the 6 mammal taxa represented (Figure 3A). In the same context, the national threatened mammal index reveals a decline of 26% since 2000, which is based on data for 79 taxa.

The trend for Tasmanian mammals in the two most recent years is not reliable, being based on relatively few time-series for these years (Figure 4C & D). As such, the headline statistic of an average increase in abundance of 81% since 2000 should be treated with considerable caution. The very wide confidence intervals for the trend (Figure 4A) are also indicative of this data limitation for the most recent years. Notably, no recent data was acquired for most Tasmanian Devil monitoring sites included in the index, which makes up the majority of time-series (as indicated by the very large block of sites between 1995 and 2016 in Figure 4C). Species for which data was available in 2018 and 2019 are the Eastern Barred Bandicoot, Eastern Bettong, Long-nosed Potoroo and Southern Elephant Seal. You can find a summary of the species included in this index by clicking "Data summary" on the TSX visualisation tool.
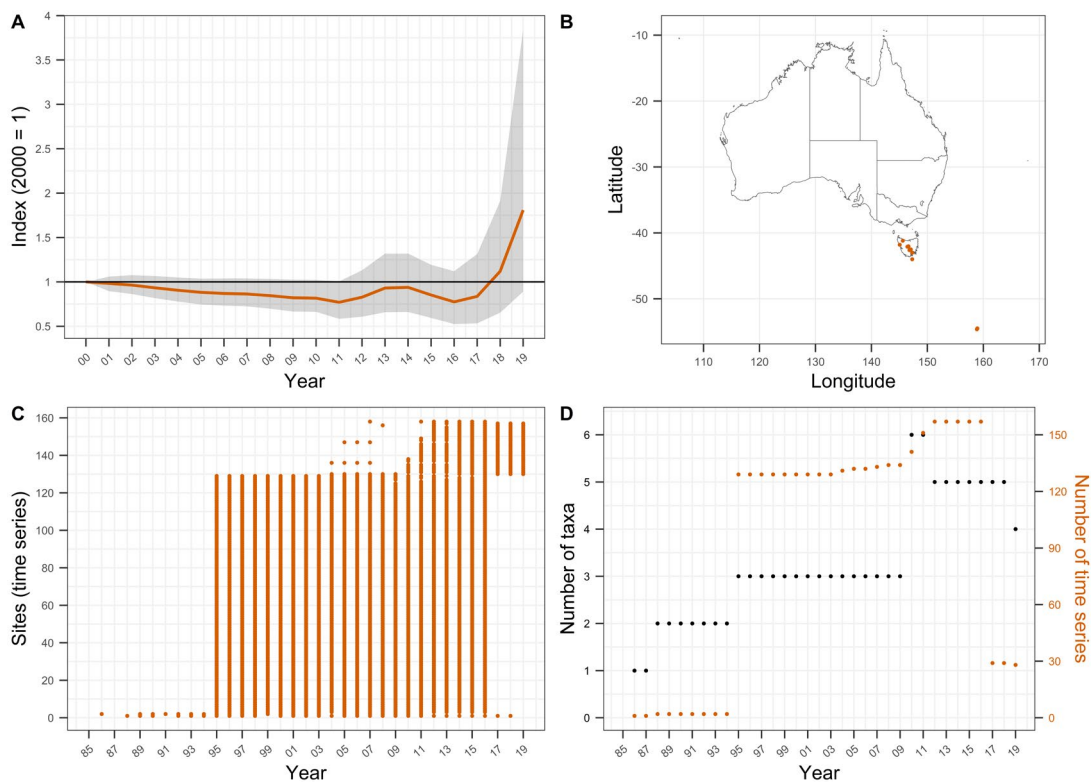

Figure 3:
A) The Tasmanian 2022 Threatened Mammal Index based on all data provided on threatened and near-threatened mammals. The orange line shows the change in mammal abundance relative to the baseline year of 2000, where the index is set to 1.0. The grey cloud shows the confidence limit.
B) A map showing where the threatened mammal data, submitted to the index, were recorded in Tasmania. The orange dots indicate repeatedly monitored sites.
C) Dot plot showing the years for which monitoring data were available to compile the index. Each row represents a time series where a species was monitored with a consistent method at a single site in Tasmania.
D) The number of species (in black circles) and number of time series (in orange circles) used to calculate the Tasmanian mammal index for each year.

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Threatened Plants in Tasmania

TAS Plant Index - Quick Facts

Ref. year	NA
2019 index value	NA
% change from 2000	*NA*
Time-series	6
Taxa	5
Sampling years	58
Av. time-series length	17

Zieria citriodora. Image: Melburnian CC BY 3.0 Wikimedia

Data are insufficient to create a formal index of abundance trends for Tasmania's threatened and near-threatened plant species, which requires data for at least 3 species in the reference year. The TSX holds time-series data for just 5 species, covering just 6 time series.

Tasmania plants for which the TSX hold data are Davies' Wax Flower (two sites, 1993–2017 and 1997–2019), Marsh Leek Orchid (one site, 2009–2021), Tailed Spider Orchid (one site, 2008–2018), Pretty Leek Orchid (one site, 2008–2019) and Crowded Leek Orchid (one site, 2012–2018). All of these datasets originate from Tasmania's north (Figure 4B). As above, data are not sufficient to build a formal trend, however, Figure 4A provides a preliminary trend based on the available data. While we recommend considerable caution when interpreting this trend, and note that the confidence intervals are very wide, the data suggest declines in abundance among the species represented since 2008. It will be imperative to collate additional data sets for Tasmania's threatened and near-threatened flora in the coming years, to enable reliable trends for this group to be estimated.
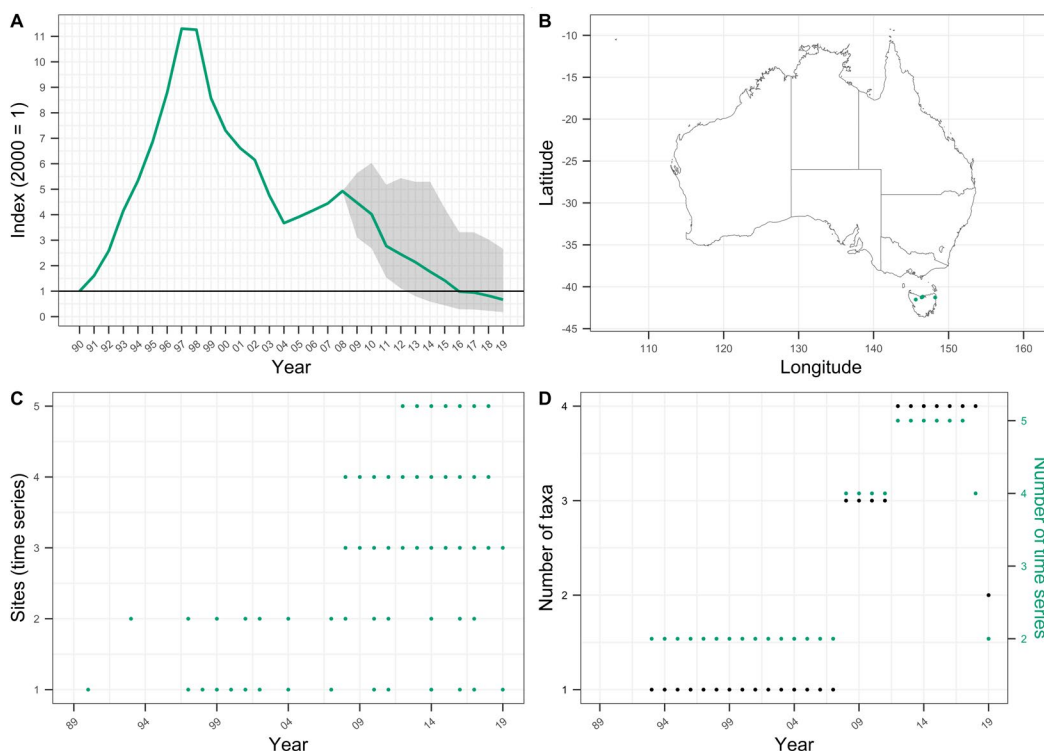

Figure 4:
A) Estimated trend for Tasmanian threatened and near-threatened plants. Note that this is not a formal trend. The green line is the change in abundance, with the initial year set to 1. The grey cloud is the 95% confidence interval. In this plot, data for only a single species is available up to 2008, in which case a confidence interval is not provided prior to that year.
B) A map showing where the threatened plant data, submitted to the index, were recorded in Tasmania. The green dots indicate repeatedly monitored sites.
C) Dot plot showing the years for which monitoring data were available to compile the index. Each row represents a time series where a species was monitored with a consistent method at a single site in Tasmania.
D) The number of species (in black circles) and number of time series (in green circles) used to calculate the Tasmanian plant index for each year.

What should we know about the data?

- The TSX includes species listed as threatened or near-threatened under both the EPBC Act and the IUCN Red List. State- and territory-based assessments are not yet incorporated into the index.

- The composite indices presented in this factsheet are based only on data provided by our custodians endeavouring to meet the TSX suitability criteria. For example, only time series produced from standardised monitoring programs and with a minimum length of two years, collected between 2000 and 2019 inclusive, were used for index calculation.

- To ensure that species trends are suitable for inclusion in the index, feedback surveys are sent to each TSX data custodian requesting that they assess the time series data and trends produced from their dataset.

- When interpreting the index, it is important to consider the proportional representation of the threatened and near-threatened taxa included, as well as the spatial and temporal coverage of the time-series data. The reliability of the trend at any point in time is directly related to coverage and quantity of underlying data.

- The data on spatial and taxonomic representativeness can be useful for identifying strategic monitoring opportunities. Increasing the number of species, regions and groups monitored, particularly in regional gaps and for poorly represented groups, will strengthen the representativeness of the index.

Further information

For more information or to become a *Friend of the Index* and receive updates on the progress of the project please contact the TSX Team at tsx@tern.org.au

The data underpinning the index were contributed by many different individuals and organisations, including Commonwealth, state and territory agencies, research institutions and environmental non-government organisations and consultants. Visit this web page for more information.

Go to the web-app to access and explore the data behind the 2022 TSX and to produce reports tailored to your particular needs.

The TSX is supported through funding from the Terrestrial Ecosystem Research Network (an NCRIS enabled facility) and the Australian Government's Department of Climate Change, Energy, the Environment and Water.

Do you have monitoring data on nationally threatened species that has been collected in a standardised way and repeated through time? You can download the TSX data upload template here and upload it together with your data to be considered for next year's index here. A video tutorial on filling out the template can be viewed here.

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