

# 2022 Threatened Species Index Factsheet: Queensland

## 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 Queensland, 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.

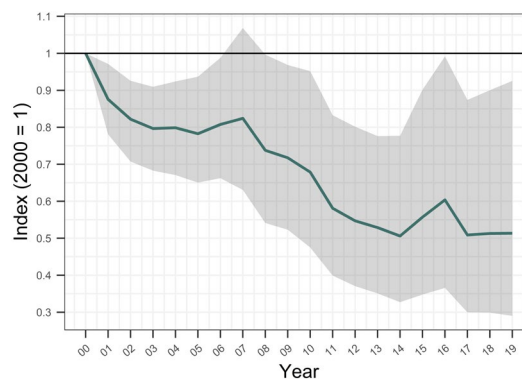
The grey cloud represents variability in the trends of individual species that make up an overall multi-species index. It is created by randomly sampling species trends from all possible trends in the dataset 100 times and dropping the 5 trends that are furthest from the average, resulting in a 95% “confidence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

## 2022 TSX for Queensland

The 2022 Threatened Species Index for Queensland includes data for 49 taxa, including 24 birds, 22 mammals and 3 plants.

The overall TSX value for QLD in 2019 is 0.51. This means that, on average, the abundance of threatened species populations represented in the index from QLD decreased by 49% 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 Queensland.



*Figure 1: The Queensland 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.*

## Threatened Birds in Queensland

QLD Bird Index - Quick Facts	
Ref. year	2000
2019 index value	0.45
<b>% change from 2000</b>	<b>-55%</b>
Time-series	2774
Taxa	24
Sampling years	25,199
Av. time-series length	15.16



The overall index value for threatened birds in Queensland in 2019 is 0.45. This suggests an average decline of 55% in population abundances since 2000, for the 24 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.

If we subset the Queensland bird index to look at trends for specific groups, we see some variation in the extent of these declines. For example, Queensland’s terrestrial birds that are represented in the index have decreased in abundance by 36% since 2000, while Queensland’s migratory shorebirds have declined substantially more on average, at 62% since 2000.

The data underlying the Queensland bird index have good coverage for both the central and south-east coast but are marginal for North Queensland and in the arid zones (Figure 2B). For birds, both the number of sites and the number of taxa being monitored in Queensland has substantially increased since 1992, with data in the index peaking at around 2007 (Figure 2C and 2D). You can find a summary of the species included in this index by clicking “Data summary” on the [TSX visualisation tool](#).

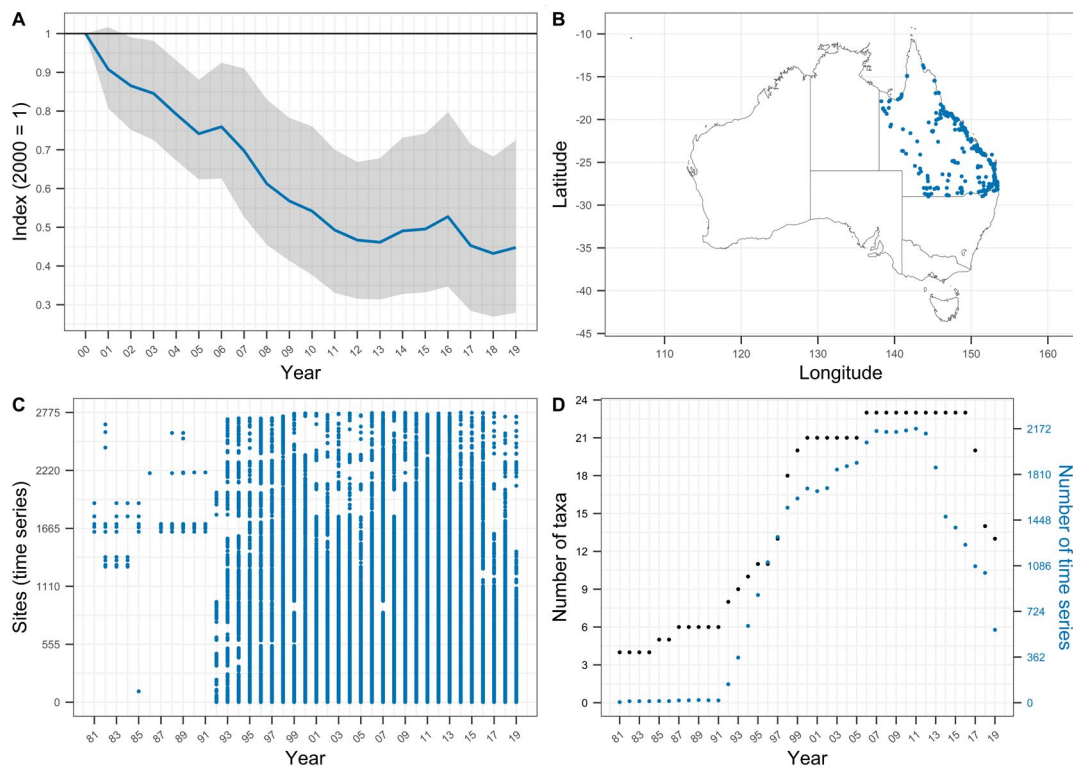


Figure 2:

- A) The Queensland 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 Queensland. 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 Queensland.
- D) The number of species (in black circles) and number of time series (in blue circles) used to calculate the Queensland birds index for each year.

## Threatened Mammals in Queensland

### QLD Mammal Index - Quick Facts

Ref. year	2000
<b>2018*</b> index value	0.78
<b>% change from 2000</b>	<b>-22%</b>
Time-series	135
Taxa	22
Sampling years	669
Av. time-series length	9.88



The overall index value for threatened mammals in Queensland in 2018 is 0.78. This suggests an average decline of 22% in population abundances since 2000, for the 22 mammal taxa represented (Figure 3A). In the same context, the national threatened mammal index (for 2018) reveals a decline of 25% since 2000, which is based on data for 79 taxa.

If we subset the Queensland mammal index to look at trends for specific groups, we see mixed results. For critical weight range mammals, the average decline is 53% since 2000. But for the four larger mammal species (>5000g) for which the TSX holds data (Humpback Whale, Northern Hairy-nosed Wombat, Yellow-footed Rock-wallaby and Koala), abundance increased on average by 160%.

The data underlying the Queensland mammal index have good coverage for the south-east but are marginal for the rest of southern Queensland, as well as central and northern regions (Figure 3B). For mammals, both the number of sites and the number of taxa being monitored in Queensland has substantially increased through time, particularly since 1996 (Figure 3C and 3D). You can find a summary of the species included in this index by clicking “Data summary” on the [TSX visualisation tool](#).

\*2018 was chosen as the final year for the Queensland mammal index due to limited data being available in 2019.

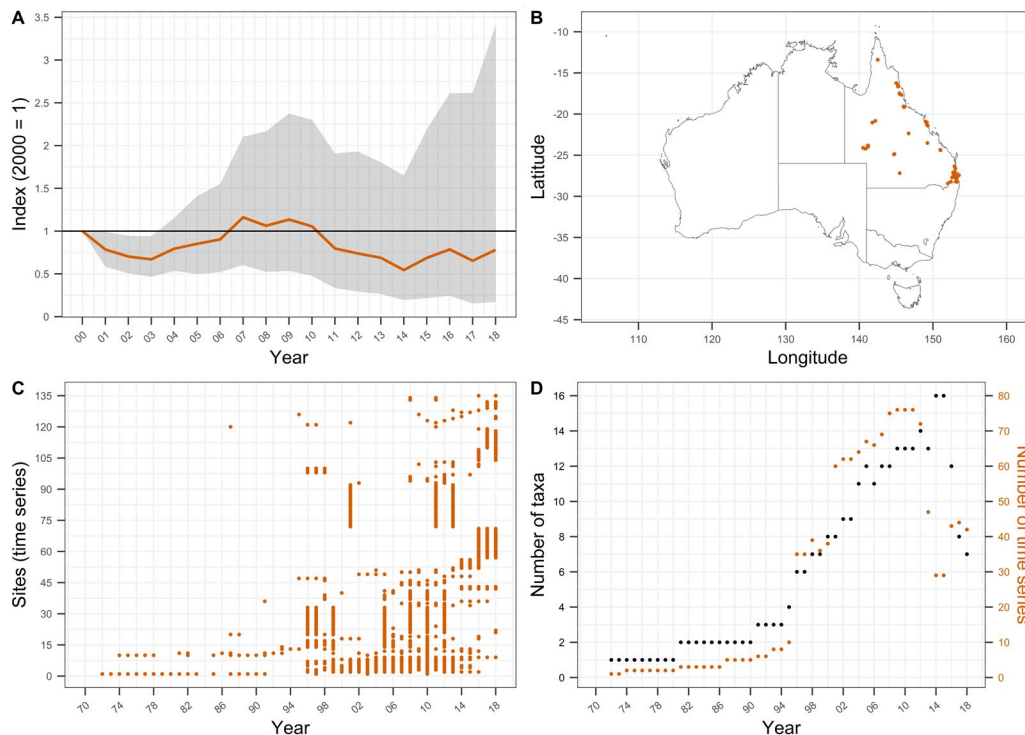


Figure 3:

A) The Queensland 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 Queensland. 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 Queensland.

D) The number of species (in black circles) and number of time series (in orange circles) used to calculate the Queensland mammal index for each year.

## Threatened Plants in Queensland

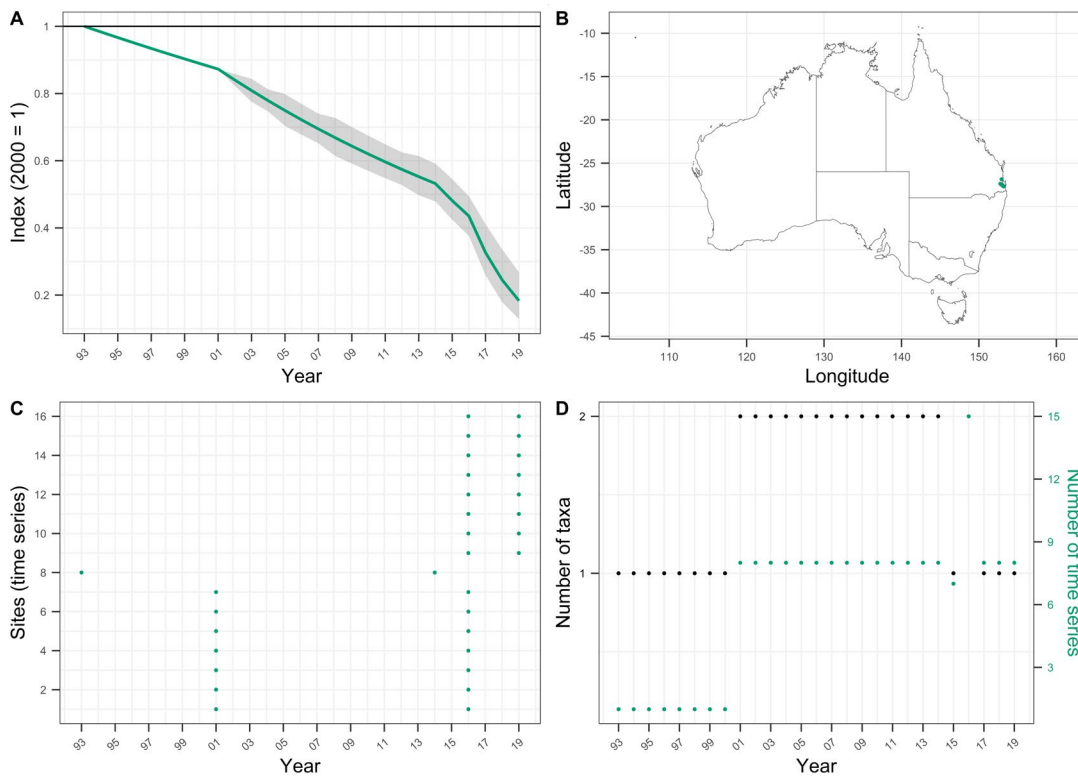
### QLD Plant Index - Quick Facts

Ref. year	NA
2019 index value	NA
<b>% change from 2000</b>	<b>NA</b>
Time-series	16
Taxa	3
Sampling years	32
Av. time-series length	10.38



Data are insufficient to create a formal index of abundance trends for Queensland’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 3 species, covering just 16 time series.

Queensland plants for which the TSX hold data are *Grevillea hodgei* (one site, 1993–2020), *Gossia gonoclada* (seven sites, 2001–2016) and *Rhodamnia rubescens* (eight sites, 2016–2019). All of these datasets originate from Queensland’s south-east coast and ranges (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, the data suggest declines in abundance among the species represented since 1993. It will be imperative to collate additional data sets for Queensland’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 Queensland threatened and near-threatened plants. Note that this is not a formal trend. The green line shows the change in plant abundance relative to the baseline year of 1993, where the index is set to 1.0. The grey cloud shows the confidence limit.  
 B) A map showing where the threatened plant data, submitted to the index, were recorded in Queensland. 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 Queensland.  
 D) The number of species (in black circles) and number of time series (in green circles) used to calculate the Queensland 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](mailto: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](#).



[www.tsx.org.au](http://www.tsx.org.au)

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