

Science for Saving Species

Research findings factsheet

Project 3.1

Factsheet: A Threatened Bird Index for the Australian Capital Territory



Research in brief

This project is developing a Threatened Species Index (TSX) for Australia which can assist policy makers, conservation managers and the public to understand how some of the population trends across Australia's threatened species are changing over time. It will inform policy and investment decisions and assist with coherent and transparent reporting on relative changes in threatened species numbers at national, state and regional levels. Australia's TSX is based on the Living Planet Index (www.livingplanetindex.org), a method developed by World Wildlife Fund and the Zoological Society of London. The TSX is still in the early stages of development, but it has been designed to be a dynamic tool to which new monitoring data can be added and examined.

How can the index be used?

For the first time in Australia, an index has been developed that can provide reliable and rigorous measures of trends across Australia's threatened species. In addition to communicating overall trends, the indices can be interrogated and the data downloaded via a **web-app** to allow trends for different taxonomic groups or regions to be explored and compared. So far, the index has been populated with data for some threatened birds, and monitoring data for threatened plants are being assembled and threatened mammals are planned next.

By bringing together monitoring data, these indices will allow Australian governments, non-government organisations, stakeholders and the community to better understand and report on trends for threatened species groups including which are decreasing, increasing or staying stable. It will potentially enable us to better understand the performance of high-level strategies and the return on investment in threatened species recovery, and inform our priorities for future investment.

A Threatened Species Index for birds in the Australian Capital Territory

Here, the national Threatened Bird Index (TBX) is drilled down to report on information relating to trends for threatened and Near Threatened birds in the Australian Capital Territory (Figure 1A). In its first iteration, this index incorporates data from two threatened (Vulnerable) and three Near Threatened bird species or subspecies (under the EPBC Act and/or as assessed by BirdLife Australia - see Table 1), which comprises a small proportion of ACT's threatened and Near Threatened bird. The aim is to add more data as they become available every year allowing the index to grow.

The index shows the estimated yearly change in relative abundance of threatened and Near Threatened bird species in relation to a baseline year,

for which 2000 was chosen, where the index is set to 1.0. Changes in the index are proportional—a value of 0.5 indicates the multi-species relative abundance is 50% below the baseline value; a value of 1.5 indicates 50% above baseline.

In 2015, the ACT TBX value given the current data is 0.52. This suggests that the relative abundance of birds for which we have information has decreased by 48% between 2000 and 2015. While the overall index value in 2015 is 0.52, individual species have TBX values between 0.16 (a 84% decrease) and 1.95 (a 95% increase). The ACT value matches the national TBX which also shows a decrease of 52% in the compiled data between 1985 and 2015.

What should we know about the Australian Capital Territory data?

This index is based on 180 time series (defined as sites where data on a species are recorded using the same methodology and a consistent monitoring effort through time) across these five species. Data quality was maximised by 1) checking whether each dataset had been produced by standardised monitoring and 2) by sending surveys on 111 eligible datasets to custodians and requesting them to assess the trends produced for their datasets. Feedback was received for 82% of the datasets. Only time series that had been produced by standardised monitoring and with a minimum length of four years collected between 2000

and 2015 inclusive were used for index calculation. No trends are calculated for indices with datasets on less than three species.

The data underlying the ACT index have very good spatial representativeness across the north of the Territory but have low representativeness of the central ACT woodland and forest habitats (Figure 1B). The number of sites monitored (Figure 1C) in ACT has increased from 78 in 2000 to 133 in 2010, and all threatened and Near Threatened species eligible for TBX calculation were monitored throughout the whole period of 15 years (Figure 1D).

As new monitoring data become available they can be added making the index more powerful, meaningful and representative. Increasing the number of species (where practical monitoring programs can be implemented) and regions monitored in the ACT should be a priority in the future. It is important that already existing monitoring programs be sustained, and provision of data to the index be encouraged—this will support efforts to track changes in threatened species relative abundance through the TBX. BirdLife Australia have committed stewardship for the TBX-component of the TSX.

Interpretational issues and constraints

- This composite index does not include data for all of the ACT's threatened bird species because some threatened species are rarely present in the ACT (they are rare vagrants to the ACT, such as the Regent Honeyeater and Swift Parrot) and so little data exist for these species and targeted monitoring is impractical. A future priority should be the identification of threatened and Near Threatened species for which practical monitoring programs can be implemented, to increase the comprehensiveness of representation of bird species in the TBX.
- Caution should be applied in assessing trends for the ACT, given the limitations of the data.
- Because of the limited available data for Australian threatened birds and the proximity of the ACT and NSW, future iterations of the index may consider integrating ACT and NSW indices.

Flame Robin. Photo: Dominic Sherony CC BY-SA 2.0 Wikimedia Commons



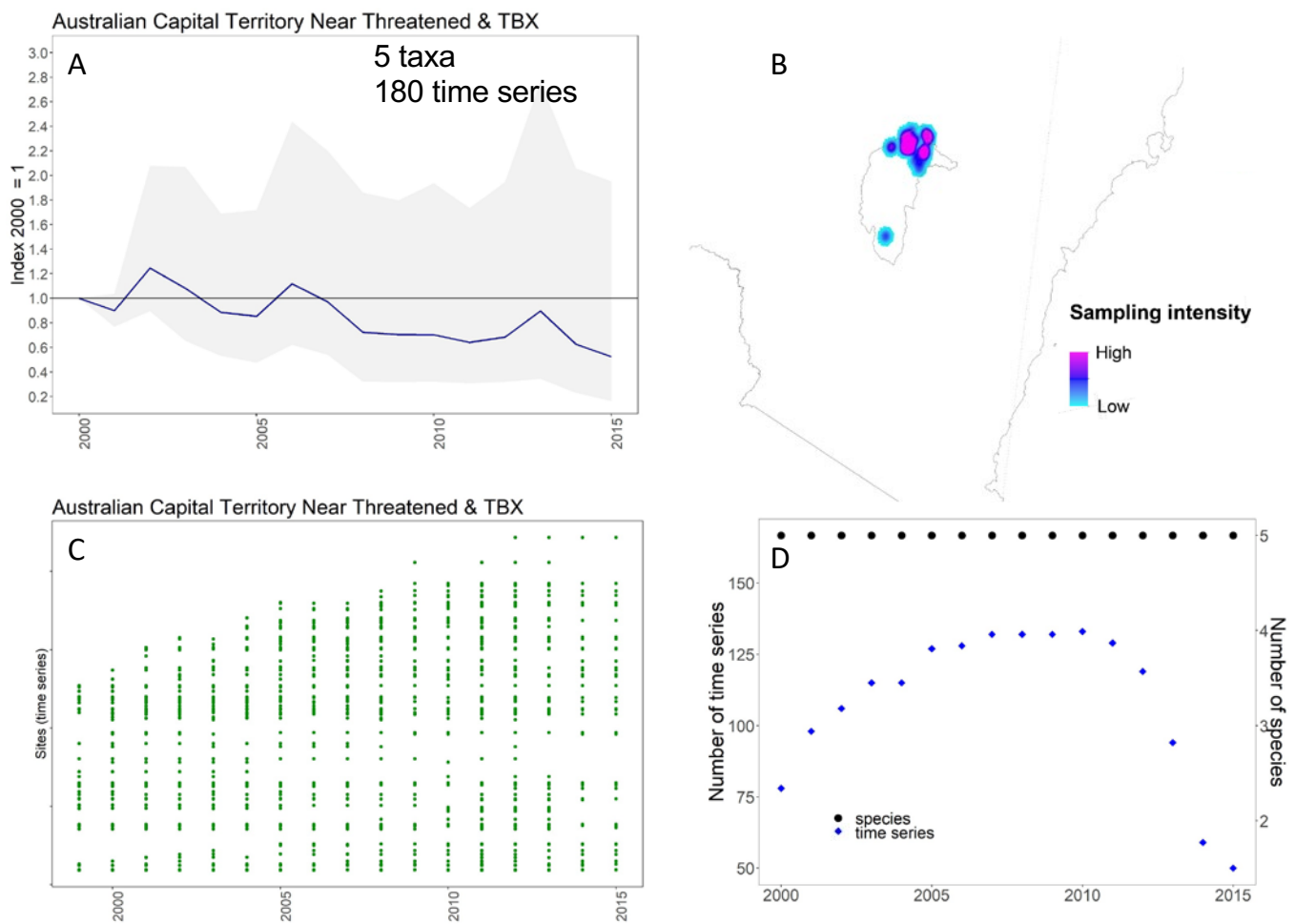


Figure 1 (above):

A) The Threatened Bird Index (TBX) for the Australian Capital Territory. The blue line shows the change in threatened and Near Threatened bird abundance relative to the baseline year of 2000, where the index is set to 1.0. The grey cloud shows the range of trends for the individual species that make up the overall multi-species index. It can be seen as the variability between single-species trends that build the composite.

B) A map showing where threatened and Near Threatened bird data were recorded in the Australian Capital Territory. Light blue indicates less data (fewer sites monitored), pink indicates more data (more sites monitored).

C) This dot plot shows the particular years for which monitoring data were available across the sites used to compile the index. Each row represents a time series where a species was monitored with a consistent method at a single site.

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





Table 1: Data on threatened and Near Threatened bird taxa included in the ACT TBX.

Time-series length (mean \pm SD): 11.2 \pm 4.3

Number of samples (years) per time series (mean \pm SD): 7.7 \pm 3.6

Number of data sources in Index: 1

Number of taxa in Index: 5

Taxon name	Functional group	Functional sub-group	BirdLife Australia status	EPBC status	# data sources	# time series	Mean time-series length
Flame Robin	Terrestrial		Near threatened		1	89	10.1
Painted Honeyeater	Terrestrial	Dry sclerophyll woodland/forest	Vulnerable	Vulnerable	1	6	9.7
South-eastern Brown Treecreeper	Terrestrial	Dry sclerophyll woodland/forest	Near threatened		1	31	10.2
South-eastern Hooded Robin	Terrestrial	Dry sclerophyll woodland/forest	Near threatened		1	22	9.0
Superb Parrot	Terrestrial	Dry sclerophyll woodland/forest	Least concern	Vulnerable	1	32	10.8

Further Information

For more information or to become a *Friend of the Index* and receive updates on the progress of the project please contact: Dr Elisa Bayraktarov; e.bayraktarov@uq.edu.au

The data underpinning the index was contributed by many different individuals and organisations, including Commonwealth, State and Territory agencies, research institutions, environmental non-government organisations and consultants. Visit this web page for more information: tsx.org.au

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

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