TSX | Threatened Species Index

TSX Dataset Downloads Factsheet

The TSX uses the Living Planet Index (LPI) methodology to generate population trends for species and groups of species. For each dataset, data providers can download their raw and time series data, along with their trends estimated using the LPI method. Depending on the contents of the dataset, these trends may be for a single species at a single site, for a single species across multiple sites, or for multiple species across either a single or multiple sites.

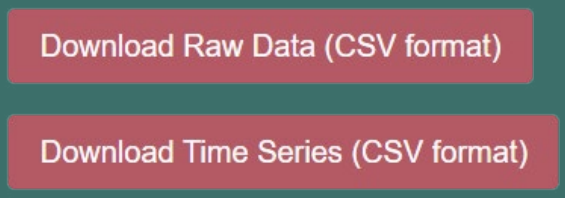
The details below provide a concise summary of the inner workings of the TSX data management interface, covering data processing, estimating population trends, and estimating an index. This text borrows from the LPI technical supplement, "The Living Planet Index 2020: A Deep Dive into the Living Planet Index". Further information on the workings of the LPI method can be found in this document, available for download at the following URL:
https://f.hubspotusercontent20.net/hubfs/4783129/LPR/PDFs/ENGLISH%20-%20TECH%20SUPPLIMENT.pdf

Step 1: Data processing

- Your raw survey data is processed and transformed into time series data (from long to wide format).
  Each individual time series represents all annual survey abundance values for a single site and single species, with all abundance values being directly comparable (e.g. raw count, density etc).
- In cases where surveys occurred more than once a year, all intra-annual abundance values are aggregated to generate a single annual abundance value.

TSX TIP

Users can download the raw and time series data for their dataset. Data dictionaries explaining each component of the data files are included in the downloads.



Step 2: Data standardisation

- All abundance values are logged, so that differences between years describe a relative rather than an absolute change. This means that we can combine information from populations with different measures of abundance and different numbers of individuals.

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Step 3: Data interpolation

- For time series with six or more sample years, a generalised additive model (GAM) is fitted to the data. Annual abundance values are then interpolated from this model for the entire length of the time series.
- For time series with less than 6 sample years, or for which a GAM cannot be fitted, missing annual abundance values are determined using linear interpolation in which a constant annual rate of change is assumed between years for which data is available.

Step 4: Calculating annual rates of change

- For each time series, the rate of change in abundance from each year to the next is calculated.

Step 5: Aggregation to the species and dataset level (relevant only for datasets with multiple time series and/or species)

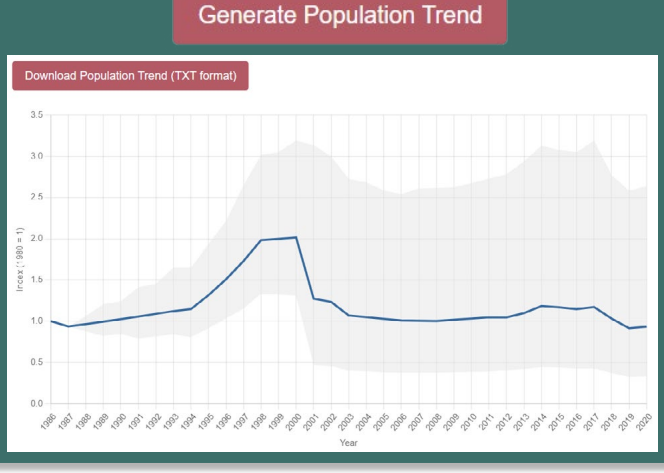
- For each species, these inter-annual rate of change values are averaged across all sites to give an overall trend for that species (specifically, by taking the arithmetic mean of values for each time-step).
- In datasets where data is available for multiple species, these inter-annual changes are furthered aggregated across all species (using a geometric mean) to create a single overall population trend.

Step 6: Generating the index and bootstrapping

- These population trend values are then turned into an index by setting the value to 1 in the first sampling year and relating each annual change to this baseline.
- 95% confidence intervals (with 1000 bootstrap resamples) are calculated around these values which describe how certain we are about the index value in any given year relative to the baseline year accounting for variation between species, were applicable.
- In the image, the blue line represents the average estimated trend, and the grey shading represents the 95% confidence intervals derived using bootstrapping.

TSX TIP

Users can view and download the population trend data for their dataset.



Further Information

For further information or assistance with interpreting your dataset downloads contact:

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