

Package: bbsTaiwan (via r-universe)

September 15, 2026

Title Streamline Taiwan Breeding Birds Survey (BBS) Data Retrieval and Analysis

Version 1.0.0

Description The goal of bbsTaiwan is to streamline the retrieval and analysis of Taiwan Breeding Bird Survey (BBS) data. This package facilitates data access from GBIF, where Taiwan BBS data are stored. While the data is openly available on GBIF, its complex arrangement in the Darwin Core format can make it challenging to understand and use, often requiring advanced data wrangling skills. The bbsTaiwan package is designed to simplify this process, making it easier to access and utilize Taiwan BBS data.

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Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.2

URL <https://sunnytseng.github.io/bbsTaiwan/>,
<https://github.com/SunnyTseng/bbsTaiwan>

BugReports <https://github.com/SunnyTseng/bbsTaiwan/issues>

Suggests knitr, patchwork, rmarkdown, testthat (>= 3.0.0)

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bbs_fetch	<i>Fetch BBS Occurrence Data by Species</i>
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Description

This function fetches occurrence data for specified target species, utilizing both the event and occurrence tables from GBIF. The fetched dataset undergoes the following processing steps:

- 1. **Join:** Combines the [event](#), [occurrence](#), and [measurementorfacts](#) datasheets from GBIF into a single cohesive dataset.
- 2. **Filter:** Retains only the observations for specified species using the `target_species` argument. The entered Chinese common name was linked to scientific name by [bbs_translate](#).
- 3. **Zero Fill:** Converts implicit missing values into explicit ones by filling in zeros for trips where the target species was not observed. Specifically, if a plot was visited during a particular year or trip but the target species was not observed, the species count will show a value of 0 for that row.

Usage

```
bbs_fetch(target_species)
```

Arguments**target_species**

Character string specifying the Chinese common name of the species of interest. It can accept a single character string, such as `target_species = " "`, or a vector, such as `target_species = c(" ", " ")`. Use `" "` to return all species.

Value

A tibble containing the species occurrence data.

Examples

```
# For single species data fetch
bbs_fetch(target_species = " ")

# For multiple species data fetch
bbs_fetch(target_species = c(" ", " "))

# To return data for all species
bbs_fetch(target_species = " ")

# The function will return NULL if the target species is not found in the
# BBS species list
bbs_fetch(target_species = " ")
```

bbs_history

Examine the Number of BBS Sites Surveyed Each Year

Description

This function returns the number of sites surveyed each year in the BBS Taiwan project. Sites were mapped into five regions: East, West, South, North, and Mountain (elevation higher than 1,000 m).

Usage

```
bbs_history(type = "plot")
```

Arguments**type**

Character string specifying the output format: either `"table"` or `"plot"`. Default value `type = "plot"`

Value

A tibble or a `ggplot` showing the number of sites surveyed each year across regions.

Examples

```
# Return the number of sites in a table
bbs_history(type = "table")

# Return the number of sites in a bar chart
bbs_history(type = "plot")
```

bbs_plotmap*Visualize Species Distribution Across All BBS Sites*

Description

This function visualizes the sites surveyed for breeding birds in Taiwan, highlighting the presence and absence of specific species. It is designed upon the function [bbs_fetch](#) and [bbs_translate](#).

Usage

```
bbs_plotmap(target_species)
```

Arguments

target_species

Character string specifying the scientific name of the species of interest. It can accept a single character string, such as `target_species = " "`, or a vector, such as `target_species = c(" ", " ")`. The function can accept up to plotting 5 species in one figure. Use `NULL` to return a map of site distribution.

Value

A ggplot object showing the distribution map.

Examples

```
# For single species distribution
bbs_plotmap(target_species = " ")

# For multiple species distribution
bbs_plotmap(target_species = c(" ", " "))

# Simply the distribution of the surveyed sites
bbs_plotmap(target_species = NULL)
```

bbs_sites*Return the Coordinates of All BBS Sites*

Description

This function returns the coordinates of all BBS sites that were surveyed. No arguments are needed. The coordinates are reported using the WGS84 projection system. Use `terra::vect(geom = c("decimalLatitude", "decimalLongitude"), crs = "epsg:4326")` to transform the table to spatial object.

Usage

```
bbs_sites()
```

Details

The source data comes from the event table in the GBIF dataset.

Value

A tibble including the coordinates of all BBS survey sites, in WGS84.

Examples

```
# Get the full list of BBS sites in a tibble
bbs_sites()

# Transform BBS sites into a spatial object using terra package
bbs_sites() |>
terra::vect(geom = c("decimalLatitude", "decimalLongitude"), crs = "epsg:4326")
```

bbs_translate*Translate Bird Species' Chinese Common Name to Scientific Name*

Description

This function is intended for use under [bbs_fetch](#) and [bbs_plotmap](#). This function helps users find the scientific names of birds from their Chinese common names for species found in Taiwan.

Usage

```
bbs_translate(target_species)
```

Arguments**target_species**

A single character string or a vector of character strings representing species' names in Chinese.

Value

A vector of bird species' scientific names. If the input species name is not included in the bird list of Taiwan, NA will be returned. Please check for any typos.

Examples

```
# For a single species
bbs_translate(" ")

# For multiple species
bbs_translate(target_species = c(" ", " ", " ", " "))
```

bird_info	<i>BBS Taiwan bird list</i>
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Description

A list of bird species that recorded in BBS Taiwan, including the scientific name, Chinese name, English name

Usage

```
bird_info
```

Format

A data frame with 909 rows and 4 columns:

scientificName scientific name

chineseName all possible Chinese that were used for the species

englishName english name from Taiwan Wild Bird Federation

scientificName_t scientific name from Taiwan Wild Bird Federation ...

Source

https://drive.google.com/drive/folders/1ex6EDkXv82mpEKcPk0YrQJ_anlu3pI1E

event*BBS Taiwan raw dataset on GBIF - event*

Description

A dataframe record BBS Taiwan event info. This is a raw dataset, which was downloaded directly from GBIF without any wrangling or cleaning.

Usage

```
event
```

Format

A data frame with 423,139 rows and 18 columns:

```
id
eventID
parentEventID
samplingProtocol
sampleSizeValue
sampleSizeUnit
samplingEffort
eventDate
eventTime
locationID
country
countryCode
locality
decimalLatitude
decimalLongitude
geodeticDatum
coordinateUncertaintyInMeters
coordinatePrecision ...
```

Source

<https://www.gbif.org/zh-tw/dataset/f170f056-3f8a-4ef3-ac9f-4503cc854ce0>

`extendedmeasurementorfact`

BBS Taiwan raw dataset on GBIF - extendedmeasurementorfact

Description

A dataframe record BBS Taiwan extendedmeasurementorfact, which contains info for associated occurrence record, such as time, location. This is a raw dataset, which was downloaded directly from GBIF without any wrangling or cleaning.

Usage

`extendedmeasurementorfact`

Format

A data frame with 1,649,589 rows and 7 columns:

`id`
`measurementID`
`measurementType`
`measurementValue`
`measurementDeterminedDate`
`measurementDeterminedBy`
`measurementMethod ...`

Source

<https://www.gbif.org/zh-tw/dataset/f170f056-3f8a-4ef3-ac9f-4503cc854ce0>

`measurementorfacts`

BBS Taiwan raw dataset on GBIF - measurementorfacts

Description

A dataframe record BBS Taiwan measurementorfacts, which contains info for associated event record, such as time, location. This is a raw dataset, which was downloaded directly from GBIF without any wrangling

Usage

`measurementorfacts`

Format

A data frame with 1,649,589 rows and 7 columns:

id
 measurementID
 measurementType
 measurementValue
 measurementDeterminedDate
 measurementDeterminedBy
 measurementMethod ...

Source

<https://www.gbif.org/zh-tw/dataset/f170f056-3f8a-4ef3-ac9f-4503cc854ce0>

occurrence	<i>BBS Taiwan raw dataset on GBIF - occurrence</i>
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Description

A dataframe record BBS Taiwan occurrence info. This is a raw dataset, which was downloaded directly from GBIF without any wrangling or cleaning.

Usage

occurrence

Format

A data frame with 385,131 rows and 11 columns:

id
 basisOfRecord
 occurrenceID
 recordedBy
 individualCount
 occurrenceRemarks
 eventID
 scientificName
 family
 genus
 vernacularName ...

Source

<https://www.gbif.org/zh-tw/dataset/f170f056-3f8a-4ef3-ac9f-4503cc854ce0>

tw_elev	<i>Elevation raster of Taiwan</i>
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Description

A raster in dataframe xyz format, representing the elevation of Taiwan in 1m by 1m grids. The data were reprojected to WGS84 (EPSG:4326).

Usage

```
tw_elev
```

Format

A data frame with 38,575 rows and 3 columns:

x scientific name

y all possible Chinese that were used for the species

G1km_TWD97-121_DTM_ELE english name from Taiwan Wild Bird Federation ...

Source

https://github.com/WanJyunChen/Taiwan_environmental_dataset

tw_map	<i>Map of Taiwan</i>
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Description

A sf file created by reading in shape file, showing the outline of Taiwan. The crs is WGS84 (EPSG:4326).

Usage

```
tw_map
```

Format

A sf object with 1 feature and 67 fields

Source

<https://geodata.libraries.mit.edu>

`tw_region`*Map of eco-regions in Taiwan*

Description

There are three regions: North, West, and East, representing different ecosystems in Taiwan specifically for avian biodiversity. This map was developed by Hau-Jie Shiu in 2003.

Usage`tw_region`**Format**

Need more info

Source

<https://ndltd.ncl.edu.tw/cgi-bin/gs32/gsweb.cgi/login?o=dnclcdr&s=id=%22091NTU00312007%22.&searchmode=basic>

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