Package ‘MinBAR’

July 10, 2019

Type Package
Title Determining the Minimal Background Area for Species Distribution Models
Version 1.1.0
Description A versatile tool that aims at (1) defining what is the minimum background extent necessary to fit good partial species distribution models and/or (2) determining if the background area used to fit a partial species distribution model is reliable enough to extract ecologically relevant conclusions from it. See Rotllan-Puig, X. & Traveset, A. (2019) <doi:10.1101/571182>.
Depends R (>= 3.4.0)
Imports raster, rgdal, sp, maxnet, dismo (>= 1.1-4), ecospat (>= 2.2.0), geosphere (>= 1.5-5), lattice, latticeExtra
Suggests knitr, rmarkdown
License GPL-3
Encoding UTF-8
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URL https://github.com/xavi-rp/minBAR
BugReports https://github.com/xavi-rp/minBAR/issues
NeedsCompilation no
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R topics documented:

bioscrop .................................................. 2
minba() .................................................. 2
sprecords ................................................. 4
bioscrop  

**CLimate variables**

**Description**

A raster brick containing 3 climate variables (resolution: 5 minutes) to be used as predictors for modelling species distributions. Coord. ref.: +init=EPSG:4326 +proj=longlat +datum=WGS84 +no_def +ellps=WGS84 +towgs84=0,0,0.

**Usage**

bioscrop

**Format**

A raster brick with 3 variables:

- **bio1** Annual Mean Temperature
- **bio7** Temperature Annual Range
- **bio12** Annual Precipitation

**Source**

http://worldclim.org

**References**


**minba()**  

**Determining the Minimal Background Area for Species Distribution Models**

**Description**

A versatile tool that aims at (1) defining what is the minimum or optimal background extent necessary to fit good partial species distribution models and/or (2) determining if the background area used to fit a partial species distribution model is reliable enough to extract ecologically relevant conclusions from it. See Rotllan-Puig, X. & Traveset, A. (2019)
Usage

```r
minba(occ = NULL, varbles = NULL, wd = NULL, prj = NULL,
    num_bands = 10, n_rep = 3, maxent_tool = "maxnet",
    BI_part = NULL, BI_tot = NULL, SD_BI_part = NULL,
    SD_BI_tot = NULL)
```

Arguments

- **occ** Data set with presences (occurrences). A data frame with 3 columns: long, lat and species name (in this order)
- **varbles** A raster brick of the independent variables, or a directory where the rasters are. It will use all the rasters in the folder. Supported: .tif and .bil
- **wd** A directory to save the results
- **prj** Coordinates system (e.g. "4326" is WGS84; check [spatialreference.org](http://spatialreference.org/))
- **num_bands** Number of buffers
- **n_rep** Number of replicates
- **maxent_tool** Either "dismo" or "maxnet"
- **BI_part** Maximum Boyce Index Partial to stop the process if reached
- **BI_tot** Maximum Boyce Index Total to stop the process if reached
- **SD_BI_part** Minimum SD of the Boyce Index Partial to stop the process if reached (last 3 buffers)
- **SD_BI_tot** Minimum SD of the Boyce Index Total to stop the process if reached (last 3 buffers)

Details

Please check the article 'Determining the Minimal Background Area for Species Distribution Models: MinBAR Package' for further details on how to use this package, examples, etc.

Value

- `selfinfo_mod_`, `info_mod_` and `info_mod_means_` (all followed by the name of the species). The first two tables are merely informative about how the modelling process has been developed and the results of each model. Whereas `info_mod_means_` shows the means of the n models run for each buffer.

Author(s)

Xavier Rotllan-Puig & Anna Traveset

References

Examples

```r
## Not run:
minbar::minba(occ = sprecords, varbles = bioscrop, 
wd = tempdir(), prj = 4326, num_bands = 3, n_rep = 3, 
maxent_tool = "maxnet")
## End(Not run)
```

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### sprecords

**Presences (occurrences) of Linaria alpina**

Description

A dataset containing the presences (1064) of Linaria alpina in Europe and North Africa. Coord. ref.: +init=EPSG:4326 +proj=longlat +datum=WGS84 +no_defs +ellps=WGS84 +towgs84=0,0,0.

Usage

sprecords

Format

A data frame with 1064 rows and 3 variables.

- `decimalLongitude`  DecimalLongitude, in degrees
- `decimalLatitude`   DecimalLatitude, in degrees
- `species`           Name of the species

Source

https://www.gbif.org/

References

Index

*Topic datasets
  bioscrop, 2
  sprecords, 4

bioscrop, 2

minba(minba()), 2
minba(), 2

sprecords, 4