Package 'MinBAR'

June 26, 2020

Type Package

Title Determining the Minimal Background Area for Species Distribution Models

Version 1.1.1

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

VignetteBuilder knitr

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

URL https://github.com/xavi-rp/MinBAR

BugReports https://github.com/xavi-rp/MinBAR/issues

NeedsCompilation no

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Repository CRAN

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R topics documented:

`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_defs +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

Fick, S.E. and R.J. Hijmans, 2017. Worldclim 2: New 1-km spatial resolution climate surfaces for global land areas. International Journal of Climatology.

`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

```
minba(occ = NULL, varbles = NULL, wd = NULL, prj = NULL,
  num_bands = 10, n_rep = 3, occ_prop_test = 0.3,
  maxent_tool = "maxnet", BI_part = NULL, BI_tot = NULL,
  SD_BI_part = NULL, SD_BI_tot = NULL)
```

Arguments

`occ`	Data frame or character. Data set with presences (occurrences). A data frame with 3 columns: long, lat and species name (in this order)
`varbles`	Raster* object. 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`	Character. A directory to save the results
`prj`	Numeric. Coordinates system (e.g. "4326" is WGS84; check http://spatialreference.org/)
`num_bands`	Numeric. Number of buffers (default is 10)
`n_rep`	Numeric. Number of replicates (default is 3)
`occ_prop_test`	Numeric. Proportion of presences (occurrences) set aside for testing (default is 0.3)
`maxent_tool`	Character. Either "dismo" or (default) "maxnet"
`BI_part`	Numeric. Maximum Boyce Index Partial to stop the process if reached
`BI_tot`	Numeric. Maximum Boyce Index Total to stop the process if reached
`SD_BI_part`	Numeric. Minimum SD of the Boyce Index Partial to stop the process if reached (last 3 buffers)
`SD_BI_tot`	Numeric. 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

Rotllan-Puig, X. & Traveset, A. 2019. Determining the Minimal Background Area for Species Distribution Models: MinBAR Package. bioRxiv. 571182. DOI: 10.1101/571182

Examples

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

## End(Not run)
```

`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

GBIF.org (07 March 2018) GBIF Occurrence Download https://doi.org/10.15468/dl.phqgk3.

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