

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

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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bioscrop	<i>CLimate variables</i>
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Description

A raster brick containing 3 climate variables (resolution: 5 minutes) to be used as predictors for modelling species distributions #¹ 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()	<i>Determining the Minimal Background Area for Species Distribution Models</i>
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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, 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 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

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:  
MinBAR::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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