Package ‘PopulationGrowthR’

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fdata

*Frequency and Specimens Data*

**Description**

Example Frequency and Specimens data by year for each species to be used in ‘PopulationGrowthR’ package

**Usage**

fdata

**Format**

An object of class data.frame with 3771 rows and 4 columns.

freqplot

*Frequency plot for a lagphase fit*

**Description**

Frequency plot for a lagphase fit

**Usage**

freqplot(
  fit1,
  fit2 = NULL,
  fit3 = NULL,
  fit4 = NULL,
  xlab = "Year",
  ylab = "Frequency",
  main = fit1$name,
  cols = 2:5,
  ...
)

**Arguments**

- `fit1, fit2, fit3, fit4`: "lagphase" fit objects to plot
- `xlab`: Label for the $x$-axis
- `ylab`: Label for the $y$-axis
- `main`: Title of the plot
- `cols`: Colors to be used to draw the lines
- `...`: (optional) parameters to pass to plot
Value

Produces a plot of observed and predicted frequencies for the species against year

Examples

Species = unique(fdata$Species) #List of all species
fit1 = lagfit(fdata, yeardata, species=Species[1])
freqplot(fit1$fit)

growthplot

Produces plot of the fitted spline function after adjusting for number of Specimens

Description

Produces plot of the fitted spline function after adjusting for number of Specimens

Usage

growthplot(
  fit,
  ylim = NULL,
  xlab = "Year",
  ylab = "Adjusted Frequency",
  main = fit$name,
  ...
)

Arguments

- fit: a "lagphase" fit object to plot
- ylim: vector of size 2 - limits of the $y$-axis
- xlab: Label for the $x$-axis
- ylab: Label for the $y$-axis
- main: Title of the plot
- ... (optional) parameters to pass to plot

Value

Produces a plot of the fit with confidence bands

Examples

Species = unique(fdata$Species) #List of all species
fit1 = lagfit(fdata, yeardata, species=Species[1])
growthplot(fit1$fit)
Description

This function fits a piecewise poisson model to the frequency data of different Species. It assumes that the data contains columns Year, Frequency and Specimens.

Usage

lagfit(
  data,
  yeardata,
  species = NULL,
  knots = NULL,
  zeros = TRUE,
  plotlag = FALSE,
  plotfreq = FALSE
)

Arguments

data a dataframe containing the columns Species (optional), Year, Frequency and Specimens.
yeardata a dataframe containing the columns Year and Specimens giving the total number of Specimens for each Year.
species list of species for which the model is to be fitted. Default is NULL, which fits the model for all species in the data.
knots a list of knots to be used for the piecewise model. Default is NULL, which chooses the optimal model with 0-4 knots.
zeros logical. Specifies whether missing year for the species will be filled with zeros. Default is TRUE.
plotlag logical. If TRUE a plot of the fitted model will be produced for each species.
plotfreq logical. If TRUE frequency plots will be created for each species.

Value

If the model is fit for a single species following are returned as a list

- Species - Species name
- Scene - Different scenario of the fit between the knots. A sequence of 0, + or - is returned. A 0 indicates constant, + indicates increasing and a - indicates decreasing.
- Lag - Logical. Is there a lag present or not.
- Laglength - Length of the first lag. Position of the First Knot - the first year for that species
raw2freqdata

Extract Frequency and Specimen data from the raw data

Description

Extract Frequency and Specimen data from the raw data

Usage

raw2freqdata(rawdata, species = "species", year = "year")

Arguments

rawdata a dataframe containing species, year
species name of the column containing species names
year name of the column containing year

Value

Returns a list of two dataframes

• data - a dataframe containing Species, Year, Frequency and Specimens
• yeardata - a dataframe containing Year and Specimens
Examples

cleandata = raw2freqdata(rawdata)
fdata = cleandata$data
yeardata = cleandata$yeardata

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### rawdata

**Raw GBIF Data**

**Description**

Example raw GBIF data used in `PopulationGrowthR` package

**Usage**

rawdata

**Format**

An object of class `data.frame` with 34088 rows and 50 columns.

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### yeardata

**Total Specimens Data**

**Description**

Example total Specimens data by year to be used in `PopulationGrowthR` package

**Usage**

yeardata

**Format**

An object of class `data.frame` with 60 rows and 2 columns.
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