Package 'birdring'

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Type Package

Title Methods to Analyse Ring Re-Encounter Data

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Depends R (>= 2.10.1), stats

Imports geosphere, ks, lazyData, raster, rgdal, rgeos, rworldmap, rworldxtra, sp, methods, graphics

Description R functions to read EURING data and analyse re-encounter data of birds marked by metal rings. For a tutorial, go to <http://www.tandfonline.com/doi/full/10.1080/03078698.2014.933053>.

License GPL-2

LazyLoad yes

LazyData TRUE

NeedsCompilation no

Repository CRAN

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R topics documented:

`birdring-package` *Methods to Analyse Bird Ring Reencounter data*

Description

This package is a collection of functions or methods used to analyse ring reencounter data. Its purpose is to read EURING ring reencounter data into R, and to help mapping and analysing reencounter data. For a tutorial, go to http://www.tandfonline.com/doi/full/10.1080/03078698.2014.933053

Details

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Author(s)

Fraenzi Korner-Nievergelt and Robert Robinson

Maintainer: Fraenzi Korner-Nievergelt <fraenzi.korner@vogelwarte.ch>

References

Speek, G., Clark, J.A., Rhode, Z., Wassenaar, R.D. & van Noordwijk, A.J. (2001) The EURING exchange-code 2000. Dutch Ringing Scheme, Heteren.

`birdstate` *Transformation of condition into state*

Description

Transforms the numeric code of the variable condition into a factor defining the state of the bird (dead, alive, sick).

Usage

```
birdstate(x)
```

Arguments

`x`	variable condition with numeric code for the condition of the bird as given in the original EURING data

Value

a factor with the levels "dead", "alive", "sick" and "unknown"

Author(s)

F. Korner-Nievergelt

References

du Feu et al. (2012) EURING Exchange Code 2000+. www.euring.org

See Also

`codes2names`

Examples

```
condition <- 0:9
birdstate(condition)
```

`circumstances` *EURING-code for finding circumstances*

Description

EURING-code for finding circumstances as given in Speek et al. (2001)

Usage

```
data(circumstances)
```

Format

A data frame with 92 observations on the following 4 variables.

`Code` a numeric vector containing the code given in column 78 and 79 in EURING data of the format 2000

`Name` a factor with the names of the finding circumstances

`BTO` a factor with the shorter names of the finding circumstances as defined by the BTO (, http://www.bto.org/volunteer-surveys/ringing/publications/online-ringing-reports))

`Description` a factor with the description of the finding circumstances

`Date.Updated` a numeric vector

Source

http://www.euring.org

References

Speek, G., Clark, J.A., Rhode, Z., Wassenaar, R.D. & van Noordwijk, A.J. (2001) The EURING exchange-code 2000. Dutch Ringing Scheme, Heteren.

Examples

```
data(circumstances)
circumstances
```

coastEU *coordinates of the coastline of Europe*

Description

coordinates of the coastline of Europe used by the function draw.map

Usage

```
data(coastEU)
```

Format

A data frame with 7528 observations on the following 4 variables.

`x` a numeric vector, longitude

`y` a numeric vector, latitude

`name` name of the island

`abstract` a numeric vector

Details

the data is used by the function draw.map

Source

http://rimmer.ngdc.noaa.gov/mgg/coast/getcoast.html

References

http://rimmer.ngdc.noaa.gov/mgg/coast/getcoast.html

Examples

```
data(coastEU)
head(coastEU)
```

coastpaleo *coordinates of the palearctic coastline*

Description

coordinates of the palearctic coastline used by the function draw.map. The coordinates were downloaded from the sources indicated below and then cleaned by hand from too small details

Usage

```
data(coastpaleo)
```

Format

A data frame with 25042 observations on the following 5 variables.

`x` a numeric vector of longitude

`y` a numeric vector of latitude

`name` name of the island

`entry` degree of detail to be entered in the map

`kategorie` a factor with levels `i` `m` `s`

Source

http://rimmer.ngdc.noaa.gov/mgg/coast/getcoast.html

References

http://rimmer.ngdc.noaa.gov/mgg/coast/getcoast.html

Examples

```
data(coastpaleo)
head(coastpaleo)
```

codes2names *Transforms codes of circumstances, condition, species and sheme into string*

Description

The function gives for the numeric codes for circumstances, condition and species the interpretable string name as given in the EURING code. The alphabetic scheme code is transformed into the town and country name of the scheme.

Usage

```
codes2names(x, variable = "circumstances", type="euring")
```

Arguments

x	variable circumstances, condition, species or scheme from the output of read.EURING2000plus.
variable	character that declares the name of the variable x, should be one of c("circumstances" [default], "conditions", "schemes", "species").
type	character that declares which names should be used, the one defined in the EURING manual, "euring" (default), or the ones used in the BTO ringing reports, "bto", (http://www.bto.org/volunteer-surveys/ringing/publications/online-ringing-reports).

Value

a factor with levels corresponding to the names of the EURING code

Author(s)

F. Korner-Nievergelt

References

http://www.euring.org/data_and_codes/euring_code_list/index.html

See Also

scheme2country

Examples

```
# circumstances
examplecode <- c(20, 21, 35, 80)
codes2names(examplecode)

# conditions
examplecodes <- c(0:9)
codes2names(examplecodes, variable="conditions")

# schemes
codes2names("BGS", variable="schemes")
```

`conditions` *EURING-code for finding conditions*

Description

EURING-code for finding conditions as given in Speek et al. (2001)

Usage

```
data(conditions)
```

Format

A data frame with 10 observations on the following 2 variables.

`Code` a numeric vector containing the code given in column 77 in EURING data of the format 2000

`Description` a factor with the finding conditions

Source

http://www.euring.org

References

Speek, G., Clark, J.A., Rhode, Z., Wassenaar, R.D. & van Noordwijk, A.J. (2001) The EURING exchange-code 2000. Dutch Ringing Scheme, Heteren.

Examples

```
data(conditions)
conditions
```

critical.check.ringing.event *Checking whether Ringing Event Exists for each Individual Bird.*

Description

Adds a variable ringing.event which is TRUE if exactly one ringing event exists and FALSE otherwise.

Usage

```
critical.check.ringing.event(dat, id = "birdID")
```

Arguments

dat	a EURING data, read in using read.euring2000plus function
id	The name of the variable that contains the individual identifier, normally a combination of scheme and ring number

Value

A new variable called "ringing.event" is added to the data frame.

Author(s)

Kasper Thorup and Fraenzi Korner-Nievergelt

Examples

```
data(lancol)
lancol$birdID <- paste(lancol$scheme, lancol$ring)
critical.check.ringing.event(lancol)
```

dayofyear *The day of the year*

Description

Gives the day of the year, i.e. the number of days since the 31 December of the previous year.

Usage

```
dayofyear(m, d, y = 1960)
```

Arguments

m	month (integer between 1 and 12)
d	day (integer between 1 and 31)
y	year (integer such as 2013)

Value

numeric value, day of the year

Author(s)

Fraenzi Korner-Nievergelt

References

no references

See Also

mdy.date

Examples

```
dayofyear(3,1,2013)
dayofyear(3,1,2012)
```

---

dc *Division coefficient*

Description

The function dc() calculates from the number of ringed birds per group and the number of reencountered birds per group in each destination area the estimated division coefficients per group and the estimated re-encounter probabilities per destination area as described in Kania and Busse (1987). The function bootci.dc() gives the bootstrap confidence intervals for the division coefficients and the re-encounter probabilities estimated by dc(). For details see Korner-Nievergelt et al. (2010).

Usage

```
dc(N, recmatrix, group.names = NA, area.names = NA, start = NA)

bootci.dc(N, recmatrix, interval = 0.95, R = 1000,
                              group.names = NA, area.names = NA)
```

Arguments

N	a vector containing the number of ringed birds per group
recmatrix	a matrix containing the number of re-encountered birds per group and area. The rows of the matrix represent the bird groups; the columns represent the destination areas.
interval	proportion of the confidence interval (default = 0.95)
R	number of bootstrap replicates (default = 1000)
group.names	facultative vector of group names
area.names	facultative vector of area names
start	facultative vector of starting values for the least-square iteration for estimating the inverse of the recovery probability per destination area. The vector has the length of the number of areas and contains approximate inverse values of the recovery probabilities (default = N[1]/recmatrix[1,]/2).

Value

rec.probs	estimated re-encounter probabilities per destination area
division.coef	estimated division coefficient per group and destination area
div.coef.lower	lower limits of the confidence intervals of the estimated division coefficients
div.coef.upper	upper limits of the confidence intervals of the estimated division coefficients

Author(s)

Fraenzi Korner-Nievergelt

References

Kania W, Busse P (1987) An analysis of the recovery distribution based on finding probabilities. Acta Ornithologica 23: 121-128. Korner-Nievergelt F, Schaub M, Thorup K, Vock M, Kania W (2010) Estimation of bird distribution based on ring re-encounters: precision and bias of the division coefficient and its relation to multi-state models. Bird Study 57: 56-68.

Example data are from: Bauthian I, Gossmann F, Ferrand Y, Julliard R. (2007) Quantifying the origin of Woodcock wintering in France. Journal of Wildlife Management 71: 701-705.

Examples

```
N<-c(7125, 9661, 5266, 3240, 3643, 3192, 3227)

recmatrix<-matrix(c(22,25, 6, 2, 4, 1, 0, 47, 78, 49, 28, 38,27, 34), ncol=2)
colnames(recmatrix) <- c("Scandinavian", "Eastern")
rownames(recmatrix) <- c("North", "West", "Southwest",
    "Central North", "Central South", "Northeast","Southeast")

dc(N, recmatrix, group.names= c("North", "West", "Southwest",
    "Central North", "Central South", "Northeast","Southeast"),
    area.names= c("Scandinavian", "Eastern"))
```

decimal.coord *decimal coordinates*

Description

transforms degrees and minutes into decimal coordinates

Usage

```
decimal.coord(x)
```

Arguments

x	scalar or vector containing degrees and minutes, e.g. for 45 degrees and 30 minutes = 45.3

Value

a scalar or a vector containing the decimal coordinates

Author(s)

Fraenzi Korner-Nievergelt

References

This function just multiplies the decimals by 5/3... (no reference)

Examples

```
decimal.coord(45.3)
```

dmvnorm *Multivariate Normal Density and Random Deviates - this function is a copy of the function in the package mvtnorm*

Description

These functions provide the density function and a random number generator for the multivariate normal distribution with mean equal to mean and covariance matrix sigma.

Usage

```
dmvnorm(x, mean, sigma, log = FALSE)
```

Arguments

x	Vector or matrix of quantiles. If x is a matrix, each row is taken to be a quantile.
mean	Mean vector, default is rep(0, length = ncol(x)).
sigma	Covariance matrix, default is diag(ncol(x)).
log	Logical; if TRUE, densities d are given as log(d).

Details

This function is copied to birdring from mvtnorm. If you use this function, please use and cite the original function from the package mvtnorm!

Author(s)

Friedrich Leisch and Fabian Scheipl

References

Alan Genz, Frank Bretz, Tetsuhisa Miwa, Xuefei Mi, Friedrich Leisch, Fabian Scheipl, Torsten Hothorn (2013). mvtnorm: Multivariate Normal and t Distributions. R package version 0.9-9995. URL http://CRAN.R-project.org/package=mvtnorm

Alan Genz, Frank Bretz (2009), Computation of Multivariate Normal and t Probabilities. Lecture Notes in Statistics, Vol. 195., Springer-Verlage, Heidelberg. ISBN 978-3-642-01688-2

See Also

see functions and documentations in the package mvtnorm

Examples

```
dmvnorm(x=c(0,0))
```

---

draw.map *Draws a map of the palearctic region*

Description

Draws a map of the palearctic region that can be used as basis for showing ring reencounter data.

Usage

```
draw.map(a=-10, b=30, c=23, d=65, bbox=NULL, fill = TRUE, col.land = grey(0.5),
  col.water = "white", border = NA, detail = FALSE, box = TRUE, axes = FALSE,
  las = 1, cex.axis = 0.8, dist.axislab = 0.2, whichaxis = c(1:4), tck = -0.005,
  mercator = FALSE, mar = rep(0.5, 4), asp=NA)
```

Arguments

a	left edge of the map (longitude), can be used alternatively to the argument bbox
b	right edge of the map (longitude), can be used alternatively to the argument bbox
c	lower edge of the map (latitude), can be used alternatively to the argument bbox
d	upper edge of the map (latitude), can be used alternatively to the argument bbox
bbox	a numeric vector giving the map boundary in decimal degrees as c(long_min, long_max, lat_min, lat_max), can be used alternatively to the arguments a, b, c, and d.
fill	logical value, TRUE = land and water masses are filled with a color
col.land	color of the land
col.water	color of the water
border	color of the coastline, NA = no coastline is drawn
detail	if TRUE: an alternative way to draw coastlines
box	logical, TRUE = a box is drawn around the map
axes	logical, indicates whether axis should be drawn
las	see par
cex.axis	see par
dist.axislab	distance from the axis to the axis labels
whichaxis	vector of length 1 to 4 containing the axis that should be drawn, default is c(1,2,3,4), i.e. all axes
tck	see par
mercator	logical, if TRUE a mercator projection is plotted. see details below
mar	see par
asp	if set to 1 x and y axes are scaled equally (not recommended if mercator=TRUE), see par

Details

If a mercator projection is used, the values for a, b, c and d will be adjusted.

Value

this is a plotting function only

Note

some times it does not do what we expect....

Author(s)

Fraenzi Korner-Nievergelt

References

Rummler, H. 2002. Mercatorkarte und hyperbolische Geometrie. Elem. Math., 57, 168-173.

Examples

```
draw.map(-18, 50, -5, 56, col.land="white", col.water=grey(0.5),
  detail=FALSE, axes=TRUE)

draw.map(a=0, b=30, c=35, d=60, col.land="white", col.water=grey(0.5),
  detail=FALSE, axes=TRUE, mercator=TRUE)
```

---

draw.recmap *Plot ringing data*

Description

Draws a map of ringing data, representing locations as points or lines linking recoveries. Optionally a heat map of the locations can also be created

Usage

```
draw.recmap(data, file='screen', subset=NULL, group=NULL, bbox=NULL,
  projection='longlat', zoom=2, margin=1, points=0, pcol='red', lines=0,
  lcol='red', gcircle=FALSE, density=FALSE, grid.size=300, mask='sea',
  all.data=FALSE, height=1000, width=0, units='px', col='lemonchiffon',
  bg='lightblue1', border=NA, lwd=1, legend='none', title = NULL, labels=NULL,
  lcex=0, alpha=0.2, ...)
```

Arguments

data	a dataframe with, minimally, columns labelled 'lat' and 'lon' giving the co-ordinates of locations (in decimal degrees). Note there should be one row per encounter (i.e. a recovery will appear as 2+ rows).
file	a valid filename to which the map should be plotted. Currently supports png, jpg (or jpeg), or tif (tiff) extensions.
subset	a character string indicating subset of rows to use, any logical expression involving column names (or numbers) should work.
group	a character string, the variable name (within data) indicating the grouping variable to be displayed in the legend.
bbox	a numeric vector giving the map boundary in decimal degrees as c(long_min, long_max, lat_min, lat_max). If some data are outwith this box a warning is issued.
projection	a character string indicating the projection to be used, currently only 'longlat' or 'mercator' work.

zoom	a number indicating resolution of map to plot: 1 - low resolution suitable for global maps; 2 - fine for most purposes (the default); and 3 - for large maps or small areas where a higher resolution is needed.
margin	a number (in decimal degrees) to pad the map by around the extreme points.
points	an integer, if >0 then points will be plotted at that size, relative to par('cex').
pcol	colour to plot the points.
lines	an integer, if >0 then lines will be plotted at that width.
lcol	colour to plot the lines.
gcircle	logical, should the lines be plotted as great circle routes.
density	logical, if TRUE overlay kernel density smooth (heat map) generated from data, see details.
grid.size	numeric, indicating the number of points over which to calculate the density grid, increase from the default 300 for a smoother pattern, decrease for quicker computation.
mask	if density=TRUE, mask could be either 'land' or 'sea' (the default); this is purely presentational, it doesn't alter the kernel calculation.
all.data	logical, if bbox is given, should all the data be used in creating the heat map, or only those displayed.
height	the height of the map canvas (in pixels unless units is given). Specify only one of height or width; height will be ignored of both given.
width	the width of the map canvas (in pixels unless units is given). Specify only one of height or width.
units	the units in which height and width are given. Can be px (pixels, the default), in (inches), cm or mm.
col	colour for land areas, the default colours are designed to also print well in greyscale.
bg	colour for ocean areas.
border	colour to draw the country borders (and coastal outline), use NA to suppress these.
lwd	numeric, width of border lines.
legend	keyword indicating position from the list "none", "bottomright", "bottom", "bottomleft", "left", "topleft", "top", "topright", "right" and "center". Use inset=c(x,y) for finer control of placement, where x, y between 0 and 1.
lcex	if a legend is included, size of the legend labels relative to par('cex').
alpha	if a legend is included, transparency of the legend rectangle, as a proportional opacity from 0 (fully transparent) to 1 (opaque).
title	if a legend is included, the title to be added in the legend box.
labels	vector of character labels to be used in identifying the group levels. If this does not match the number of group levels, then it will be ignored.
...	other arguments to pass to `legend()`.

Details

If density=TRUE, additionally overlays a simple bivariate kernel density estimator using the kde function from package ks. This does not respect geography so may give biologically unrealistic results and, in particular, will predict effort over the sea or land inappropriately in most cases, this behaviour can be hidden by using the 'mask' argument.

Value

invisibly, a SpatialPolygons object containing the map outline

Note

all co-ordinates in data should be given as decimal degrees, they will be transformed as appropriate. If plotting recovery lines by group, check that each record has the same group identifier, since only that attached to the first encounter will be used.

Author(s)

Rob Robinson

References

The country border dataset uses Natural Earth data as presented in the rworldmap package. The following was useful in working out the default land and sea colours used
http://research.stowers-institute.org/efg/R/Color/Chart/ColorChart.pdf

Examples

```
data(lancol)
if (requireNamespace("rgeos", quietly=TRUE) && packageVersion("rgeos") >= "0.5.1") {
  if (rgeos::get_RGEOS_CheckValidity() == 1L) rgeos::set_RGEOS_CheckValidity(2L)
}
draw.recmap(lancol,lines=2,border='gray',subset="ring=='13B...6919'",gcircle=TRUE,zoom=3)

## Not run:
draw.recmap(lancol,points=0.5,pcol='blue',density=TRUE, bbox=c(-5,20, 47,58),
  projection='mercator',all.data=TRUE)
draw.recmap(lancol,'d:/example.png',points=1,pcol=c('red','blue','black'),
 group='sex.byringer',legend='bottomleft',labels=c('Female','Male','Unknown'),title='Sex')

## End(Not run)
```

lancol *Example data set of EURING2000 format*

Description

Ringing and recovery data of the Red-backed Shrike in the EURING2000 format

Usage

```
data(lancol)
```

Format

A data frame with 2483 observations of the 40 variables of the EURING2000.

Source

http://www.euring.org

References

Speek, G., Clark, J.A., Rhode, Z., Wassenaar, R.D. & van Noordwijk, A.J. (2001) The EURING exchange-code 2000. Dutch Ringing Scheme, Heteren.

Examples

```
data(lancol)
```

loxodrom *loxodromic distance and direction*

Description

calculates the loxodromic distance and direction between two points on the earth

Usage

```
loxodrom.dir(x1, y1, x2, y2, epsilon = 1e-06)

loxodrom.dist(x1, y1, x2, y2, epsilon = 1e-04, package="geosphere")
```

Arguments

x1	x-coordinate/longitude of the first point (in decimal coordinates), can be a scalar or a vector
y1	y-coordinate/latitude of the first point (in decimal coordinates), can be a scalar or a vector
x2	x-coordinate/longitude of the second point (in decimal coordinates), can be a scalar or a vector
y2	y-coordinate/latitude of the second point (in decimal coordinates), can be a scalar or a vector
epsilon	a threshold value for considering a number as zero. See details.
package	if "geosphere" (default) the function is based on the geosphere package, if "birdring" the function written by F. Korner is used. The latter is less reliable.

Details

If you use the birdring package, please, check the results carefully, especially when vectors instead of scalars are given as arguments. If some distances or directions are obviously wrong (such cases occurred predominantly when the bird moved exactly into one of the four directions 0, 90, 180 or 270 degrees) then it might help to increase the value of epsilon.

Value

The function loxodrom.dist() gives back a number or a vector with the distances in km between the two points on earth. The function loxodrom.dir() gives back a number or a vector with the directions in degees from North (clockwise) between the two points on earth.

Warning

see details

Author(s)

Fraenzi Korner-Nievergelt

References

Imboden, C., Imboden D. (1972) Orthodromic and loxodromic formula for the calculation of distance and direction between ringing and finding place. Vogelwarte 26: 336-346.

See Also

decimal.coord

Examples

```
ringingx<-7.30
ringingy<-47.41
findingx<-5.1
findingy<-32.01
rxdec<-decimal.coord(ringingx)
rydec<-decimal.coord(ringingy)
fxdec<-decimal.coord(findingx)
fydec<-decimal.coord(findingy)

loxodrom.dist(rxdec, rydec, fxdec, fydec)

loxodrom.dir(rxdec, rydec, fxdec, fydec)
```

`mdy.date` *Convert to Julian Dates - this is a copy of the function mdy.date from the package date*

Description

Given a month, day, and year, returns the number of days since January 1, 1960.

Usage

```
mdy.date(month, day, year, nineteen = TRUE, fillday = FALSE, fillmonth = FALSE)
```

Arguments

`month`	vector of months.
`day`	vector of days.
`year`	vector of years.
`nineteen`	if TRUE, year values between 0 and 99 are assumed to be in the 20th century A.D.; otherwise, if FALSE, they are assumed to be in the 1st century A.D.
`fillday`	if TRUE, then missing days are replaced with 15.
`fillmonth`	if TRUE, then a missing month causes the month and day to be set to 7/1.

Details

The date functions are particularly useful in computing time spans, such as number of days on test, and similar functions can be found in other statistical packages. The baseline date of Jan 1, 1960 is, of course, completely arbitrary (it is the same one used by SAS).

The fillday and fillmonth options are perhaps useful only to the author and a very few others: we sometimes deal with patients whose birth date was in the 1800's, and only the month or even only the year is known. When the interval is greater than 80 years, a filler seems defensible.

Value

a vector of Julian dates.

References

Press, W. H., Teukolsky, S. A., Vetterling, W. T., and Flannery, B. P. (1992). Numerical Recipes: The Art of Scientific Computing (Second Edition). Cambridge University Press.

Terry Therneau and Thomas Lumley and Kjetil Halvorsen and Kurt Hornik (2012). date: Functions for handling dates. R package version 1.2-33.

See Also

see documentation and other functions in the package date

Examples

```
mdy.date(3, 10, 53)
```

---

mercatorlat *gives the streching factor of the latitude to draw a mercator map*

Description

this function is only used internally by the function draw.map

Usage

```
mercatorlat(x)
```

Arguments

x	latitude in decimal coordinates

Value

numeric: latitude to draw a mercator map

Author(s)

Fraenzi Korner-Nievergelt

References

Rummler, H. (2002) Mercatorkarte und hyperbolische Geometrie. Elem. Math., 57, 168-173.

Examples

```
mercatorlat(41.6)
```

`orthodrom.dist` *orthodromic distance and direction*

Description

calculates the orthodromic (great circle, shortest distance) distance between two points on the earth

Usage

```
orthodrom.dist(x1, y1, x2, y2)
```

Arguments

`x1`	x-coordinate/longitude of the first point (in decimal coordinates), can be a scalar or a vector
`y1`	y-coordinate/latitude of the first point (in decimal coordinates), can be a scalar or a vector
`x2`	x-coordinate/longitude of the second point (in decimal coordinates), can be a scalar or a vector
`y2`	y-coordinate/latitude of the second point (in decimal coordinates), can be a scalar or a vector

Details

The function is a wrapper of the distMeeus function of the geosphere package.

Value

gives back a number or a vector with the distances in km between the two points on earth.

Warning

see details

Author(s)

Fraenzi Korner-Nievergelt

References

Imboden, C., Imboden D. (1972) Orthodromic and loxodromic formula for the calculation of distance and direction between ringing and finding place. Vogelwarte 26: 336-346.

See Also

`decimal.coord`

Examples

```
ringingx<-7.30
ringingy<-47.41
findingx<-5.1
findingy<-32.01
rxdec<-decimal.coord(ringingx)
rydec<-decimal.coord(ringingy)
fxdec<-decimal.coord(findingx)
fydec<-decimal.coord(findingy)

orthodrom.dist(rxdec, rydec, fxdec, fydec)
```

---

overlap *Overlap between the prior and posterior distribution*

Description

Gives the overlap of two distributions (such as a prior and a posterior distribution) based on one sample of simulated values from each distribution

Usage

```
overlap(posterior, prior, from = 0, to = 1, nsim = 1e+05, edge.of.parameter.space=FALSE)
```

Arguments

posterior	A numeric vector, a sample of simulated random values from the posterior distribution
prior	A numeric vector, a sample of simulated random values from the prior distribution
from	Lower limit of the parameter space over which the posterior and prior distributions are compared.
to	Upper limit of the parameter space over which the posterior and prior distributions are compared.
nsim	Number of simulated values used for the Monte Carlo simulation to measure the overlap.
edge.of.parameter.space	logical value; Two different methods are implemented to calculate the overlap. First (edge.of.parameter.space=FALSE), smoothers are fitted to the histograms of the simulated values from the posterior and prior distributions, and the overlap is calculated based on this smoothed density functions. This has the advantage to be more exact when the number of simulated values from the posterior distribution is small. However, it can be unreliable when the mean of the posterior distribution is close to the edge of the parameter space. In such cases (edge.of.parameter.space=TRUE), it is more reliable to calculate the overlap directly from histograms of the simulated values from the posterior and prior distributions. See also details.

Details

If edge.of.parameter.space=FALSE, the function first uses the function density to obtain density functions of the prior and posterior distributions and then the overlap is measured by a Monte Carlo simulation. If edge.of.parameter.space=TRUE, two histrograms of the simulated values from the posterior and prior distributions are drawn with 999 classes and breaks 1000 equally spaced values between from and to. The overlap is then calculated directly from these histograms.

Value

a numeric value which is an approximation of the proportion of the overlap of the posterior with the prior distribution.

Author(s)

Fraenzi Korner-Nievergelt

References

Gimenez, O., S. P. Brooks, et al. (2009). Weak identiability in models for mark-recapture-recovery data. Modelling Demographic Processes in Marked Populations. Series: Environmental and Ecological Statistics. D. L. Thomson, E. G. Cooch and M. J. Conroy.

See Also

density

Examples

```
prior <- rbeta(2000, 1,1)
posterior <- rbeta(2000, 14, 35)
overlap(posterior, prior)
```

---

place2name *Decode Euring place codes*

Description

Converts Euring country and region codes into their text names.

Usage

```
place2name(x)
```

Arguments

x	a variable containing four character Euring place code.

Details

A warning is given if any place codes are not matched, these will be returned as NA.

Value

a dataframe with three columns: 'country.name', 'region.name', 'current', the last of which indicates whether the code is currently use or deprecated.

Author(s)

Rob Robinson

Examples

```
examplecodes <- c('BL20', 'GBTR')
place2name(examplecodes)
```

---

places *EURING-code for finding locations*

Description

EURING-code for places as given in Speek et al. (2001)

Usage

```
data(places)
```

Format

A data frame with 1852 rows of the following 5 variables.

`country` name of country. non-ASCII characters have been exchanged, please change back for Cote d Ivoire and Suqutra

`region` name of region. non-ASCII characters have been exchanged, please check an change back!

`code` the code used by EDB

`current`

`date.updated` date of update

Source

http://www.euring.org

References

Speek, G., Clark, J.A., Rhode, Z., Wassenaar, R.D. & van Noordwijk, A.J. (2001) The EURING exchange-code 2000. Dutch Ringing Scheme, Heteren.

Examples

```
data(places)
```

`read.euring2000` *Reads EURING data into R*

Description

Reads EURING data (format EURING exchange code 2000) into R and creates a data.frame

Usage

```
read.euring2000(filename)
```

Arguments

`filename`	character string of the data file obtained from EURING (format: exchange code 2000)

Value

A data.frame containing the following variables from the EURING 2000 code:

scheme	Factor	ringing scheme (code)
id.method	Factor	identification method
ring	Factor	ring number
ring.verif	character	verification of the metal ring
metal.ring.info	character	metal ring information
marks.info	character	other marks information
spec.byringer	character	species + subsp., mentioned by person
spec.byscheme	character	species + subsp., concluded by scheme
manipulated	character	manipulated
moved	character	moved before the (re)capture/recovery
catching.method	character	catching method
catching.lures	character	catching lures
sex.byringer	character	sex, by the person who handled the bird
sex.byscheme	character	sex, as concluded by scheme
age.byringer	character	age, by the person who handled the bird
age.byscheme	character	age, as concluded by scheme
status	character	status
broodsize	character	broodsize
pullus.age	character	pullus age
pullus.age.acc	character	accuracy of pullus age
day	numeric	day of record, derived from date
month	numeric	month of record, derived from date
year	numeric	year of record, derived from date

date.acc	character	accuracy of date
time	character	time
place.code	character	place code
country	character	country derived from place code
region	character	region (county) derived from place code
lat	numeric	latitude in decimal coordinates
lon	numeric	longitude in decimal coordinates
coord.acc	character	accuracy of coordinates
condition	character	condition
circumstances	character	finding circumstances
circumstances.presumed	character	finding circumstances presumed
euring.codeid	character	EURING-code identifier
distance	numeric	distance to place of ringing (km)
direction	numeric	direction to place of ringing (km)
time.elapsed	numeric	time since ringing (days)

Author(s)

Fraenzi Korner-Nievergelt

References

Speek et al. 2007: The EURING exchange-code 2000. www.euring.org

Examples

```
filename <- system.file("extdata", "RBShrike2000.TXT", package = "birdring")
dat <-  read.euring2000(filename)
str(dat)
```

`read.euring2000plus` *Reads EURING data of the format 2000\+ into R*

Description

Reads EURING data (format EURING exchange code 2000\+) into R and creates a data.frame

Usage

```
read.euring2000plus(filename)
```

Arguments

`filename`	character string of the psv-file obtained from EURING (format: exchange code 2000\+)

Value

A data.frame containing the following variables from the EURING 2000\+ code:

scheme	Factor	ringing scheme (code)
id.method	Factor	identification method
ring	Factor	ring number
ring.verif	character	verification of the metal ring
metal.ring.info	character	metal ring information
marks.info	character	other marks information
spec.byringer	character	species + subsp., mentioned by person
spec.byscheme	character	species + subsp., concluded by scheme
manipulated	character	manipulated
moved	character	moved before the (re)capture/recovery
catching.method	character	catching method
catching.lures	character	catching lures
sex.byringer	character	sex, by the person who handled the bird
sex.byscheme	character	sex, as concluded by scheme
age.byringer	character	age, by the person who handled the bird
age.byscheme	character	age, as concluded by scheme
status	character	status
broodsize	character	broodsize
pullus.age	character	pullus age
pullus.age.acc	character	accuracy of pullus age
day	numeric	day of record, derived from date
month	numeric	month of record, derived from date
year	numeric	year of record, derived from date
date.acc	character	accuracy of date
time	character	time
place.code	character	place code
country	character	country extracted from place code
region	character	region (county) extracted from place code
lat	numeric	latitude in decimal coordinates
lon	numeric	longitude in decimal coordinates
coord.acc	character	accuracy of coordinates
condition	character	condition
circumstances	character	finding circumstances
circumstances.presumed	character	finding circumstances presumed
euring.codeid	character	EURING-code identifier
distance	numeric	distance to place of ringing (km)
direction	numeric	direction to place of ringing (km)
time.elapsed	numeric	time since ringing (days)
wing.length	numeric	maximum chord measurement in mm, Svensson (1992)
third.primary	numeric	Length of the third primary feather, in mm
state.of.wing.point	character	condition of the longest primary feather
mass	numeric	body, in grams, measured to a maximum precision of 0.1 g.
moult	character	code for main, clearly identifiable moult states
plumage.code	character	extra information to enhance age code

hind.claw	numeric	in mm, for details of method see Svensson (1992)
bill.length	numeric	in mm, see du Feu (2012).
bill.method	character	a single letter code, for details see Svensson (1992).
total.head.length	numeric	in mm, see du Feu (2012)
tarsus	numeric	in mm, see du Feu (2012)
tarsus.method	character	tarsus method used, see du Feu (2012)
tail.length	numeric	in mm, details of the method see Svensson (1992).
tail.difference	numeric	according to Svensson (1992)
fat.score	numeric	fat score, see du Feu (2012) for details.
fat.score.method	character	fat score method used, see du Feu (2012)
pectoral.muscle	numeric	state of pectoral muscle
brood.patch	character	state of the brood patch in the breeding season
primary.score	numeric	the sum of the primary moult scores
primary.moult	character	state of the 10 primary feathers
old.greater.coverts	numeric	the number of unmoulted greater coverts
alula	character	state of the three alula feathers
carpal.covert	numeric	state of moult of the carpal covert: 0=old, 1=new.
sexing.method	character	for code description see du Feu (2012).

For three additional optional variables, see du Feu (2012).

Author(s)

Fraenzi Korner-Nievergelt

References

du Feu et al. 2012: EURING exchange-code 2000\+. www.euring.org

Examples

```
filename <- system.file("extdata", "REEWAExport_50.psv", package = "birdring")
dat <-  read.euring2000plus(filename)
str(dat)
```

---

scheme2country *Gives the country name from the scheme code*

Description

Transforms the scheme codes into country name.

Usage

```
scheme2country(x)
```

Arguments

x	variable scheme from the data frame produced by read.EURING2000 or read.EURING2000plus

Value

a factor with levels coresponding to the country names

Author(s)

F. Korner-Nievergelt

References

www.euring.org

See Also

codes2names

Examples

```
schemecode <- "HES"
scheme2country(schemecode)
```

---

schemes *EURING-code for ringing scheme*

Description

EURING-code for ringing scheme as given in Speek et al. (2001)

Usage

```
data(schemes)
```

Format

A data frame with 39 observations on the following 7 variables.

`Code` a factor with the EURING code

`Country` a factor with the country of the scheme

`Centre` a factor with the city of the place of the scheme

`EURING` a factor with levels `Y`

`Current` a factor with levels `Y`

`Date.Updated` a factor

`Notes` a factor with additional remarks

Source

http://www.euring.org

References

Speek, G., Clark, J.A., Rhode, Z., Wassenaar, R.D. & van Noordwijk, A.J. (2001) The EURING exchange-code 2000. Dutch Ringing Scheme, Heteren.

Examples

```
data(schemes)
```

---

species *EURING-code for species*

Description

EURING-code for species as given in Speek et al. (2001)

Usage

```
data(species)
```

Format

A data frame with 3311 observations on the following 3 variables.

`Code` a numeric vector with the EURING species code

`Name` a factor with the species names

`Date.Updated` a factor

Source

http://www.euring.org

References

Speek, G., Clark, J.A., Rhode, Z., Wassenaar, R.D. & van Noordwijk, A.J. (2001) The EURING exchange-code 2000. Dutch Ringing Scheme, Heteren.

Examples

```
data(species)
```

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