

Drawing RDA triplots

Description

This function produces triplots from the output list of the RDA function 'rdaTest'.

Usage

```
plot.rdaTest(
  rdaTest.out, xax=1, yax=2, scaling=1, plot.type="notchosen", binary=NULL, height=6,
  width=6, xlim=NULL, ylim=NULL, ell=NULL, alpha=0.95, ell.axis=FALSE,
  mul.spc=0.8, mul.env=0.90, mul.text=0.10, pos.ell=NULL, pos.bin=NULL, pos.site=1,
  type="p", label.env=TRUE, label.spc=TRUE, label.site=TRUE, label.ell=TRUE,
  col.env="blue", col.spc="red", col.site="black", col.ell="black", lty.env=1, lty.spc=1,
  lty.ell=1, lty.axis=2, cex=1, cex.lab=1, cex.axis=1, lwd=1, len=0.1, saveplot=FALSE,
  path=NULL, mar.perc=NULL)
```

Arguments

rdaTest.out	name of the rdaTest output object. The most simple call to this function is to provide only the 'rdaTest.out' output object name. Ex.: graph.rdaTest(toto).
xax, yax	the matrix columns to be used to plot the rda graph. These value can be negative; if so, the plot axes will be reversed.
binary	a vector specifying which of the environmental variables are binary; the corresponding data points will be averaged and represented by a symbol instead of an arrow, as in Canoco.
scaling	allows the user to choose between the two scaling types, 1 or 2, for the triplots: scaling = 1: distance triplot (default); scaling = 2: correlation triplot.
plot.type	either "F" or "Z" -- "F" = site scores, "Z" = fitted site scores.
saveplot	if you want to save the plot to a PDF file; • if set to FALSE, the graph will only appear in a window (quartz); • if set to TRUE, no graph will be plotted on the screen; a pdf file will created.
path	complete path to the file in which the plot will be saved; example: "~/Desktop/toto.pdf"
width, height	size of the triplot in inches.
xlim, ylim	vectors describing the minimum and maximum values of the plotted region.
lwd	line width for the axes, arrows, and ellipses.
len	length of the arrow heads.

Parameters controlling the confidence ellipses around groups of points

ell	draw confidence ellipses around groups of points according to a vector defining the group assignments of the objects; see section Examples below.
alpha	confidence region of the ellipses (e.g. 0.90, 0.80, etc.) Default value: 0.95.

lty.ell	drawing type for ellipses; see 'lty' in the help documentation file of 'par'.
col.ell	the ellipses and group identification text color; see 'lty' in the help file of 'par'.
ell.axis	if TRUE, draw the major and minor axes of the ellipses.
pos.ell	offset the group names relative to the ellipse centers: 1=bottom, 2=left, 3=top, 4=right.
pos.bin	offset the names of the binary variables: 1=bottom, 2=left, 3=top, 4=right.
pos.site	offset the site labels: 1=bottom, 2=left, 3=top, 4=right.

Parameters for arrows and text

lty.env	environmental variable arrows drawing type; see 'lty' in the help documentation file of 'par'.
lty.spc	species arrows drawing type; see 'lty' in the help documentation file of 'par'.
col.env	color for the environmental variable arrows and text.
col.spc	color for the species arrows and text.
lty.axis	drawing type for axes, full lines, dotted lines, etc.
text.cex	font size.
mul.spc	multiplier based on the range of the plot axes; changes proportionally to the length of the species arrows; 1 is the maximum relative length in the whole set of arrows.
mul.env	same, for the explanatory variables
mul.text	text position at the end of each arrow plus a percentage; default is 10%.
type	by default (type = "p"), the sites are represented in the plot; type = "n" will not display the sites. If type = "p", the sites are represented by empty circles.
mar.perc	allows to increase or decrease the margin size, using a percentage of the total width and height of the graph; the value must be between 0 and 1.
label.xxx	using logicals, define whether the labels will be added to environmental variables, species, sites, and ellipses.

Details

A triplot of the results of the canonical redundancy analysis (RDA) is drawn, using either scaling 1 or scaling 2.

Scaling type 1 triplot uses matrices Z or F for objects and U for variables; notation as in Legendre and Legendre (1998, Section 11.1.1). This projection preserves the Euclidean distances among the objects.

Scaling type 2 triplot uses matrices ZSc2 or FSc2 for objects and USc2 for variables. This projection preserves the correlations among the response variables' fitted values.

Value

The function plots a canonical ordination triplot to a graphics window or a PDF file.

Reference

Legendre, P. and Legendre, L. 1998. *Numerical Ecology*. 2nd English ed. Elsevier, Amsterdam.

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See Also

rdaTest

Examples

```
## Example from Legendre and Legendre (1998), p. 590, Table 11.3
Table11.3 = read.table(file.choose())      # File "Table_11-3.txt"
Y = Table11.3[,1:6]
X = Table11.3[,7:10]
result = rdaTest(Y, X, testF=TRUE, nperm=999)
graph.rdaTest(result, plot.type="Z")

## Run rdaTest in such a way that it prints no output to the screen
results <- rdaTest(Y, X, testF=TRUE, nperm=999, print.results=FALSE, print.cum=FALSE)

## Reverse the orientation of the abscissa ('xax') in the plot
graph.rdaTest(result, xax=-1, yax=2, mul.spc=0.90, mul.env=0.70, mul.text=0.10, scaling=1,
plot.type="F", mai.perc=0.15, pos.site=3)

## Draw confidence ellipses around groups of points, spider data
spiders.spe = read.table("Spiders_28x12_spe.txt")
spiders.hel = decostand(spiders.spe, "hellinger")
spiders.env = read.table("Spiders_28x4_env.txt")
result.spiders = rdaTest(spiders.hel, spiders.env)
# 'vec' divides the sites into three a priori group
vec = c(2,1,2,1,1,3,1,3,2,2,2,2,1,3,3,3,3,3,3,3,2,2,2,3,2,2,2)
graph.rdaTest(result.spiders, plot.type="Z", ell=vec, lty.ell=3, pos.site=4, mar.perc=0.15)
```