Package 'ggords'

September 28, 2017

Version 1.0

Title Ordination Visualization

Description Functions to produce ordination plot based on ggplot2 and vegan package.

Depends R (>= 3.4.1)

Imports ggplot2, vegan, plyr

License GPL-3

URL https://github.com/wdy91617/ggords

BugReports https://github.com/wdy91617/ggords/issues

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Suggests knitr, rmarkdown

VignetteBuilder knitr

RoxygenNote 6.0.1

NeedsCompilation no

R topics documented:

Envs *Envs dataset*

Description

Environmental indicators

Usage

```
Envs
```

Format

A data frame

ggca *"CA" ordination plot*

Description

Output ca ordination plot produced by cca.

Usage

```
ggca(ord, groups = NULL, axes = c(1, 2), scaling = 2, obslab = FALSE,
  moblabs = NULL, obssize = 2, obscol = "black", obspch = 16,
  obsFonts = "serif", obsface = "plain", spe = TRUE, msplabs = NULL,
  spearrow = 0.2, spelab = TRUE, spmapsize = NULL, spaline = 1,
  spalwd = 0.5, spacol = "grey30", sprotate = NULL, spesize = 4,
  specol = "red", spepch = 16, speFonts = "serif", speface = "plain",
  envs = NULL, mflabs = NULL, farrow = 0.2, fmapsize = NULL,
  faline = 1, falwd = 0.5, facol = "blue", fzoom = 1, frotate = NULL,
  fsize = 5, fcol = "blue", fFonts = "serif", fface = "plain",
  ellipse = FALSE, ellprob = 0.95, cirlwd = 1, cirline = 2)
```

Arguments

ord	An object produced by cca.
groups	An grouping factor, its length is the same as the row number of the ordination dataframe.
axes	Axes shown.
scaling	Scaling for species and site scores. Either species (2) or site (1) scores are scaled by eigenvalues, and the other set of scores is left unscaled, or with 3 both are scaled symmetrically by square root of eigenvalues. Unscaled raw scores stored in the result can be accessed with scaling = 0. The type of scores can also be specified as one of "none", "sites", "species", or "symmetric", which correspond to the values 0, 1, 2, and 3 respectively.
obslab	A logical value, obslab = FALSE(The row variables are displayed as points), obslab = TRUE(The row variables are displayed as texts).

moblabs	A vector of strings, rename the row variable names displayed.
obssize	The size of row variables.
obscol	The colour of row variables.
obspch	The point shape of row variables.
obsFonts	The family of row variables.
obsface	The fontface of row variables.
spe	A logical value, whether the column variables are displayed.
msplabs	A vector of strings, rename the col variable names displayed.
spearrow	Arrowhead length of col variables.
spelab	A logical value, spelab = FALSE(The col variables are displayed as points), spelab = TRUE(The col variables are displayed as texts).
spmapsize	Numeric value, the size of col variable labels is mapped by the length of arrowhead.
spaline	Type of arrowhead segment.
spalwd	Numeric value, the width of arrowhead segment.
spacol	The colour of arrowhead segment.
sprotate	Numeric value, rotation angle of col variable labels.
spesize	Numeric value, the size of col variable labels or points.
specol	The colour of col variable labels or opoints.
spepch	Type of col variable labels or points .
speFonts	The family of col variable labels.
speface	The fontface of col variable labels.
envs	Dataframe fitted.
mflabs	A vector of strings, rename the fitted variable names displayed.
farrow	Arrowhead length of fitted variables.
fmapsize	Numeric value, the size of fitted variable labels is mapped by the length of arrowhead.
faline	Arrowhead type of fitted variables.
falwd	Numeric value, arrowhead width of fitted variables.
facol	Arrowhead colour of fitted variables.
fzoom	Numeric value, scaling arrow length.
frotate	Numeric value, rotation angle of fitted variable labels.
fsize	Numeric value, the size of fitted variable labels or points.
fcol	The colour of fitted variable labels or opoints.
fFonts	The family of fitted variable labels.
fface	The fontface of fitted variable labels.
ellipse	A logical value, whether confidence ellipses are displayed.
ellprob	Numeric value, confidence interval.
cirlwd	Numeric value, line width of ellipse.
cirline	Line type of ellipse.

Details

Control of some parts is put in the function. Theme of figure can be set by theme of ggplot2.

Value

Returns a ggplot object.

Author(s)

Dongya Wang <wdy91617@163.com>

Examples

```
data(Spes)
library(vegan)

#get group factor
Spe.w <- hclust(dist(scale(Spes)), "ward.D")
gr <- cutree(Spe.w , k=4)
grl <- factor(gr)

# Compute CCA
Spe.ca <- cca(Spes,scale = TRUE)
head(summary(Spe.ca))

# Produce a plot
ggca(Spe.ca)

# Add a group
ggca(Spe.ca, group = grl)

# Set a theme
require(ggplot2)
ggca(Spe.ca, group = grl, fcol = "white", facol = "white") + theme_dark()

# Remove the arrow
ggca(Spe.ca, group = grl, spearrow = NULL)

# Modify legend title, group color and point shape
ggca(Spe.ca, group = grl, spearrow = NULL) +
  scale_color_manual(name = "Groups",values = c("red2", "purple1", "grey20","cyan")) +
  scale_shape_manual(name = "Groups",values = c(8,15,16,17))

#Add confidence ellipses
ggca(Spe.ca, group = grl, spearrow = NULL, ellipse = TRUE) +
  scale_colour_hue(l = 70, c = 300)
```

---

ggcca "CCA" *ordination plot*

Description

Output cca ordination plot produced by cca.

Usage

```
ggcca(ord, groups = NULL, axes = c(1, 2), display = "bp", scaling = 2,
  obslab = FALSE, moblabs = NULL, obssize = 2, obscol = "black",
  obspch = 16, obsFonts = "serif", obsface = "plain", spe = TRUE,
  msplabs = NULL, spearrow = 0.2, spelab = TRUE, spmapsize = NULL,
  spaline = 1, spalwd = 0.5, spacol = "grey30", sprotate = NULL,
  spesize = 4, specol = "red", spepch = 16, speFonts = "serif",
  speface = "plain", envs = NULL, mflabs = NULL, farrow = 0.2,
  fmapsize = NULL, faline = 1, falwd = 0.5, facol = "blue", fzoom = 1,
  frotate = NULL, fsize = 5, fcol = "blue", fFonts = "serif",
  fface = "plain", ellipse = FALSE, ellprob = 0.95, cirlwd = 1,
  cirline = 2)
```

Arguments

ord	An object produced by cca.
groups	An grouping factor, its length is the same as the row number of the ordination dataframe.
axes	Axes shown.
display	Scores shown. These must include some of the alternatives species or sp for species scores, sites or wa for site scores, lc for linear constraints or "LC scores", or bp for biplot arrows or cn for centroids of factor constraints instead of an arrow
scaling	Scaling for species and site scores. Either species (2) or site (1) scores are scaled by eigenvalues, and the other set of scores is left unscaled, or with 3 both are scaled symmetrically by square root of eigenvalues. Unscaled raw scores stored in the result can be accessed with scaling = 0. The type of scores can also be specified as one of "none", "sites", "species", or "symmetric", which correspond to the values 0, 1, 2, and 3 respectively.
obslab	A logical value, obslab = FALSE(The row variables are displayed as points), obslab = TRUE(The row variables are displayed as texts).
moblabs	A vector of strings, rename the row variable names displayed.
obssize	The size of row variables.
obscol	The colour of row variables.
obspch	The point shape of row variables.
obsFonts	The family of row variables.
obsface	The fontface of row variables.
spe	A logical value, whether the column variables are displayed.
msplabs	A vector of strings, rename the col variable names displayed.
spearrow	Arrowhead length of col variables.
spelab	A logical value, spelab = FALSE(The col variables are displayed as points), spelab = TRUE(The col variables are displayed as texts).
spmapsize	Numeric value, the size of col variable labels is mapped by the length of arrowhead.
spaline	Type of arrowhead segment.
spalwd	Numeric value, the width of arrowhead segment.

spacol	The colour of arrowhead segment.
sprotate	Numeric value, rotation angle of col variable labels.
spesize	Numeric value, the size of col variable labels or points.
specol	The colour of col variable labels or opoints.
spepch	Type of col variable labels or points .
speFonts	The family of col variable labels.
speface	The fontface of col variable labels.
envs	Dataframe fitted.
mflabs	A vector of strings, rename the fitted variable names displayed.
farrow	Arrowhead length of fitted variables.
fmapsize	Numeric value, the size of fitted variable labels is mapped by the length of arrowhead.
faline	Arrowhead type of fitted variables.
falwd	Numeric value, arrowhead width of fitted variables.
facol	Arrowhead colour of fitted variables.
fzoom	Numeric value, scaling arrow length.
frotate	Numeric value, rotation angle of fitted variable labels.
fsize	Numeric value, the size of fitted variable labels or points.
fcol	The colour of fitted variable labels or opoints.
fFonts	The family of fitted variable labels.
fface	The fontface of fitted variable labels.
ellipse	A logical value, whether confidence ellipses are displayed.
ellprob	Numeric value, confidence interval.
cirlwd	Numeric value, line width of ellipse.
cirline	Line type of ellipse.

Details

Control of some parts is put in the function. Theme of figure can be set by theme of ggplot2.

Value

Returns a ggplot object.

Author(s)

Dongya Wang <wdy91617@163.com>

Examples

```
data(Spes)
data(Envs)
library(vegan)

# get group factor
Spe.w <- hclust(dist(scale(Spes)), "ward.D")
gr <- cutree(Spe.w , k=4)
```

```
grl <- factor(gr)

# Compute CCA
Spe.cca <- cca(Spes, Envs)
head(summary(Spe.cca))

# Produce a plot
ggcca(Spe.cca)

# Add a group
ggcca(Spe.cca, group = grl)

# Set a theme
require(ggplot2)
ggcca(Spe.cca, group = grl, fcol = "white", facol = "white") + theme_dark()

# Remove the arrow
ggcca(Spe.cca, group = grl, spearrow = NULL)

# Modify legend title, group color and point shape
ggcca(Spe.cca, group = grl, spearrow = NULL) +
  scale_color_manual(name = "Groups",values = c("red2", "purple1", "grey20","cyan")) +
  scale_shape_manual(name = "Groups",values = c(8,15,16,17))

#Add confidence ellipses
ggcca(Spe.cca, group = grl, spearrow = NULL, ellipse = TRUE) +
  scale_colour_hue(l = 70, c = 300)
```

---

ggnmds *"NMDS" ordination plot*

Description

Output nmds ordination plot.

Usage

```
ggnmds(ord, groups = NULL, axes = c(1, 2), obslab = FALSE,
  moblabs = NULL, obssize = 2, obscol = "black", obspch = 16,
  obsFonts = "serif", obsface = "plain", spe = TRUE, msplabs = NULL,
  spearrow = 0.2, spelab = TRUE, spmapsize = NULL, spaline = 1,
  spalwd = 0.5, spacol = "grey30", sprotate = NULL, spesize = 4,
  specol = "red", spepch = 16, speFonts = "serif", speface = "plain",
  envs = NULL, mflabs = NULL, farrow = 0.2, fmapsize = NULL,
  faline = 1, falwd = 0.5, facol = "blue", fzoom = 1, frotate = NULL,
  fsize = 5, fcol = "blue", fFonts = "serif", fface = "plain",
  ellipse = FALSE, ellprob = 0.95, cirlwd = 1, cirline = 2)
```

Arguments

ord	An object produced by metaMDS.
groups	An grouping factor, its length is the same as the row number of the ordination dataframe.

axes	Axes shown.
obslab	A logical value, obslab = FALSE(The row variables are displayed as points), obslab = TRUE(The row variables are displayed as texts).
moblabs	A vector of strings, rename the row variable names displayed.
obssize	The size of row variables.
obscol	The colour of row variables.
obspch	The point shape of row variables.
obsFonts	The family of row variables.
obsface	The fontface of row variables.
spe	A logical value, whether the column variables are displayed.
msplabs	A vector of strings, rename the col variable names displayed.
spearrow	Arrowhead length of col variables.
spelab	A logical value, spelab = FALSE(The col variables are displayed as points), spelab = TRUE(The col variables are displayed as texts).
spmapsize	Numeric value, the size of col variable labels is mapped by the length of arrowhead.
spaline	Type of arrowhead segment.
spalwd	Numeric value, the width of arrowhead segment.
spacol	The colour of arrowhead segment.
sprotate	Numeric value, rotation angle of col variable labels.
spesize	Numeric value, the size of col variable labels or points.
specol	The colour of col variable labels or opoints.
spepch	Type of col variable labels or points .
speFonts	The family of col variable labels.
speface	The fontface of col variable labels.
envs	Dataframe fitted.
mflabs	A vector of strings, rename the fitted variable names displayed.
farrow	Arrowhead length of fitted variables.
fmapsize	Numeric value, the size of fitted variable labels is mapped by the length of arrowhead.
faline	Arrowhead type of fitted variables.
falwd	Numeric value, arrowhead width of fitted variables.
facol	Arrowhead colour of fitted variables.
fzoom	Numeric value, scaling arrow length.
frotate	Numeric value, rotation angle of fitted variable labels.
fsize	Numeric value, the size of fitted variable labels or points.
fcol	The colour of fitted variable labels or opoints.
fFonts	The family of fitted variable labels.
fface	The fontface of fitted variable labels.
ellipse	A logical value, whether confidence ellipses are displayed.
ellprob	Numeric value, confidence interval.
cirlwd	Numeric value, line width of ellipse.
cirline	Line type of ellipse.

Details

Control of some parts is put in the function. Theme of figure can be set by theme of ggplot2.

Value

Returns a ggplot object.

Author(s)

Dongya Wang <wdy91617@163.com>

Examples

```
data(Envs)
library(vegan)

#get group factor
Env.w <- hclust(dist(scale(Envs)), "ward.D")
gr <- cutree(Env.w , k=4)
grl <- factor(gr)

# Compute NMDS
Env.nmds <- metaMDS(Envs, distance="bray")

# Produce a plot
ggnmds(Env.nmds)

# Add a group
ggnmds(Env.nmds, group = grl)

# Set a theme
require(ggplot2)
ggnmds(Env.nmds, group = grl, fcol = "white", facol = "white") + theme_dark()

# Remove the arrow
ggnmds(Env.nmds, group = grl, spearrow = NULL)

# Modify legend title, group color and point shape
ggnmds(Env.nmds, group = grl, spearrow = NULL) +
  scale_color_manual(name = "Groups",values = c("red2", "purple1", "grey20","cyan")) +
  scale_shape_manual(name = "Groups",values = c(8,15,16,17))

#Add confidence ellipses
ggnmds(Env.nmds, group = grl, spearrow = NULL, ellipse = TRUE) +
  scale_colour_hue(l = 70, c = 300)
```

---

ggpca *"PCA" ordination plot*

Description

Output pca ordination plot produced by rda.

Usage

```
ggpca(ord, groups = NULL, axes = c(1, 2), scaling = 2, obslab = FALSE,
  moblabs = NULL, obssize = 2, obscol = "black", obspch = 16,
  obsFonts = "serif", obsface = "plain", spe = TRUE, msplabs = NULL,
  spearrow = 0.2, spelab = TRUE, spmapsize = NULL, spaline = 1,
  spalwd = 0.5, spacol = "grey30", sprotate = NULL, spesize = 4,
  specol = "red", spepch = 16, speFonts = "serif", speface = "plain",
  envs = NULL, mflabs = NULL, farrow = 0.2, fmapsize = NULL,
  faline = 1, falwd = 0.5, facol = "blue", fzoom = 1, frotate = NULL,
  fsize = 5, fcol = "blue", fFonts = "serif", fface = "plain",
  ellipse = FALSE, ellprob = 0.95, cirlwd = 1, cirline = 2)
```

Arguments

ord	An object produced by rda.
groups	An grouping factor, its length is the same as the row number of the ordination dataframe.
axes	Axes shown.
scaling	Scaling for species and site scores. Either species (2) or site (1) scores are scaled by eigenvalues, and the other set of scores is left unscaled, or with 3 both are scaled symmetrically by square root of eigenvalues. Unscaled raw scores stored in the result can be accessed with scaling = 0. The type of scores can also be specified as one of "none", "sites", "species", or "symmetric", which correspond to the values 0, 1, 2, and 3 respectively.
obslab	A logical value, obslab = FALSE(The row variables are displayed as points), obslab = TRUE(The row variables are displayed as texts).
moblabs	A vector of strings, rename the row variable names displayed.
obssize	The size of row variables.
obscol	The colour of row variables.
obspch	The point shape of row variables.
obsFonts	The family of row variables.
obsface	The fontface of row variables.
spe	A logical value, whether the column variables are displayed.
msplabs	A vector of strings, rename the col variable names displayed.
spearrow	Arrowhead length of col variables.
spelab	A logical value, spelab = FALSE(The col variables are displayed as points), spelab = TRUE(The col variables are displayed as texts).
spmapsize	Numeric value, the size of col variable labels is mapped by the length of arrowhead.
spaline	Type of arrowhead segment.
spalwd	Numeric value, the width of arrowhead segment.
spacol	The colour of arrowhead segment.
sprotate	Numeric value, rotation angle of col variable labels.
spesize	Numeric value, the size of col variable labels or points.
specol	The colour of col variable labels or opoints.

spepch	Type of col variable labels or points .
speFonts	The family of col variable labels.
speface	The fontface of col variable labels.
envs	Dataframe fitted.
mflabs	A vector of strings, rename the fitted variable names displayed.
farrow	Arrowhead length of fitted variables.
fmapsize	Numeric value, the size of fitted variable labels is mapped by the length of arrowhead.
faline	Arrowhead type of fitted variables.
falwd	Numeric value, arrowhead width of fitted variables.
facol	Arrowhead colour of fitted variables.
fzoom	Numeric value, scaling arrow length.
frotate	Numeric value, rotation angle of fitted variable labels.
fsize	Numeric value, the size of fitted variable labels or points.
fcol	The colour of fitted variable labels or opoints.
fFonts	The family of fitted variable labels.
fface	The fontface of fitted variable labels.
ellipse	A logical value, whether confidence ellipses are displayed.
ellprob	Numeric value, confidence interval.
cirlwd	Numeric value, line width of ellipse.
cirline	Line type of ellipse.

Details

Control of some parts is put in the function. Theme of figure can be set by theme of ggplot2.

Value

Returns a ggplot object.

Author(s)

Dongya Wang <wdy91617@163.com>

Examples

```
data(Envs)
library(vegan)

# get group factor
Env.w <- hclust(dist(scale(Envs)), "ward.D")
gr <- cutree(Env.w , k=4)
grl <- factor(gr)

# Compute PCA
Env.pca <- rda(Envs,scale = TRUE)
head(summary(Env.pca))
```

```
# Produce a plot
ggpca(Env.pca)

# Add a group
ggpca(Env.pca, group = grl)

# Set a theme
require(ggplot2)
ggpca(Env.pca, group = grl, fcol = "white", facol = "white") + theme_dark()

# Remove the arrow
ggpca(Env.pca, group = grl, spearrow = NULL)

# Modify legend title, group color and point shape
ggpca(Env.pca, group = grl, spearrow = NULL) +
  scale_color_manual(name = "Groups",values = c("red2", "purple1", "grey20","cyan")) +
  scale_shape_manual(name = "Groups",values = c(8,15,16,17))

#Add confidence ellipses
ggpca(Env.pca, group = grl, spearrow = NULL, ellipse = TRUE) +
  scale_colour_hue(l = 70, c = 300)
```

---

ggpcoa *"PCoA" ordination plot*

Description

Output pcoa ordination plot.

Usage

```
ggpcoa(ord, ordata, groups = NULL, axes = c(1, 2), obslab = FALSE,
  moblabs = NULL, obssize = 2, obscol = "black", obspch = 16,
  obsFonts = "serif", obsface = "plain", spe = TRUE, msplabs = NULL,
  spearrow = 0.2, spelab = TRUE, spmapsize = NULL, spaline = 1,
  spalwd = 0.5, spacol = "grey30", sprotate = NULL, spesize = 4,
  specol = "red", spepch = 16, speFonts = "serif", speface = "plain",
  envs = NULL, mflabs = NULL, farrow = 0.2, fmapsize = NULL,
  faline = 1, falwd = 0.5, facol = "blue", fzoom = 1, frotate = NULL,
  fsize = 5, fcol = "blue", fFonts = "serif", fface = "plain",
  ellipse = FALSE, ellprob = 0.95, cirlwd = 1, cirline = 2)
```

Arguments

ord	An object produced by cmdscale.
ordata	An dataframe that is provided to function wascores.
groups	An grouping factor, its length is the same as the row number of the ordination dataframe.
axes	Axes shown.
obslab	A logical value, obslab = FALSE(The row variables are displayed as points), obslab = TRUE(The row variables are displayed as texts).

moblabs	A vector of strings, rename the row variable names displayed.
obssize	The size of row variables.
obscol	The colour of row variables.
obspch	The point shape of row variables.
obsFonts	The family of row variables.
obsface	The fontface of row variables.
spe	A logical value, whether the column variables are displayed.
msplabs	A vector of strings, rename the col variable names displayed.
spearrow	Arrowhead length of col variables.
spelab	A logical value, spelab = FALSE(The col variables are displayed as points), spelab = TRUE(The col variables are displayed as texts).
spmapsize	Numeric value, the size of col variable labels is mapped by the length of arrowhead.
spaline	Type of arrowhead segment.
spalwd	Numeric value, the width of arrowhead segment.
spacol	The colour of arrowhead segment.
sprotate	Numeric value, rotation angle of col variable labels.
spesize	Numeric value, the size of col variable labels or points.
specol	The colour of col variable labels or opoints.
spepch	Type of col variable labels or points .
speFonts	The family of col variable labels.
speface	The fontface of col variable labels.
envs	Dataframe fitted.
mflabs	A vector of strings, rename the fitted variable names displayed.
farrow	Arrowhead length of fitted variables.
fmapsize	Numeric value, the size of fitted variable labels is mapped by the length of arrowhead.
faline	Arrowhead type of fitted variables.
falwd	Numeric value, arrowhead width of fitted variables.
facol	Arrowhead colour of fitted variables.
fzoom	Numeric value, scaling arrow length.
frotate	Numeric value, rotation angle of fitted variable labels.
fsize	Numeric value, the size of fitted variable labels or points.
fcol	The colour of fitted variable labels or opoints.
fFonts	The family of fitted variable labels.
fface	The fontface of fitted variable labels.
ellipse	A logical value, whether confidence ellipses are displayed.
ellprob	Numeric value, confidence interval.
cirlwd	Numeric value, line width of ellipse.
cirline	Line type of ellipse.

Details

Control of some parts is put in the function. Theme of figure can be set by theme of ggplot2.

Value

Returns a ggplot object.

Author(s)

Dongya Wang <wdy91617@163.com>

Examples

```
data(Envs)
library(vegan)
# get group factor
Env.w <- hclust(dist(scale(Envs)), "ward.D")
gr <- cutree(Env.w , k=4)
grl <- factor(gr)

# Compute PCoA
Env.bray <- vegdist(Envs)
Env.pcoa <- cmdscale(Env.bray, eig=TRUE)
summary(Env.pcoa)

# Produce a plot
ggpcoa(Env.pcoa, ordata = Envs)

# Add a group
ggpcoa(Env.pcoa, ordata = Envs, group = grl)

# Set a theme
require(ggplot2)
ggpcoa(Env.pcoa, ordata = Envs, group = grl, fcol = "white", facol = "white") + theme_dark()

# Remove the arrow
ggpcoa(Env.pcoa, ordata = Envs, group = grl, spearrow = NULL)

# Modify legend title, group color and point shape
ggpcoa(Env.pcoa, group = grl, ordata = Envs, spearrow = NULL) +
  scale_color_manual(name = "Groups",values = c("red2", "purple1", "grey20","cyan")) +
  scale_shape_manual(name = "Groups",values = c(8,15,16,17))

#Add confidence ellipses
ggpcoa(Env.pcoa, ordata = Envs, group = grl, spearrow = NULL, ellipse = TRUE) +
  scale_colour_hue(l = 70, c = 300)
```

---

ggrda "RDA" *ordination plot*

Description

Output rda ordination plot produced by rda.

Usage

```
ggrda(ord, groups = NULL, axes = c(1, 2), display = "bp", scaling = 2,
  obslab = FALSE, moblabs = NULL, obssize = 2, obscol = "black",
  obspch = 16, obsFonts = "serif", obsface = "plain", spe = TRUE,
  msplabs = NULL, spearrow = 0.2, spelab = TRUE, spmapsize = NULL,
  spaline = 1, spalwd = 0.5, spacol = "grey30", sprotate = NULL,
  spesize = 4, specol = "red", spepch = 16, speFonts = "serif",
  speface = "plain", envs = NULL, mflabs = NULL, farrow = 0.2,
  fmapsize = NULL, faline = 1, falwd = 0.5, facol = "blue", fzoom = 1,
  frotate = NULL, fsize = 5, fcol = "blue", fFonts = "serif",
  fface = "plain", ellipse = FALSE, ellprob = 0.95, cirlwd = 1,
  cirline = 2)
```

Arguments

ord	An object produced by rda.
groups	An grouping factor, its length is the same as the row number of the ordination dataframe.
axes	Axes shown.
display	Scores shown. These must include some of the alternatives species or sp for species scores, sites or wa for site scores, lc for linear constraints or "LC scores", or bp for biplot arrows or cn for centroids of factor constraints instead of an arrow
scaling	Scaling for species and site scores. Either species (2) or site (1) scores are scaled by eigenvalues, and the other set of scores is left unscaled, or with 3 both are scaled symmetrically by square root of eigenvalues. Unscaled raw scores stored in the result can be accessed with scaling = 0. The type of scores can also be specified as one of "none", "sites", "species", or "symmetric", which correspond to the values 0, 1, 2, and 3 respectively.
obslab	A logical value, obslab = FALSE(The row variables are displayed as points), obslab = TRUE(The row variables are displayed as texts).
moblabs	A vector of strings, rename the row variable names displayed.
obssize	The size of row variables.
obscol	The colour of row variables.
obspch	The point shape of row variables.
obsFonts	The family of row variables.
obsface	The fontface of row variables.
spe	A logical value, whether the column variables are displayed.
msplabs	A vector of strings, rename the col variable names displayed.
spearrow	Arrowhead length of col variables.
spelab	A logical value, spelab = FALSE(The col variables are displayed as points), spelab = TRUE(The col variables are displayed as texts).
spmapsize	Numeric value, the size of col variable labels is mapped by the length of arrowhead.
spaline	Type of arrowhead segment.
spalwd	Numeric value, the width of arrowhead segment.

spacol	The colour of arrowhead segment.
sprotate	Numeric value, rotation angle of col variable labels.
spesize	Numeric value, the size of col variable labels or points.
specol	The colour of col variable labels or opoints.
spepch	Type of col variable labels or points .
speFonts	The family of col variable labels.
speface	The fontface of col variable labels.
envs	Dataframe fitted.
mflabs	A vector of strings, rename the fitted variable names displayed.
farrow	Arrowhead length of fitted variables.
fmapsize	Numeric value, the size of fitted variable labels is mapped by the length of arrowhead.
faline	Arrowhead type of fitted variables.
falwd	Numeric value, arrowhead width of fitted variables.
facol	Arrowhead colour of fitted variables.
fzoom	Numeric value, scaling arrow length.
frotate	Numeric value, rotation angle of fitted variable labels.
fsize	Numeric value, the size of fitted variable labels or points.
fcol	The colour of fitted variable labels or opoints.
fFonts	The family of fitted variable labels.
fface	The fontface of fitted variable labels.
ellipse	A logical value, whether confidence ellipses are displayed.
ellprob	Numeric value, confidence interval.
cirlwd	Numeric value, line width of ellipse.
cirline	Line type of ellipse.

Details

Control of some parts is put in the function. Theme of figure can be set by theme of ggplot2.

Value

Returns a ggplot object.

Author(s)

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Examples

```
data(Spes)
data(Envs)
library(vegan)

# Hellinger-transform the species dataset
Spe.hel <- decostand(Spes, "hellinger")
```

```
# get group factor
Spe.w <- hclust(dist(scale(Spe.hel)), "ward.D")
gr <- cutree(Spe.w , k=4)
grl <- factor(gr)

# Compute RDA
Spe.rda <- rda(Spe.hel, Envs)
head(summary(Spe.rda))

# Produce a plot
ggrda(Spe.rda)

# Add a group

# Set a theme
require(ggplot2)
ggrda(Spe.rda,group = grl, fcol = "white", facol = "white") + theme_dark()

# Remove the arrow
ggrda(Spe.rda,group = grl, spearrow = NULL)

# Modify legend title, group color and point shape
ggrda(Spe.rda,group = grl, spearrow = NULL) +
  scale_color_manual(name = "Groups",values = c("red2", "purple1", "grey20","cyan")) +
  scale_shape_manual(name = "Groups",values = c(8,15,16,17))

#Add confidence ellipses
ggrda(Spe.rda, group = grl, spearrow = NULL, ellipse = TRUE) +
  scale_colour_hue(l = 70, c = 300)
```

`Spes` *Spes dataset*

Description

species richness indicators

Usage

```
Spes
```

Format

A data frame

Index