Package 'betalink'

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Title Beta-Diversity of Species Interactions

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Depends R (>= 2.12.0)

Imports plyr, stringr, igraph

Suggests testthat, covr

Description
Measures of beta-diversity in networks, and easy visualization of why two networks are different.

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URL http://poisotlab.io/software

RoxygenNote 5.0.1

NeedsCompilation no

Repository CRAN

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R topics documented:

`anemonefish` *Anemone/fish interaction data*

Description

From http://mangal.io/data/dataset/2/

Format

16 adjacency matrices with species names

`B01` *Whittaker*

Description

Measure beta-diversity

Usage

```
B01(pm)
```

Arguments

pm	a list with components a, b, and c

B02 *Harrison*

Description

Measure beta-diversity

Usage

```
B02(pm)
```

Arguments

pm	a list with components a, b, and c

B03 *Cody*

Description

Measure beta-diversity

Usage

```
B03(pm)
```

Arguments

pm	a list with components a, b, and c

B04 *WeiherBoylen*

Description

Measure beta-diversity

Usage

```
B04(pm)
```

Arguments

pm	a list with components a, b, and c

B05 *Routledge*

Description

Measure beta-diversity

Usage

```
B05(pm)
```

Arguments

pm	a list with components a, b, and c

B06 *WilsonShmida*

Description

Measure beta-diversity

Usage

```
B06(pm)
```

Arguments

pm	a list with components a, b, and c

B07 *Routledge2*

Description

Measure beta-diversity

Usage

```
B07(pm)
```

Arguments

pm	a list with components a, b, and c

B08 *WilsonShmida2*

Description

Measure beta-diversity

Usage

```
B08(pm)
```

Arguments

pm	a list with components a, b, and c

B09 *MourelleEzcurra*

Description

Measure beta-diversity

Usage

```
B09(pm)
```

Arguments

pm	a list with components a, b, and c

B10 *Jaccard*

Description

Measure beta-diversity

Usage

```
B10(pm)
```

Arguments

pm	a list with components a, b, and c

B11 *Sorensen*

Description

Measure beta-diversity

Usage

```
B11(pm)
```

Arguments

pm	a list with components a, b, and c

B12 *Magurran*

Description

Measure beta-diversity

Usage

```
B12(pm)
```

Arguments

pm	a list with components a, b, and c

B13 *Harrison2*

Description

Measure beta-diversity

Usage

```
B13(pm)
```

Arguments

pm	a list with components a, b, and c

B14 *Cody2*

Description

Measure beta-diversity

Usage

```
B14(pm)
```

Arguments

pm	a list with components a, b, and c

B15 *ColwellCoddington*

Description

Measure beta-diversity

Usage

```
B15(pm)
```

Arguments

pm	a list with components a, b, and c

B16 *Gaston*

Description

Measure beta-diversity

Usage

```
B16(pm)
```

Arguments

pm	a list with components a, b, and c

B17 *Williams*

Description

Measure beta-diversity

Usage

```
B17(pm)
```

Arguments

pm	a list with components a, b, and c

B18 *Lande*

Description

Measure beta-diversity

Usage

```
B18(pm)
```

Arguments

pm	a list with components a, b, and c

B19 *Williams2*

Description

Measure beta-diversity

Usage

```
B19(pm)
```

Arguments

pm	a list with components a, b, and c

B20 *HarteKinzig*

Description

Measure beta-diversity

Usage

```
B20(pm)
```

Arguments

pm	a list with components a, b, and c

B21 *Ruggiero*

Description

Measure beta-diversity

Usage

```
B21(pm)
```

Arguments

pm	a list with components a, b, and c

B22 *Lennon*

Description

Measure beta-diversity

Usage

```
B22(pm)
```

Arguments

pm	a list with components a, b, and c

B23 *Lennon2*

Description

Measure beta-diversity

Usage

```
B23(pm)
```

Arguments

pm	a list with components a, b, and c

B24 *B24*

Description

Measure beta-diversity

Usage

```
B24(pm)
```

Arguments

pm	a list with components a, b, and c

betalink *beta-diversity of two networks*

Description

measures the beta-diversity between two networks

Usage

```
betalink(n1, n2, bf = B01)
```

Arguments

n1	network 1 (as an igraph object)
n2	network 2 (as an igraph object)
bf	any function to measure beta-diversity between two sets

Value

a list with components S, OS, WN, and ST. While interpreting the output, it is important to consider that ST is strongly constrained by the values of S (the species composition dissimilarity). ST is only really meaningful when the values of S are "intermediate"; a good example is when the networks have been sampled along a gradient, and a more or less equal proportion of the species show turnover from one step to the next. In the situations where S is either really high or really low, the values of ST are constrained and should no be given importance. The values of OS and WN, and how they relate to S, have more informative value.

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betapart *Partition sets A and B*

Description

given any two sets (arrays) A and B, return the size of components a, b, and c, used in functions to measure beta-diversity

Usage

```
betapart(A, B)
```

Arguments

A	any array
B	any array

Examples

```
A = c(1,2,3)
B = c(2,3,4)
betapart(A, B)
```

beta_os_prime *Measure the distance between a network and its metaweb*

Description

Returns the values of beta OS', i.e. the distace between all realizations, and the revelant subset from the metaweb

Usage

```
beta_os_prime(N, ...)
```

Arguments

N	a list of networks
...	additional arguments to be passed to betalink

Value

An array of the values of Beta OS'

df_from_A *data.frame from adjancency matrix*

Description

Transforms an Adjacency matrix into a data frame

Usage

```
df_from_A(A)
```

Arguments

A	an adjacency matrix

metaweb *Returns a metaweb given a list of networks*

Description

Given a list of networks, this function returns the metaweb

Usage

```
metaweb(n)
```

Arguments

n	a list of graphs

name_networks *Give names to networks*

Description

If the networks (in a list) have no names, give them names

Usage

```
name_networks(w)
```

Arguments

w	A list (of networks, but who am I to judge?)

network_betadiversity *Components of beta-diversity for a list of networks*

Description

Given a list of networks, returns the pairwise beta-diversity components

Usage

```
network_betadiversity(N, complete = FALSE, ...)
```

Arguments

N	a list of networks
complete	(boolean) whether all combinations of networks should be tested
...	additional arguments to be passed to betalink

Value

A dataframe with the pairwise distances

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network_betaplot *Plot a network with species and interactions highlighted*

Description

Plot differences between two networks

Usage

```
network_betaplot(n1, n2, na = "#2ca02c", nb = "#1f77b4", ns = "grey", ...)
```

Arguments

n1	a network
n2	a second network
na	color of items unique to network 1
nb	color of items unique to network 2
ns	color of shared items
...	additional arguments to be passed to plot

Value

Nothing

prepare_networks *Prepare networks*

Description

Taking a list of networks as matrices, returns a list of igraph objects

Usage

```
prepare_networks(w, directed = TRUE)
```

Arguments

w	A list of network matrices
directed	whether the edges are directed or not

Examples

```
data(anemonefish)
networks <- prepare_networks(anemonefish, TRUE)
print(networks$Timur)
```

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