Package ‘betalink’

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Title Beta-Diversity of Species Interactions
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Suggests testthat, covr
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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

\( \text{pm} \) a list with components a, b, and c

---

**B02**

*Harrison*

**Description**

Measure beta-diversity

**Usage**

\[ \text{B02}(\text{pm}) \]

**Arguments**

\( \text{pm} \) a list with components a, b, and c

---

**B03**

*Cody*

**Description**

Measure beta-diversity

**Usage**

\[ \text{B03}(\text{pm}) \]

**Arguments**

\( \text{pm} \) a list with components a, b, and c

---

**B04**

*WeiherBoylen*

**Description**

Measure beta-diversity

**Usage**

\[ \text{B04}(\text{pm}) \]

**Arguments**

\( \text{pm} \) 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
Description

Measure beta-diversity

Usage

B08(pm)

Arguments

pm a list with components a, b, and c

Description

Measure beta-diversity

Usage

B09(pm)

Arguments

pm a list with components a, b, and c

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
### Description
Measure beta-diversity

**Usage**

B23(pm)

**Arguments**

- **pm**: a list with components a, b, and c

### 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)
betapart

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 not be given importance. The values of OS and WN, and how they relate to S, have more informative value.

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 distance between all realizations, and the relevant 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 adjacency 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, ...)

network_betaplot

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

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

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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