Package 'neighborhood'

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Type A package

Title An R package to determine the neighborhood competitive environment of trees

Version 0.1.0

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Description Functions to define and characterize neighborhoods and estimate their effects on forest dynamics

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.0

Imports dplyr, tidyr, likelihood

R topics documented:

`create_nci_files` *create_nci_files*

Description

function to create the files needed to estimate NCI-growth euqations using the anneal function of the likelihood package.

Usage

```
create_nci_files(df, plot_ID, var)
```

Arguments

df	the dataframe containing information about the target trees and their neighbors. It can be provided by the users or obtained using the 'get_neighbors' function
plot_ID	optional. Variable that identifies the plots, or experimental units, within which the neighbors will be considered. This information is used to split the calculations per plot, and the results are merged back into a single data frame.
var	The variable that we want to extract from the neighbors. It can be either a numeric, logical or character variable.

Details

create_nci_files

Value

a data frame containing as many rows as target trees. Each row will contain as many values (columns) as neighbors has the corresponding target tree. Cells contain values of the variable "var" for each neighbor tree, and missing values are coded as NA

Examples

```
data(neighbors)

dbhs <- create_nci_files(neighbors, plot, dbh_neighbor)
sps <- create_nci_files(neighbors, plot, sps_neighbour)
distances <- create_nci_files(neighbors, plot, dist)
```

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get_neighbors *get_neighbors*

Description

Function to obtain the neighbors of each tree from a file containing the identities of the trees and, optionally, a variable that identifies the plots.

Usage

```
get_neighbors(df, plot_ID, coords, suffixes, max_dist = 10000)
```

Arguments

df	the data frame containing the trees for which we want to identify the neighbors, and their associated information
plot_ID	**optional**. Variable that identifies the plots, or experimental units, within which the neighbors will be searched. If this variable exists, a tree "a" can only be a neighbor of another tree "b", if it is fulfilled that plot(a) == plot(b).

coords	**optional** Character vector containing the names of the columns in 'df'containing the x and y coordinates of the trees. By default 'coords = c("x", "y")', i.e. it assumes taht the columns are called "x" and "y"
suffixes	**optional** character vector containing the suffixes that will be added to the variables in 'df'to dientify target trees and neighbours. By default it takes the value 'suffixes = c("_target", "_neighbor")', but can take any other value defined by user.
max_dist	numeric Maximum distance to search for neighbours of target trees. It takes value 10000 by default.

Value

This function identifies the neighbors of each potential "target" tree and creates a data frame that contains a row for each neighbor of each tree in the original data frame. Variables characterizing target and neighbor trees are identified with the suffixes "_target" and "_neighbour", respectively. It also computes the distance between each target - neighbor pair, in the same units as provided by the "x" and "y" coordinates.

Examples

```
plot <- c(rep(1:2, 9), rep(3:6, 14), rep(7,6))
sps_pool <- c("PINI", "PISY", "ABAL")    # the pool of species
sps <- sample(sps_pool, length(plot), replace = T)
dbh <- rnorm(length(plot), 15, 5)
x <- rnorm(length(plot), 0, 5)     # x coordinates of the tree
y <- rnorm(length(plot), 0, 5)     # y coordinates of the tree
tree_data <- data.frame(plot, sps, dbh, x, y)

neighbors <- get_neighbors(tree_data, plot)

# If not plots are to be considered
all_neighbors <- get_neighbors(tree_data)

# specify suffix for target and neighbors, and maximum distance
neighbors2 <- get_neighbors(tree_data, plot, suffixes = c("cible", "voisin"), max_dist = 10)
```

---

tree_data *Forest inventory data in Pyrenean forests*

Description

Forest inventory data in Pyrenean forests

Usage

```
tree_data
```

Format

A data frame with columns:

plot Plot identifier

sps Tree species, with 3 possible values: ABAL, PINI or PISY

dbh Tree diameter(cm).

x x coordinates of the tree within the plot, as measured from the plot center (m).

y y coordinates of the tree within the plot, as measured from the plot center (m).

Source

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Examples

```
## Not run:
 tree_data

## End(Not run)
```

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