

Package ‘brranching’

December 5, 2018

Title Fetch 'Phylogenies' from Many Sources

Description Includes methods for fetching 'phylogenies' from a variety of sources, including the 'Phylomatic' web service (<<http://phylodiversity.net/phylomatic>>), and 'Phylocom' (<<https://github.com/phylocom/phylocom/>>).

Version 0.4.0

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URL <https://github.com/ropensci/brranching>

BugReports <http://github.com/ropensci/brranching/issues>

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LazyData yes

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VignetteBuilder knitr

Depends R(>= 3.2.1)

Imports crul (>= 0.4.0), curl (>= 1.2), ape, taxize, phytools, phylocomr (>= 0.1.2)

Suggests testthat, knitr

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Author Scott Chamberlain [aut, cre] (<<https://orcid.org/0000-0003-1444-9135>>)

Maintainer Scott Chamberlain <myrmecocystus@gmail.com>

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brranching-package	<i>Phylogenies from many sources</i>
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Description

Phylogenies from many sources

Author(s)

Scott Chamberlain myrmecocystus@gmail.com

phylomatic	<i>Query Phylomatic for a phylogenetic tree.</i>
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Description

Query Phylomatic for a phylogenetic tree.

Usage

```
phylomatic(taxa, taxnames = TRUE, get = "GET", informat = "newick",
  method = "phylomatic", storedtree = "R20120829", treeuri = NULL,
  taxaformat = "slashpath", outformat = "newick", clean = TRUE,
  db = "apg", mssgs = TRUE, ...)
```

Arguments

taxa	Phylomatic format input of taxa names.
taxnames	If TRUE (default), we get the family names for you to attach to your species names to send to Phylomatic API. If FALSE, you have to provide the strings in the right format.
get	'GET' (default) or 'POST' format for submission to the website.
informat	One of newick (default), nexml, or cdaordf. If using a stored tree, informat should always be newick.

method	One of phylomatic (default) or convert
storedtree	One of R20120829 (Phylomatic tree R20120829 for plants), smith2011 (Smith 2011, plants), binindaemonds2007 (Bininda-Emonds 2007, mammals), or zanne2014 (Zanne et al. 2014, plants). Default: R20120829
treeuri	URL for a phylogenetic tree in newick format.
taxaformat	Only option is slashpath for now. Leave as is.
outformat	One of newick, nexml, or fyt.
clean	Return a clean tree or not. Default: TRUE
db	One of "ncbi", "itis", or "apg". Default: apg
mssgs	Print messages. Default: TRUE
...	curl options passed on to crul::HttpClient

Details

Use the web interface at <http://phylodiversity.net/phylomatic/>

If you set `taxnames = FALSE`, you need to pass in a character vector, with each element like this example: "asteraceae/taraxacum/taraxacum_officinale", of the form "family/genus/genus_specific epithet"

Value

Newick formatted tree as phylo object or nexml character string

Examples

```
## Not run:
# Input taxonomic names
taxa <- c("Poa annua", "Phlox diffusa", "Helianthus annuus")
tree <- phylomatic(taxa=taxa, get = 'POST')
plot(tree, no.margin=TRUE)

# Genus names
taxa <- c("Poa", "Phlox", "Helianthus")
tree <- phylomatic(taxa=taxa, storedtree='R20120829', get='POST')
plot(tree, no.margin=TRUE)

# Lots of names
taxa <- c("Poa annua", "Collomia grandiflora", "Lilium lankongense", "Phlox diffusa",
"Iteadaphne caudata", "Gagea sarmentosa", "Helianthus annuus")
tree <- phylomatic(taxa=taxa, get = 'POST')
plot(tree, no.margin=TRUE)

# Don't clean - clean=TRUE is default
(tree <- phylomatic(taxa=taxa, clean = FALSE))
## with clean=FALSE, you can get non-splitting nodes, which you
## need to collapse before plotting
library('ape')
plot(collapse.singles(tree), no.margin=TRUE)
```

```

# Output NeXML format
taxa <- c("Gonocarpus leptothecus", "Gonocarpus leptothecus", "Lilium lankongense")
out <- phylomatic(taxa=taxa, get = 'POST', outformat = "nexml")
cat(out)

# Lots of names, note that when you have enough names (number depends on length of individual
# names, so there's no per se rule), you will get an error when using `get='GET'`,
# when that happens use `get='POST'`
library("taxize")
spp <- names_list("species", 500)
# phylomatic(taxa = spp, get = "GET")
(out <- phylomatic(taxa = spp, get = "POST"))
plot(out)

# Pass in a tree from a URL on the web
spp <- c("Abies_nordmanniana", "Abies_bornmuelleriana", "Abies_cilicica", "Abies_cephalonica",
"Abies_numidica", "Abies_pinsapo", "Abies_alba")
url <- "http://datadryad.org/bitstream/handle/10255/dryad.8791/final_tree.tre?sequence=1"
phylomatic(taxa=spp, treeuri=url)

## End(Not run)

```

phylomatic_local *Use Phylomatic locally - ideal for large queries*

Description

Use Phylomatic locally - ideal for large queries

Usage

```

phylomatic_local(taxa, taxnames = TRUE, storedtree = "R20120829",
  db = "apg", lowercase = FALSE, nodes = FALSE, verbose = TRUE)

```

Arguments

taxa	(character) Phylomatic format input of taxa names. required
taxnames	If TRUE (default), we get the family names for you to attach to your species names to send to Phylomatic API. If FALSE, you have to provide the strings in the right format. See Details.
storedtree	One of R20120829 (Phylomatic tree R20120829 for plants), smith2011 (Smith 2011, plants), binindaemonds2007 (Bininda-Emonds 2007, mammals), or zanne2014 (Zanne et al. 2014, plants). Default: R20120829
db	(character) One of "ncbi", "itis", or "apg". Default: apg
lowercase	(logical) Convert all chars in taxa file to lowercase. Default: FALSE
nodes	(logical) label all nodes with default names. Default: FALSE
verbose	(logical) Print messages. Default: TRUE

Details

uses `phylocomr::ph_phylomatic()` under the hood

This function uses Phylomatic via Phylocom using the **phylocomr** package. The interface is slightly different from `phylomatic()`: there's no tree by URL available, and some of the parameters are not included here.

If you set `taxnames = FALSE`, you need to pass in a character vector, with each element like this example: "asteraceae/taraxacum/taraxacum_officinale", of the form "family/genus/genus_specific epithet"

Value

Newick formatted tree as phylo object

Examples

```
## Not run:
library('ape')

# Input taxonomic names
taxa <- c("Poa annua", "Phlox diffusa", "Helianthus annuus")
(tree <- phylomatic_local(taxa))
plot(collapse.singles(tree), no.margin=TRUE)

taxa <- c("Poa annua", "Collomia grandiflora", "Lilium lankongense",
"Phlox diffusa", "Iteadaphne caudata", "Gagea sarmentosa",
"Helianthus annuus")
(tree <- phylomatic_local(taxa))
plot(collapse.singles(tree), no.margin=TRUE)

library("taxize")
spp <- names_list("species", 500)
length(spp)
(tree <- phylomatic_local(spp))

## End(Not run)
```

phylomatic_names	<i>Phylomatic names</i>
------------------	-------------------------

Description

Get family names to make Phylomatic input object, and output input string to Phylomatic for use in the function `phylomatic`

Usage

```
phylomatic_names(taxa, format = "isubmit", db = "ncbi")
```

Arguments

taxa	quoted tsn number (taxonomic serial number)
format	output format, isubmit (you can paste in to the Phylomatic website), or 'rsubmit' to use in fxn phyloomatic_tree
db	One of "ncbi", "itis", or "apg". if you use "apg", no HTTP requests are made (no internet connection needed), whereas if you use "ncbi" or "itis" you do need an internet connection. IMPORTANT: see Authentication below if using "ncbi".

Value

string (e.g., "pinaceae/pinus/pinus_contorta"), in Phylomatic submission format

Authentication

NCBI Entrez doesn't require that you use an API key, but you get higher rate limit with a key, from 3 to 10 requests per second, so do get one. Run `taxize::use_entrez()` or see <https://ncbiinsights.ncbi.nlm.nih.gov/2017/11/0/api-keys-for-the-e-utilities/> for instructions.

NCBI API key handling logic is done inside of the `taxize` package, used inside this function.

Save your API key with the name `ENTREZ_KEY` as an R option in your `.Rprofile` file, or as environment variables in either your `.Renv` file or `.bash_profile` file, or `.zshrc` file (if you use `oh-my-zsh`) or similar. See [Startup](#) for help on R options and environment variables. You cannot pass in your API key in this function.

Remember to restart your R session (and to start a new shell window/tab if you're using the shell) to take advantage of the new R options or environment variables.

We strongly recommend using environment variables over R options.

Examples

```
## Not run:
mynames <- c("Poa annua", "Salix goodingii", "Helianthus annuus")
phyloomatic_names(taxa = mynames, format='rsubmit')
phyloomatic_names(mynames, format='rsubmit', db="apg")
phyloomatic_names(mynames, format='isubmit', db="ncbi")
phyloomatic_names(mynames, format='isubmit', db="apg")

## End(Not run)
```

phyloomatic_trees

Phylogenies to use with phyloomatic

Description

Phylogenies to use with phyloomatic

Format

A list with 4 character strings:

- R20120829 - 2401 tips, 1801 internal nodes
- binindaemons2007 - 4510 tips, 2108 internal nodes
- zanne2014 - 31749 tips, 31748 internal nodes
- smith2011 - 55473 tips, 55338 internal nodes

Source

phylocom

rbladj	<i>Run Phylocom's bladj from R</i>
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Description

Run Phylocom's bladj from R

Usage

```
rbladj(tree, ages)
```

Arguments

tree	(character/phylo) One of: phylogeny as a newick string (will be written to a temp file) - OR path to file with a newick string - OR a an ape phylo object. required.
ages	(data.frame/character) ages data.frame, or path to an ages file. required.

Details

uses `phylocomr::ph_bladj()` under the hood

Value

Newick formatted tree as phylo object

Examples

```
## Not run:
library("phylocomr")

# make an ages data.frame
ages_df <- data.frame(
  a = c('malpighiales', 'eudicots', 'ericales_to_asterales', 'plantaginaceae',
        'malvids', 'poales'),
  b = c(81, 20, 56, 76, 47, 71)
)

# read phylogeny file as a string
phylo_file <- system.file("examples/phylo_bladj", package = "phylocomr")
phylo_str <- readLines(phylo_file)

# Run Bladj, returns phylo object
(x <- rbladj(tree = phylo_str, ages = ages_df))

# load ape and plot tree
library(ape)
plot(x)

## End(Not run)
```

tpl

*Lookup-table for family, genus, and species names for ThePlantList
gymnosperms*

Description

These names are from <http://www.theplantlist.org/>, collected on 2015-11-11, and are from version 1.1 of their data. This data is used in the function `phylomatic_names()`

Format

A data frame with 23,801 rows and 2 variables:

- family: family name
- genus: genus name

Source

<http://www.theplantlist.org/>

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