Package ‘taxize’

September 28, 2017

Title  Taxonomic Information from Around the Web

Description  Interacts with a suite of web 'APIs' for taxonomic tasks, such as getting database specific taxonomic identifiers, verifying species names, getting taxonomic hierarchies, fetching downstream and upstream taxonomic names, getting taxonomic synonyms, converting scientific to common names and vice versa, and more.

Version  0.9.0

License  MIT + file LICENSE

URL  https://github.com/ropensci/taxize

BugReports  https://github.com/ropensci/taxize/issues

LazyLoad  yes

LazyData  yes

VignetteBuilder  knitr

Depends  R(>= 3.2.1)

Imports  graphics, methods, stats, utils, httr (>= 1.2.1), xml2 (>= 1.0.0), jsonlite, reshape2, stringr, plyr, foreach, ape, bold (>= 0.3.5), data.table, redlist (>= 0.3.0), rotl (>= 3.0.0), ritis (>= 0.5.0), tibble (>= 1.2), worrms (>= 0.1.0), natserv (>= 0.1.4), wikitaxa (>= 0.1.4)

Suggests  testthat, roxygen2 (>= 6.0.1), knitr, vegan

RoxygenNote  6.0.1

NeedsCompilation  no

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Description

This package interacts with a suite of web 'APIs' for taxonomic tasks, such as verifying species names, getting taxonomic hierarchies, and verifying name spelling.

About

Allows users to search over many websites for species names (scientific and common) and download up- and downstream taxonomic hierarchical information - and many other things.

The functions in the package that hit a specific API have a prefix and suffix separated by an underscore. They follow the format of service_whatitdoes. For example, gnr_resolve uses the Global Names Resolver API to resolve species names.

General functions in the package that don’t hit a specific API don’t have two words separated by an underscore, e.g., classification

You need API keys for Encyclopedia of Life (EOL), and Tropicos.

Currently supported APIs
<table>
<thead>
<tr>
<th>API</th>
<th>prefix</th>
<th>SOAP?</th>
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<tbody>
<tr>
<td>Encyclopedia of Life (EOL)</td>
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<td>Taxonomic Name Resolution Service</td>
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<tr>
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<td>Global Names Index (from EOL/GBIF)</td>
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<tr>
<td>Open Tree of Life (TOL)</td>
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</tr>
<tr>
<td>NatureServe</td>
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</tbody>
</table>

If the source above has a TRUE in the SOAP? column, it is not available in this package. They are available from a different package called `taxizesoap`. See the GitHub repo for how to install https://github.com/ropensci/taxizesoap

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**apg**  

*Get APG names*

**Description**

Generic names and their replacements from the Angiosperm Phylogeny Group III system of flowering plant classification.

**Usage**

```r
apgOrders(...)  
apgFamilies(...)  
```

**Arguments**

...  

Curl args passed on to GET

**References**

http://www.mobot.org/MOBOT/research/APweb/

**Examples**

```r
## Not run:  
head(apgOrders())  
head(apgFamilies())  
## End(Not run)
```

---

**apg_families**  

*MOBOT family names*

**Description**

Family names and their replacements from the Angiosperm Phylogeny Website system of flowering plant classification.

**Format**

A data frame with 1597 rows and 4 variables:

- **original**: original data record from APG website
- **this**: Order name
- **that**: Replacement order name
- **order**: Order name
Details

This dataset is from Version 13, incorporated on 2015-04-29.

Source

http://www.mobot.org/MOBOT/research/APweb/

---

**apg_lookup**

*Lookup in the APGIII taxonomy and replace family names*

Description

Lookup in the APGIII taxonomy and replace family names

Usage

```r
apg_lookup(taxa, rank = "family")
```

Arguments

taxa (character) Taxonomic name to lookup a synonym for in APGIII taxonomy.

rank (character) Taxonomic rank to lookup a synonym for. One of family or order.

Details

Internally in this function, we use the datasets `apg_families` and `apg_orders` - see their descriptions for the data in them. The functions `apgOrders` `apgFamilies` are for scraping current content from the [website](http://www.mobot.org/MOBOT/research/APweb/).

BEWARE: The datasets used in this function are (I think) from Version 12 of the data on [website](http://www.mobot.org/MOBOT/research/APweb/) - I’ll update data asap.

Value

A APGIII family or order name, or the original name if no match.

Examples

```r
# New name found
apg_lookup(taxa = "Hyacinthaceae", rank = "family")
apg_lookup(taxa = "Poaceae", rank = "family")

# Name not found
apg_lookup(taxa = "Asteraceae", rank = "family")
```
**apg_orders**  
*MOBOT order names*

**Description**
Order names and their replacements from the Angiosperm Phylogeny Website system of flowering plant classification.

**Format**
A data frame with 494 rows and 3 variables:
- **original**: original data record from APG website
- **this**: Order name
- **that**: Replacement order name

**Details**
This dataset is from Version 13, incorporated on 2015-04-29.

**Source**
http://www.mobot.org/MOBOT/research/APweb/

---

**bold_search**  
*Search Barcode of Life for taxonomic IDs*

**Description**
Search Barcode of Life for taxonomic IDs

**Usage**
```
bold_search(name = NULL, id = NULL, fuzzy = FALSE, datatypes = "basic", includeTree = FALSE, response = FALSE, ...)
```

**Arguments**
- **name**: (character) One or more scientific names.
- **id**: (integer) One or more BOLD taxonomic identifiers.
- **fuzzy**: (logical) Whether to use fuzzy search or not (default: FALSE). Only used if name passed.
- **datatypes**: (character) Specifies the datatypes that will be returned. See Details for options. This variable is ignored if name parameter is passed, but is used if the id parameter is passed.
**bold_search**

includeTree  
(logical) If TRUE (default: FALSE), returns a list containing information for parent taxa as well as the specified taxon. Only used if id passed.

response  
(logical) Note that response is the object that returns from the Curl call, useful for debugging, and getting detailed info on the API call.

Further args passed on to GET, main purpose being curl debugging

**Details**

You must provide one of name or id to this function. The other parameters are optional. Note that when passing in name, fuzzy can be used as well, while if id is passed, then fuzzy is ignored, and datatypes includeTree can be used.

Options for datatypes parameter:

- all returns all data
- basic returns basic taxon information
- images returns specimen image. Includes copyright information, image URL, image metadata.
- stats Returns specimen and sequence statistics. Includes public species count, public BIN count, public marker counts, public record count, specimen count, sequenced specimen count, barcode specimen count, species count, barcode species count.
- geo Returns collection site information. Includes country, collection site map.
- sequencinglabs Returns sequencing labs. Includes lab name, record count.
- depository Returns specimen depositories. Includes depository name, record count.
- thirdparty Returns information from third parties. Includes wikipedia summary, wikipedia URL, GBIF map.

**Value**

A list of data.frame’s.

**References**

http://www.boldsystems.org/index.php/resources/api

**Examples**

```r
## Not run:
# A basic example
bold_search(name="Apis")
bold_search(name="Agapostemon")
bold_search(name="Poa")

# Fuzzy search
head(bold_search(name="Po", fuzzy=TRUE))
head(bold_search(name="Aga", fuzzy=TRUE))

# Many names
bold_search(name=c("Apis","Puma concolor"))
mns <- names_list('species')
```
bold_search(name=nms)

# Searching by ID - dataTypes can be used, and includeTree can be used
bold_search(id=88899)
bold_search(id=88899, dataTypes="stats")
bold_search(id=88899, dataTypes="geo")
bold_search(id=88899, dataTypes="basic")
bold_search(id=88899, includeTree=TRUE)

## End (Not run)

---

children

*Retrieve immediate children taxa for a given taxon name or ID.*

**Description**

This function is different from `downstream` in that it only collects immediate taxonomic children, while `downstream` collects taxonomic names down to a specified taxonomic rank, e.g., getting all species in a family.

**Usage**

```r
children(...)
```

## Default S3 method:
```r
cchildren(x, db = NULL, rows = NA, ...)
```

## S3 method for class 'tsn'
```r
cchildren(x, db = NULL, ...)
```

## S3 method for class 'colid'
```r
cchildren(x, db = NULL, ...)
```

## S3 method for class 'wormsid'
```r
cchildren(x, db = NULL, ...)
```

## S3 method for class 'ids'
```r
cchildren(x, db = NULL, ...)
```

## S3 method for class 'uid'
```r
cchildren(x, db = NULL, ...)
```

**Arguments**

- `...` Further args passed on to `col_children`, `hierarchy_down`, `ncbi_children`, or `wm_children` See those functions for what parameters can be passed on.
- `x` Vector of taxa names (character) or IDs (character or numeric) to query.
children

db
character; database to query. One or more of itis, col, ncbi, or worms. Note that each taxonomic data source has their own identifiers, so that if you provide the wrong db value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).

rows
(numeric) Any number from 1 to infinity. If the default NA, all rows are considered. Note that this parameter is ignored if you pass in a taxonomic id of any of the acceptable classes: tsn, colid. NCBI has a method for this function but rows doesn’t work.

Value
A named list of data.frames with the children names of every supplied taxa. You get an NA if there was no match in the database.

Examples
## Not run:
# Plug in taxonomic IDs
children(161994, db = "itis")
children(8028, db = "ncbi")
children("578cbfd2674a9b589f19af71a33b89b6", db = "col")
## works with numeric if as character as well
children("161994", db = "itis")

# Plug in taxon names
children("Salmo", db = 'col')
children("Salmo", db = 'itis')
children("Salmo", db = "ncbi")
children("Salmo", db = 'worms')

# Plug in IDs
(id <- get_colid("Apis"))
children(id)

(id <- get_wormsid("Platanista"))
children(id)

## Equivalently, plug in the call to get the id via e.g., get_colid
## into children
(id <- get_colid("Apis"))
children(id)
children(get_colid("Apis"))

# Many taxa
sp <- c("Tragia", "Schistocarpha", "Encalypta")
children(sp, db = 'col')
children(sp, db = 'itis')

# Two data sources
(ids <- get_ids("Apis", db = c('col','itis'))) children(ids)
## same result
class2tree

Convert list of classifications to a tree.

Description

This function converts a list of hierarchies for individual species into a single species by taxonomic level matrix, then calculates a distance matrix based on taxonomy alone, and outputs either a phylo or dist object. See details for more information.

Usage

class2tree(input, varstep = TRUE, check = TRUE, ...)

## S3 method for class 'classtree'
plot(x, ...)

## S3 method for class 'classtree'
print(x, ...)

Arguments

input List of classification data.frame’s from the function classification
varstep Vary step lengths between successive levels relative to proportional loss of the number of distinct classes.
check If TRUE, remove all redundant levels which are different for all rows or constant for all rows and regard each row as a different basal taxon (species). If FALSE all levels are retained and basal taxa (species) also must be coded as variables (columns). You will get a warning if species are not coded, but you can ignore this if that was your intention.
... Further arguments passed on to hclust.
x Input object to print or plot - output from class2tree function.

Details

See taxa2dist. Thanks to Jari Oksanen for making the taxa2dist function and pointing it out, and Clarke & Warwick (1998, 2001), which taxa2dist was based on.
**Value**

An object of class "classtree" with slots:

- **phylo** - The resulting object, a phylo object
- **classification** - The classification data.frame, with taxa as rows, and different classification levels as columns
- **distmat** - Distance matrix
- **names** - The names of the tips of the phylogeny

Note that when you execute the resulting object, you only get the phylo object. You can get to the other 3 slots by calling them directly, like `output$names`, etc.

**Examples**

```r
## Not run:
spnames <- c('Quercus robur', 'Iris oratoria', 'Arachis paraguariensis',
             'Helianthus annuus', 'Madia elegans', 'Lupinus albicaulis',
             'Pinus lambertiana')
out <- classification(spnames, db='itis')
tr <- class2tree(out)
plot(tr)

spnames <- c('Klattia flava', 'Trollius sibiricus', 'Arachis paraguariensis',
             'Tanacetum boreale', 'Gentiana yakushimensis', 'Sesamum schinzianum',
             'Pilea verrucosa', 'Tibouchina striphnocalyx', 'Lycium dasystemum',
             'Berkheya echinacea', 'Androcymbium villosum',
             'Helianthus annuus', 'Madia elegans', 'Lupinus albicaulis',
             'Pinus lambertiana')
out <- classification(spnames, db='ncbi')
tr <- class2tree(out)
plot(tr)

## End(Not run)
```

---

**classification**

*Retrieve the taxonomic hierarchy for a given taxon ID.*

**Description**

Retrieve the taxonomic hierarchy for a given taxon ID.

**Usage**

```r
classification(...)```

```
# Default S3 method:
classification(x, db = NULL, callopts = list(),
                return_id = TRUE, rows = NA, ...)
```
## S3 method for class 'tsn'
classification(id, return_id = TRUE, ...)

## S3 method for class 'uid'
classification(id, callopts = list(), return_id = TRUE, ...)

## S3 method for class 'eolid'
classification(id, key = NULL, callopts = list(),
               return_id = TRUE, ...)

## S3 method for class 'colid'
classification(id, start = NULL, checklist = NULL,
               callopts = list(), return_id = TRUE, ...)

## S3 method for class 'tpsid'
classification(id, key = NULL, callopts = list(),
                return_id = TRUE, ...)

## S3 method for class 'gbifid'
classification(id, callopts = list(), return_id = TRUE, ...

## S3 method for class 'nbnid'
classification(id, callopts = list(), return_id = TRUE, ...)

## S3 method for class 'tolid'
classification(id, callopts = list(), return_id = TRUE, ...)

## S3 method for class 'wormsid'
classification(id, callopts = list(), return_id = TRUE, ...

## S3 method for class 'natservid'
classification(id, callopts = list(), return_id = TRUE, ...

## S3 method for class 'boldid'
classification(id, callopts = list(), return_id = TRUE, ...

## S3 method for class 'wiki'
classification(id, callopts = list(), return_id = TRUE, ...

## S3 method for class 'ids'
classification(id, ...)

## S3 method for class 'classification'
cbind(...)  

**S3 method for class 'classification'**

rbind(...)  

**S3 method for class 'classification_ids'**

cbind(...)  

**S3 method for class 'classification_ids'**

### Arguments

...  

For `classification`: other arguments passed to `get_tsn, get_uid, get_eolid, get_colid, get_tpsid, get_gbifid, get_wormsid, get_natservid, get_wormsid, get_wiki`. For `rbind.classification` and `cbind.classification`: one or more objects of class `classification`

`x`  

Vector of taxa names (character) or IDs (character or numeric) to query.

db  

character; database to query. either `ncbi, itis, eol, col, tropicos, gbif, nbn, worms, natserv, bold, or wiki`. Note that each taxonomic data source has their own identifiers, so that if you provide the wrong `db` value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).

callopts  

Curl options passed on to `GET`

`return_id`  

(logical) If `TRUE` (default), return the taxon id as well as the name and rank of taxa in the lineage returned. Ignored for naterv as they don’t return IDs in their taxonomic classification data.

`rows`  

(numeric) Any number from 1 to infinity. If the default NA, all rows are considered. Note that this parameter is ignored if you pass in a taxonomic id instead of a name of class character.

`id`  

character; identifiers, returned by `get_tsn, get_uid, get_eolid, get_colid, get_tpsid, get_gbifid, get_tolid, get_wormsid, get_natservid, get_wormsid, get_wiki`

`key`  

Your API key; loads from .Rprofile.

`start`  

The first record to return. If omitted, the results are returned from the first record (`start=0`). This is useful if the total number of results is larger than the maximum number of results returned by a single Web service query (currently the maximum number of results returned by a single query is 500 for terse queries and 50 for full queries).

`checklist`  

character; The year of the checklist to query, if you want a specific year’s checklist instead of the latest as default (numeric).

### Details

If IDs are supplied directly (not from the `get_*` functions) you must specify the type of ID. There is a timeout of 1/3 seconds between queries to NCBI.

**BEWARE:** Right now, NBN doesn’t return the queried taxon in the classification. But you can attach it yourself quite easily of course. This behavior is different from the other data sources.
Value

A named list of data.frames with the taxonomic classification of every supplied taxa.

Lots of results

It may happen sometimes that you get more results back from your query than will show in the data.frame on screen. Our advice is to refine your query in those cases. On a data source basis we can attempt to help make it easier to refine queries, whether it be with the data provider (unlikely to happen), or in the code in this package (more likely) - let us know if you run into too many results problem and we’ll see what we can do.

See Also

get_tsn, get_uid, get_eolid, get_colid, get_tpsid, get_gbifid, get_wormsid, get_natservid, get_boldid, get_wiki

Examples

```r
# Not run:
# Plug in taxon IDs
classification(9606, db = 'ncbi')
classification(c(9606, 55062), db = 'ncbi')
classification(129313, db = 'itis')
classification(57361017, db = 'eol')
classification(126436, db = 'worms')
classification("ELEMENT_GLOBAL.2.134717", db = 'natserv')
classification(c(2704179, 2441176), db = 'gbif')
classification(25509881, db = 'tropicos')
classification("NBNSYS0000004786", db = 'nbn')
classification(as.nbind("NBNSYS0000004786"), db = 'nbn')
classification(3930798, db = 'tol')
# works the same if IDs are in class character
classification("2704179", "2441176"), db = 'gbif')
classification("Agapostemon", db = "bold")

# wikispecies
classification("Malus domestica", db = "wiki")
classification("Pinus contorta", db = "wiki")
classification("Pinus contorta", db = "wiki", wiki_site = "commons")
classification("Pinus contorta", db = "wiki", wiki_site = "pedia")
classification("Pinus contorta", db = "wiki", wiki_site = "pedia", wiki = "fr")
classification(get_wiki("Malus domestica", "commons"))
classification(get_wiki("Malus domestica", "species"))
classification(c("Pinus contorta", "Malus domestica"), db = "wiki")

# Plug in taxon names
## in this case, we use get_\(*)() fxns internally to first get taxon IDs
classification(c("Chironomus riparius", "aaa vva"), db = 'ncbi')
classification(c("Chironomus riparius", "aaa vva"), db = 'ncbi',
  verbose=FALSE)
```
classification(c("Chironomus riparius", "aaa vva"), db = 'itis')
classification(c("Chironomus riparius", "aaa vva"), db = 'itis',
  verbose=FALSE)
classification(c("Chironomus riparius", "aaa vva"), db = 'eol')
classification(c("Chironomus riparius", "aaa vva"), db = 'col')
classification("Alopias vulpinus", db = 'nbn')
classification('Gadus morhua', db = 'worms')
classification('Aquila chrysaetos', db = 'natserv')
classification('Gadus morhua', db = 'natserv')
classification('Pomatomus saltatrix', db = 'natserv')
classification(c("Chironomus riparius", "aaa vva"), db = 'col',
  verbose=FALSE)
classification(c("Chironomus riparius", "asdfsdfsdasd"), db = 'gbif')
classification(c("Chironomus", db = 'tol')
classification("Poa annua", db = 'tropicos')

# Use methods for get_uid, get_tsn, get_eolid, get_colid, get_tpsid
classification(get_uid(c("Chironomus riparius", "Puma concolor")))

classification(get_uid(c("Chironomus riparius", "aaa vva")))
classification(get_tsn(c("Chironomus riparius", "aaa vva")))
classification(get_tsn(c("Chironomus riparius", "aaa vva"),
  verbose = FALSE))
classification(get_eolid(c("Chironomus riparius", "aaa vva")))
classification(get_colid(c("Chironomus riparius", "aaa vva")))
classification(get_tpsid(c("Poa annua", "aaa vva")))
classification(get_gbifid(c("Poa annua", "Bison bison")))

# Pass many ids from class "ids"
(out <- get_ids(names="Puma concolor", db = c('ncbi','gbif'))) 
(cl <- classification(out))

# Bind width-wise from class classification_ids
cbind(cl)

# Bind length-wise
rbind(cl)

# Many names to get_ids
(out <- get_ids(names=c("Puma concolor","Accipiter striatus"),
  db = c('ncbi','itis','col'))) 
(cl <- classification(out))
rbind(cl)
#
## cbind with so many names results in some messy data
cbind(cl)
## so you can turn off return_id
cbind( classification(out, return_id=FALSE) )

# rbind and cbind on class classification (from a
# call to get_colid, get_tsn, etc. other than get_ids)
(cl_col <- classification(
  get_colid(c("Puma concolor","Accipiter striatus"))))
```r
rbind(cl_col)
cbind(cl_col)

(cl_uid <- classification(get_uid(c("Puma concolor","Accipiter striatus")),
    return_id=FALSE))
rbind(cl_uid)
cbind(cl_uid)
## cbind works a bit odd when there are lots of ranks without names
(cl_uid <- classification(get_uid(c("Puma concolor","Accipiter striatus")),
    return_id=TRUE))
cbind(cl_uid)

(cl_tsn <- classification(get_tsn(c("Puma concolor","Accipiter striatus"))))
rbind(cl_tsn)
cbind(cl_tsn)

(tsns <- get_tsn(c("Puma concolor","Accipiter striatus")))
(cl_tsns <- classification(tsns))
cbind(cl_tsns)

# NBN data
(res <- classification(c("Alopias vulpinus","Pinus sylvestris"),
    db = 'nbn'))
rbind(res)
cbind(res)

# Return taxonomic IDs
## the return_id parameter is logical, and you can turn it on or off.
## It's TRUE by default
classification(c("Alopias vulpinus","Pinus sylvestris"), db = 'ncbi',
    return_id = TRUE)
classification(c("Alopias vulpinus","Pinus sylvestris"), db = 'ncbi',
    return_id = FALSE)

# Use rows parameter to select certain
classification('Poa annua', db = 'tropicos')
classification('Poa annua', db = 'tropicos', rows=1:4)
classification('Poa annua', db = 'tropicos', rows=1)
classification('Poa annua', db = 'tropicos', rows=6)

## End(Not run)

## Not run:
# Fails without db param set
# classification(315576)

## End(Not run)
```

**col_children**

Search Catalogue of Life for direct children of a particular taxon.
Description

Search Catalogue of Life for for direct children of a particular taxon.

Usage

```
col_children(name = NULL, id = NULL, format = NULL, start = NULL,
               checklist = NULL, ...)
```

Arguments

- **name**: The string to search for. Only exact matches found the name given will be returned, unless one or wildcards are included in the search string. An * (asterisk) character denotes a wildcard; a character may also be used. The name must be at least 3 characters long, not counting wildcard characters.
- **id**: The record ID of the specific record to return (only for scientific names of species or infraspecific taxa)
- **format**: format of the results returned. Valid values are format=xml and format=php; if the format parameter is omitted, the results are returned in the default XML format. If format=php then results are returned as a PHP array in serialized string format, which can be converted back to an array in PHP using the unserialize command.
- **start**: The first record to return. If omitted, the results are returned from the first record (start=0). This is useful if the total number of results is larger than the maximum number of results returned by a single Web service query (currently the maximum number of results returned by a single query is 500 for terse queries and 50 for full queries).
- **checklist**: The year of the checklist to query, if you want a specific year’s checklist instead of the lastest as default (numeric).
- **...**: Curl options passed on to `GET`

Details

You must provide one of name or id. The other parameters (format and start) are optional.

Value

A list of data.frame’s.

Examples

```
## Not run:
# A basic example
col_children(name="Apis")

# An example where there is no classification, results in data.frame with
# no rows
col_children(id='b2f88f382aa5568f93a97472c6be6516')
```
# Use a specific year's checklist
col_children(name="Apis", checklist=2012)
col_children(name="Apis", checklist=2009)

# Pass in many names or many id's
out <- col_children(name=c("Buteo","Apis","Accipiter","asdf"),
                     checklist = "2012")
out$Apis # get just the output you want
library("plyr")
ldply(out) # or combine to one data.frame

# or pass many id's
ids <- c('abe977b1d27007a76dd12a5c93a637bf',
         'b2f88f382aa5568f93a97472c6be6516')
out <- col_children(id = ids, checklist=2012)
library("plyr")
ldply(out) # combine to one data.frame

## End(Not run)

---

**col_downstream** 

*Use Catalogue of Life to get downstream taxa to a given taxonomic level.*

---

**Description**

Use Catalogue of Life to get downstream taxa to a given taxonomic level.

**Usage**

```r
col_downstream(name = NULL, id = NULL, downto, format = NULL,
               start = NULL, checklist = NULL, verbose = TRUE, intermediate = FALSE,
               ...)
```

**Arguments**

- `name`: The string to search for. Only exact matches found the name given will be returned, unless one or wildcards are included in the search string. An * (asterisk) character denotes a wildcard; a character may also be used. The name must be at least 3 characters long, not counting wildcard characters.
- `id`: The record ID of the specific record to return (only for scientific names of species or infraspecific taxa).
- `downto`: The taxonomic level you want to go down to. See examples below. The taxonomic level IS case sensitive, and you do have to spell it correctly. See `data(rank_ref)` for spelling.
- `format`: The returned format (default = NULL). If NULL xml is used. Currently only xml is supported.
col_downstream

start  The first record to return (default = NULL). If NULL, the results are returned from the first record (start=0). This is useful if the total number of results is larger than the maximum number of results returned by a single Web service query (currently the maximum number of results returned by a single query is 500 for terse queries and 50 for full queries).

checklist  The year of the checklist to query, if you want a specific year’s checklist instead of the latest as default (numeric).

verbose  Print or suppress messages.

intermediate  (logical) If TRUE, return a list of length two with target taxon rank names, with additional list of data.frame’s of intermediate taxonomic groups. Default: FALSE

...  Curl options passed on to GET

Details

Provide only names instead of id’s

Value

A list of data.frame’s.

Examples

```
## Not run:
# Some basic examples
col_downstream(name="Apis", downto="species")
col_downstream(name="Bryophyta", downto="family")

col_downstream(name="Animalia", downto="class")
col_downstream(name="Animalia", downto="class", intermediate=TRUE)

## An example that takes a bit longer
col_downstream(name=c("Plantae", "Animalia"), downto="class")

## Using a checklist from a specific year
col_downstream(name="Bryophyta", downto="family", checklist=2009)

## By id
col_downstream(id='576d098d770a39d09e2bcfa1c0896b26', downto="species", checklist=2012)
```

## End(Not run)
col_search  
Search Catalogue of Life for taxonomic IDs  

Description  
Search Catalogue of Life for taxonomic IDs  

Usage  
```r  
col_search(name = NULL, id = NULL, start = NULL, checklist = NULL,  
response = "terse", ...)  
```

Arguments  
- **name**: The string to search for. Only exact matches found the name given will be returned, unless one or wildcards are included in the search string. An * (asterisk) character denotes a wildcard; a character may also be used. The name must be at least 3 characters long, not counting wildcard characters.  
- **id**: The record ID of the specific record to return (only for scientific names of species or infraspecific taxa)  
- **start**: The first record to return. If omitted, the results are returned from the first record (start=0). This is useful if the total number of results is larger than the maximum number of results returned by a single Web service query (currently the maximum number of results returned by a single query is 500 for terse queries and 50 for full queries).  
- **checklist**: The year of the checklist to query, if you want a specific year’s checklist instead of the lastest as default (numeric).  
- **response**: (character) one of "terse" or "full"  
- **...**: Curl options passed on to GET  

Details  
You must provide one of name or id. The other parameters (format and start) are optional.  

Value  
A list of data.frame’s.  

References  
http://webservice.catalogueoflife.org/
Examples

## Not run:

# A basic example
col_search(name="Apis")
col_search(name="Agapostemon")
col_search(name="Poa")

# Get full response, i.e., more data
col_search(name="Apis", response="full")
col_search(name="Poa", response="full")

# Many names
col_search(name=c("Apis","Puma concolor"))
col_search(name=c("Apis","Puma concolor"), response = "full")

# An example where there is no data
col_search(id = "36c623ad9e3da39c2e978fa3576ad415")
col_search(id = "36c623ad9e3da39c2e978fa3576ad415", response = "full")
col_search(id = "787ce23969f5188c2467126d9a545be1")
col_search(id = "787ce23969f5188c2467126d9a545be1", response = "full")
col_search(id = c("36c623ad9e3da39c2e978fa3576ad415", "787ce23969f5188c2467126d9a545be1"))

## a synonym
col_search(id = "f726bdaa5924cabf8581f99889de51fc")
col_search(id = "f726bdaa5924cabf8581f99889de51fc", response = "full")

## End(Not run)

**comm2sci**

*Get scientific names from common names.*

**Description**

Get scientific names from common names.

**Usage**

`comm2sci(commnames, db = "eol", itisby = "search", simplify = TRUE, ...)`

**Arguments**

- `commnames` One or more common names or partial names.
- `db` Data source, one of "eol" (default), "itis", "tropicos", "ncbi", or "worms".
- `itisby` Search for common names across entire names (search, default), at beginning of names (begin), or at end of names (end).
- `simplify` (logical) If TRUE, simplify output to a vector of names. If FALSE, return variable formats from different sources, usually a data.frame.
- `...` Further arguments passed on to internal methods.
Details

For data sources ITIS and NCBI you can pass in common names directly, and use `get_uid` or `get_tsn` to get ids first, then pass in to this fxn.

For the other data sources, you can only pass in common names directly.

Value

If `simplify=TRUE`, a list of scientific names, with list labeled by your input names. If `simplify=FALSE`, a data.frame with columns that vary by data source.

Author(s)

Scott Chamberlain

See Also

`sci2comm`

Examples

```r
## Not run:
comm2sci(commonnames='black bear')
comm2sci(commonnames='black bear', simplify = FALSE)
comm2sci(commonnames='black bear', db='itis')
comm2sci(commonnames='annual blue grass', db='tropicos')
comm2sci(commonnames=c('annual blue grass','tree of heaven'), db='tropicos')
comm2sci(commonnames=c('black bear', 'roe deer'))
comm2sci('blue whale', db = "worms")
comm2sci(c('blue whale', 'dwarf surf clam'), db = "worms")

# Output easily converts to a data.frame with plyr::ldply
library(plyr)
ldply(comm2sci(commonnames=c('annual blue grass','tree of heaven'),
                                db='tropicos'))

# ncbi: pass in uid's from get_uid() directly
x <- get_uid("western capercaillie", modifier = "Common Name")
comm2sci(x)
# itis: pass in tsn's from get_tsn() directly
x <- get_tsn(c("Louisiana black bear", "american crow"),
              searchtype = "common")
comm2sci(x)

## End(Not run)
```
downstream

Retrieve the downstream taxa for a given taxon name or ID.

Description

This function uses a while loop to continually collect children taxa down to the taxonomic rank that you specify in the downto parameter. You can get data from ITIS (itis), Catalogue of Life (col), GBIF (gbif), or NCBI (ncbi). There is no method exposed by these four services for getting taxa at a specific taxonomic rank, so we do it ourselves here.

Usage

downstream(...)

## Default S3 method:
downstream(x, db = NULL, downto = NULL,
             intermediate = FALSE, rows = NA, ...)

## S3 method for class 'tsn'
downstream(x, db = NULL, downto = NULL,
             intermediate = FALSE, ...)

## S3 method for class 'colid'
downstream(x, db = NULL, downto = NULL,
             intermediate = FALSE, ...)

## S3 method for class 'gbifid'
downstream(x, db = NULL, downto = NULL,
             intermediate = FALSE, ...)

## S3 method for class 'uid'
downstream(x, db = NULL, downto = NULL,
             intermediate = FALSE, ...)

## S3 method for class 'ids'
downstream(x, db = NULL, downto = NULL,
             intermediate = FALSE, ...)

Arguments

... Further args passed on to itis_downstream, col_downstream, gbif_downstream,
or ncbi_downstream

x Vector of taxa names (character) or IDs (character or numeric) to query.

db character; database to query. One or more of itis, col, gbif, or ncbi. Note that each taxonomic data source has their own identifiers, so that if you provide the wrong db value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).
downstream

downto
What taxonomic rank to go down to. One of: 'superkingdom', 'kingdom', 'sub-
kingdom', 'infракingdom', 'phylum', 'division', 'subphylum', 'subdivision', 'infrastructure',
'superclass', 'class', 'subclass', 'infraorder', 'order', 'suborder', 'infraorder', 'superfamily', 'family',
'subfamily', 'tribe', 'subtribe', 'genus', 'subgenus', 'section', 'subsection', 'species group', 'species', 'subspecies',
'stirp', 'morph', 'aberration', 'subform', 'unspecified', 'no rank'

intermediate
(logical) If TRUE, return a list of length two with target taxon rank names, with
additional list of data.frame's of intermediate taxonomic groups. Default: FALSE

rows
(numeric) Any number from 1 to infinity. If the default NA, all rows are consid-
ered. Note that this parameter is ignored if you pass in a taxonomic id of any of
the acceptable classes: tsn, colid.

Value
A named list of data.frames with the downstream names of every supplied taxa. You get an NA if
there was no match in the database.

Examples

## Not run:
# Plug in taxon IDs
# col Ids have to be character, as they are alphanumeric IDs
downstream("015be256b061ba571f495394b8f0108", db = "col",
downto = "species")
# ITIS tsn ids can be numeric or character
downstream("154395", db = "itis", downto = "species")
downstream(154395, db = "itis", downto = "species")

# Plug in taxon names
downstream("Insecta", db = 'col', downto = 'order')
downstream("Apis", db = 'col', downto = 'species')
downstream("Apis", db = 'ncbi', downto = 'species')
downstream("Apis", db = 'itis', downto = 'species')
downstream(c("Apis", "Epeoloides"), db = 'itis', downto = 'species')
downstream(c("Apis", "Epeoloides"), db = 'col', downto = 'species')
downstream("Ursus", db = 'gbif', downto = 'species')
downstream(get_gbifid("Ursus"), db = 'gbif', downto = 'species')

# Plug in IDs
id <- get_colid("Apis")
downstream(id, downto = 'species')

## Equivalently, plug in the call to get the id via e.g., get_colid
## into downstream
identical(downstream(id, downto = 'species'),
downstream(get_colid("Apis"), downto = 'species'))

id <- get_colid("Apis")
downstream(id, downto = 'species')
downstream(get_colid("Apis"), downto = 'species')

# Many taxa
Given the identifier for a data object, return all metadata about the object

Usage

eol_dataobjects(id, taxonomy = TRUE, usekey = TRUE, key = NULL, verbose = TRUE, ...)

Description

Given the identifier for a data object, return all metadata about the object
Arguments

- **id** (character): The EOL data object identifier
- **taxonomy** (logical): Whether to return any taxonomy details from different taxon hierarchy providers, in an array named `taxonconcepts`
- **usekey** (logical): use your API key or not (TRUE or FALSE)
- **key** (character): Your EOL API key; can load from .Rprofile if not passed as a parameter
- **verbose** (logical): If TRUE the actual taxon queried is printed on the console.
- **...**

Details

It's possible to return JSON or XML with the EOL API. However, this function only returns JSON for now.

Value

A list, optionally with a data.frame if `taxonomy=TRUE`

Examples

```
## Not run:
eol_dataobjects(id = "d72801627bf4adff1a38d9c5f10cc767f")
eol_dataobjects(id = "21929584")

# curl options
library("httr")
eol_dataobjects(id = "21929584", config = verbose())

## End(Not run)
```

eol_pages

Search for pages in EOL database using a taxonconceptID.

Description

Search for pages in EOL database using a taxonconceptID.

Usage

eol_pages(taxonconceptID, iucn = FALSE, images = 0, videos = 0, sounds = 0, maps = 0, text = 0, subjects = "overview", licenses = "all", details = FALSE, common_names = FALSE, synonyms = FALSE, references = FALSE, taxonomy = TRUE, vetted = 0, cache_ttl = NULL, key = NULL, ...)
Arguments

- **taxonconceptID**: The taxonconceptID (numeric), which is also the page number.
- **iucn**: Include the IUCN Red List status object (Default: FALSE)
- **images**: Limits the number of returned image objects (values 0 - 75)
- **videos**: Limits the number of returned video objects (values 0 - 75)
- **sounds**: Limits the number of returned sound objects (values 0 - 75)
- **maps**: Limits the number of returned map objects (values 0 - 75)
- **text**: Limits the number of returned text objects (values 0 - 75)
- **subjects**: 'overview' (default) to return the overview text (if exists), a pipe | delimited list of subject names from the list of EOL accepted subjects (e.g. TaxonBiology, FossilHistory), or 'all' to get text in any subject. Always returns an overview text as a first result (if one exists in the given context).
- **licenses**: A pipe | delimited list of licenses or 'all' (default) to get objects under any license. Licenses abbreviated cc- are all Creative Commons licenses. Visit their site for more information on the various licenses they offer.
- **details**: Include all metadata for data objects. (Default: FALSE)
- **common_names**: Return all common names for the page’s taxon (Default: FALSE)
- **synonyms**: Return all synonyms for the page’s taxon (Default: FALSE)
- **references**: Return all references for the page’s taxon (Default: FALSE)
- **taxonomy**: (logical) Whether to return any taxonomy details from different taxon hierarchy providers, in an array named taxonconcepts (Default: TRUE)
- **vetted**: If 'vetted' is given a value of '1', then only trusted content will be returned. If 'vetted' is '2', then only trusted and unreviewed content will be returned (untrusted content will not be returned). The default is to return all content. (Default: FALSE)
- **cache_ttl**: The number of seconds you wish to have the response cached.
- **key**: Your EOL API key; loads from .Rprofile, or you can specify the key manually the in the function call.
- **...**: Curl options passed on to GET

Details

It’s possible to return JSON or XML with the EOL API. However, this function only returns JSON for now.

Value

JSON list object, or data.frame.

Examples

```r
## Not run:
(pageid <- eol_search('Pomatomus')$pageid[1])
eol_pages(taxonconceptID=pageid)$scinames

## End(Not run)
```
eol_search

Search for terms in EOL database.

Description

Search for terms in EOL database.

Usage

eol_search(terms, page = 1, exact = NULL, filter_tid = NULL,
  filter_heid = NULL, filter_by_string = NULL, cache_ttl = NULL,
  key = NULL, ...)

Arguments

  terms          search terms (character)
  page           A maximum of 30 results are returned per page. This parameter allows you to
                 fetch more pages of results if there are more than 30 matches (Default 1)
  exact          Will find taxon pages if the preferred name or any synonym or common name
                 exactly matches the search term.
  filter_tid     Given an EOL page ID, search results will be limited to members of that taxonomic group
  filter_heid    Given a Hierarchy Entry ID, search results will be limited to members of that
taxonomic group
  filter_by_string
  cache_ttl      The number of seconds you wish to have the response cached.
  key            Your EOL API key; loads from .Rprofile.
  ...            Curl options passed on to GET

Details

It’s possible to return JSON or XML with the EOL API. However, this function only returns JSON
for now.

Value

A data frame with four columns:

  • pageid: pageid, this is the same as the eolid you can get from get_eolid
  • name: taxonomic name, may or may not contain the taxonomic authority
  • link: URL for the taxon in question
  • content: a string of semi-colon separated names. it’s not clear to us what these represent
    exactly, but figured why not give it to users in case some may find it useful
Examples

```eol_search(terms='Homo')
eol_search(terms='Salix')
eol_search(terms='Ursus americanus luteolus')
```

## End(Not run)

---

**EUBON taxonomy search**

### Description

EUBON taxonomy search

### Usage

```eubon(query, providers = "pesi", searchMode = "scientificNameExact",
addSynonymy = FALSE, addParentTaxon = FALSE, timeout = 0,
dedup = NULL, ...)
eubon_search(query, providers = "pesi", searchMode = "scientificNameExact",
addSynonymy = FALSE, addParentTaxon = FALSE, timeout = 0,
dedup = NULL, ...)
```

### Arguments

- **query** (character) The scientific name to search for. For example: "Bellis perennis", "Prionus" or "Bolinus brandaris". This is an exact search so wildcard characters are not supported.

- **providers** (character) A list of provider id strings concatenated by comma characters. The default : "pesi,bgbm-cdm-server[col]" will be used if this parameter is not set. A list of all available provider ids can be obtained from the '/capabilities' service end point. Providers can be nested, that is a parent provider can have sub providers. If the id of the parent provider is supplied all subproviders will be queried. The query can also be restricted to one or more subproviders by using the following syntax: parent-id[sub-id-1,sub-id2,...].

- **searchMode** (character) Specifies the searchMode. Possible search modes are: scientificNameExact, scientificNameLike (begins with), vernacularNameExact, vernacularNameLike (contains), findByIdentifier. If the a provider does not support the chosen searchMode it will be skipped and the status message in the tnrClientStatus will be set to 'unsupported search mode' in this case.

- **addSynonymy** (logical) Indicates whether the synonymy of the accepted taxon should be included into the response. Turning this option on may cause an increased response time. Default: FALSE
addParentTaxon (logical) Indicates whether the parent taxon of the accepted taxon should be included into the response. Turning this option on may cause a slightly increased response time. Default: FALSE

timeout (numeric) The maximum of milliseconds to wait for responses from any of the providers. If the timeout is exceeded the service will just return the responses that have been received so far. The default timeout is 0 ms (wait for ever)

dedup (character) Allows to deduplicate the results by making use of a deduplication strategy. The deduplication is done by comparing specific properties of the taxon:

  - id: compares 'taxon.identifier'
  - id_name: compares 'taxon.identifier' AND 'taxon.taxonNamescientificName'
  - name: compares 'taxon.taxonNamescientificName' Using the pure 'name' strategy is not recommended.

Details

Note that paging is not yet implemented, so you only get the first chunk of up to 50 results for methods that require paging. We will implement paging here when it is available in the EU BON API.

References

http://cybertaxonomy.eu/eu-bon/utis/1.2/doc.html

See Also

Other eubon-methods: eubon_capabilities, eubon_children, eubon_hierarchy

Examples

```r
## Not run:
eubon_search("Prionus")
eubon_search("Salmo", 'pesi')
eubon_search("Salmo", c('pesi', 'worms'))
eubon_search("Salmo", 'worms', 'scientificNameLike')
eubon_search("Salmo", 'worms', addSynonymy = TRUE)
eubon_search("Salmo", 'worms', addParentTaxon = TRUE)
```

## End(Not run)
eubon_capabilities  

---

EUBON capabilities

### Usage

eubon_capabilities(...)

### Arguments

... Curl options passed on to GET

### References

http://cybertaxonomy.eu/eu-bon/utis/1.2/doc.html

### See Also

Other eubon-methods: eubon_children, eubon_hierarchy, eubon

### Examples

```r
## Not run:
eubon_capabilities()

## End(Not run)
```

---

eubon_children  

---

EUBON children

### Usage

```r
eubon_children(id, providers = NULL, timeout = 0, ...)
```
Arguments

id (character) identifier for the taxon. (LSID, DOI, URI, or any other identifier used by the checklist provider)

providers (character) A list of provider id strings concatenated by comma characters. The default: "pesi,bgbm-cdm-server[col]" will be used if this parameter is not set. A list of all available provider ids can be obtained from the '/capabilities' service end point. Providers can be nested, that is a parent provider can have sub providers. If the id of the parent provider is supplied all subproviders will be queried. The query can also be restricted to one or more subproviders by using the following syntax: parent-id[sub-id-1,sub-id2,...]

timeout (numeric) The maximum of milliseconds to wait for responses from any of the providers. If the timeout is exceeded the service will just return the responses that have been received so far. The default timeout is 0 ms (wait for ever)

... Curl options passed on to GET

Value

a data.frame or an empty list if no results found

References

http://cybertaxonomy.eu/eu-bon/utis/1.2/doc.html

See Also

Other eubon-methods: eubon_capabilities, eubon_hierarchy, eubon

Examples

## Not run:
x <- eubon_children(id = "urn:lsid:marinespecies.org:taxname:126141", providers = 'worms')
head(x)

## End(Not run)

eubon_hierarchy EUBON hierarchy

Description

EUBON hierarchy

Usage

eubon_hierarchy(id, providers = "pesi", timeout = 0, ...)

Arguments

id  (character) identifier for the taxon. (LSID, DOI, URI, or any other identifier used by the checklist provider)

providers  (character) A list of provider id strings concatenated by comma characters. The default: "pesi, bgbm-cdm-server[col]" will be used if this parameter is not set. A list of all available provider ids can be obtained from the '/capabilities' service end point. Providers can be nested, that is a parent provider can have sub providers. If the id of the parent provider is supplied all subproviders will be queried. The query can also be restricted to one or more subproviders by using the following syntax: parent-id[sub-id-1,sub-id2,...]

timeout  (numeric) The maximum of milliseconds to wait for responses from any of the providers. If the timeout is exceeded the service will just return the responses that have been received so far. The default timeout is 0 ms (wait for ever)

... Curl options passed on to GET

References

http://cybertaxonomy.eu/eu-bon/utis/1.2/doc.html

See Also

Other eubon-methods: eubon_capabilities, eubon_children, eubon

Examples

## Not run:
eubon_hierarchy(id = "urn:lsid:marinespecies.org:taxname:126141", 'worms')
eubon_hierarchy(id = "urn:lsid:marinespecies.org:taxname:274358", 'worms')

## End(Not run)

fungorum  Index Fungorum

Description

Search for taxonomic names in Index Fungorum

Usage

fg_name_search(q, anywhere = TRUE, limit = 10, ...)

fg_author_search(q, anywhere = TRUE, limit = 10, ...)

fg_epithet_search(q, anywhere = TRUE, limit = 10, ...)
fg_name_by_key(key, ...)
fg_name_full_by_lsid(lsid, ...)
fg_all_updated_names(date, ...)
fg_deprecated_names(date, ...)

Arguments
q (character) Query term
anywhere (logical) Default: TRUE
limit (integer) Number of results to return. max limit value appears to be 6000, not positive about that though
... Curl options passed on to GET
key (character) A IndexFungorum taxon key
lsid (character) an LSID, e.g. "urn:lsid:indexfungorum.org:names:81085"
date (character) Date, of the form YYYYMMDD

Value
A data.frame, or NULL if no results

References

Examples
## Not run:
# NameSearch
gf_name_search(q = "Gymnopus", limit = 2)
gf_name_search(q = "Gymnopus")

# EpithetSearch
gf_epithet_search(q = "phalloides")

# NameByKey
gf_name_by_key(17703)

# NameFullByKey
gf_name_full_by_lsid("urn:lsid:indexfungorum.org:names:81085")

# AllUpdatedNames
gf_all_updated_names(date = gsub("-", ",", Sys.Date() - 2))

# DeprecatedNames
gf_deprecated_names(date=20150101)
gbif_downstream

# AuthorSearch
fg_author_search(q = "Fayod", limit = 2)

## End(Not run)

---

### gbif_downstream

**Retrieve all taxa names downstream in hierarchy for GBIF**

**Description**

Retrieve all taxa names downstream in hierarchy for GBIF

**Usage**

```r
gbif_downstream(key, downto, intermediate = FALSE, ...)
```

**Arguments**

- **key**
  - A taxonomic serial number.

- **downto**
  - The taxonomic level you want to go down to. See examples below. The taxonomic level is case sensitive, and you do have to spell it correctly. See `data(rank_ref)` for spelling.

- **intermediate**
  - (logical) If TRUE, return a list of length two with target taxon rank names, with additional list of data.frame’s of intermediate taxonomic groups. Default: FALSE

- **...**
  - Further args passed on to `gbif_name_usage`

**Value**

Data.frame of taxonomic information downstream to family from e.g., Order, Class, etc., or if `intermediated=TRUE`, list of length two, with target taxon rank names, and intermediate names.

**Author(s)**

Scott Chamberlain <myrmecocystus@gmail.com>

**Examples**

```r
## Not run:
## the plant class Bangiophyceae
gbif_downstream(key = 198, downto="genus")
gbif_downstream(key = 198, downto="genus", intermediate=TRUE)

# families downstream from the family Strepsiptera (twisted wing parasites)
gbif_downstream(key = 1227, "family")
## here, intermediate leads to the same result as the target
gbif_downstream(key = 1227, "family", intermediate=TRUE)
```
# Lepidoptera

```r
gbif_downstream(key = 797, "family")
```

# get species downstream from the genus Ursus

```r
gbif_downstream(key = 2433406, "species")
```

# get tribes down from the family Apidae

```r
gbif_downstream(key = 7799978, downto="species")
gbif_downstream(key = 7799978, downto="species", intermediate=TRUE)
```

## End

---

### gbif_name_usage

**Lookup details for specific names in all taxonomies in GBIF.**

---

**Description**

This is a taxize version of the same function in the rgbif package so as to not have to import rgbif and thus require GDAL binary installation.

**Usage**

```r
gbif_name_usage(key = NULL, name = NULL, data = "all", language = NULL,
datasetKey = NULL, uuid = NULL, sourceId = NULL, rank = NULL,
shortname = NULL, start = NULL, limit = 20, ...)
```

**Arguments**

- **key** (numeric) A GBIF key for a taxon
- **name** (character) Filters by a case insensitive, canonical namestring, e.g. 'Puma concolor'
- **data** (character) Specify an option to select what data is returned. See Description below.
- **language** (character) Language, default is english
- **datasetKey** (character) Filters by the dataset's key (a uuid)
- **uuid** (character) A uuid for a dataset. Should give exact same results as datasetKey.
- **sourceId** (numeric) Filters by the source identifier. Not used right now.
- **rank** (character) Taxonomic rank. Filters by taxonomic rank as one of: CLASS, CULTIVAR, CULTIVAR_GROUP, DOMAIN, FAMILY, FORM, GENUS, INFORMAL, INFRAGENERIC_NAME, INFRAORDER, INFRASPECIFIC_NAME, INFRASUBSPECIFIC_NAME, KINGDOM, ORDER, PHYLUM, SECTION, SERIES, SPECIES, STRAIN, SUBCLASS, SUBFAMILY, SUBFORM, SUBGENUS, SUBKINGDOM, SUBORDER, SUBPHYLUM, SUBSECTION, SUBSERIES, SUBSPECIES, SUBTRIBE, SUBVARIETY, SUPERCLASS, SUPERFAMILY, SUPERORDER, SUPERPHYLM, SUPRAGENERIC_NAME, TRIBE, UNRANKED, VARIETY
**gbif_parse**

Parse taxon names using the GBIF name parser.

**Description**

Parse taxon names using the GBIF name parser.

**Usage**

```r
gbif_parse(scientificname, ...)
```

**Arguments**

- `scientificname` (character) scientific names
- `...` Further args passed on to POST

**Value**

A data.frame containing fields extracted from parsed taxon names. Fields returned are the union of fields extracted from all species names in `scientificname`.

**Author(s)**

John Baumgartner (johnbb@student.unimelb.edu.au)

**References**

- [http://tools.gbif.org/nameparser/api.do](http://tools.gbif.org/nameparser/api.do)

**See Also**

- `gni_parse`
Examples

```r
## Not run:
genbank2uid(id = 'AJ748748')
genbank2uid(id = 'Y13155')
genbank2uid(id = 'X78312')
genbank2uid(id = 'KM495596')
```

## End(Not run)

---

**genbank2uid**

*Get NCBI taxonomy UID from GenBankID*

**Description**

Get NCBI taxonomy UID from GenBankID

**Usage**

```r
genbank2uid(id, batch_size = 100, ...)
```

**Arguments**

- `id` A GenBank accession alphanumeric string, or a gi numeric string.
- `batch_size` The number of queries to submit at a time.
- `...` Curl args passed on to `GET`

**Details**


Note that if you pass in > 1 item, if one or more of your items is not found, the entire batch will return NA's. To get around this, set `batch_size = 1` - so each is sent separately to NCBI. However, this of course is much slower than the default, which is to send up to 100 at a time.

**Value**

one or more NCBI taxonomic IDs

**Examples**

```r
## Not run:
# with accession numbers
genbank2uid(id = 'AJ748748')
genbank2uid(id = 'Y13155')
genbank2uid(id = 'X78312')
genbank2uid(id = 'KM495596')
```

## End(Not run)
get_boldid

get_boldid(id = 62689767)
genbank2uid(id = 22775511)
genbank2uid(id = 156446673)

# pass in many accession or gi numbers
genbank2uid(c(62689767, 156446673))
genbank2uid(c('X78312', 'KM495596'))
genbank2uid(list('X78312', 156446673))

# curl options
library('httr')
genbank2uid(id = 156446673, config=verbose())

## End(Not run)

---

**get_boldid**  

*Get the BOLD (Barcode of Life) code for a search term.*

---

**Description**

Get the BOLD (Barcode of Life) code for a search term.

**Usage**

```r
get_boldid(searchterm, fuzzy = FALSE, dataTypes = "basic",
           includeTree = FALSE, ask = TRUE, verbose = TRUE, rows = NA,
           rank = NULL, division = NULL, parent = NULL, ...)

as.boldid(x, check = TRUE)

## S3 method for class 'boldid'
as.boldid(x, check = TRUE)

## S3 method for class 'character'
as.boldid(x, check = TRUE)

## S3 method for class 'list'
as.boldid(x, check = TRUE)

## S3 method for class 'numeric'
as.boldid(x, check = TRUE)

## S3 method for class 'data.frame'
as.boldid(x, check = TRUE)

## S3 method for class 'boldid'
as.data.frame(x, ...)
```
get_boldid (searchterm, verbose = TRUE, fuzzy = FALSE,
   datatypes = "basic", includeTree = FALSE, rows = NA, ...)

Arguments

- **searchterm**: character; A vector of common or scientific names.
- **fuzzy**: (logical) Whether to use fuzzy search or not (default: FALSE).
- **datatypes**: (character) Specifies the datatypes that will be returned. See `bold_search` for options.
- **includeTree**: (logical) If TRUE (default: FALSE), returns a list containing information for parent taxa as well as the specified taxon.
- **ask**: logical; should `get_tsn` be run in interactive mode? If TRUE and more than one TSN is found for teh species, the user is asked for input. If FALSE NA is returned for multiple matches.
- **verbose**: logical; should progress be printed?
- **rows**: numeric; Any number from 1 to infinity. If the default NA, all rows are considered. Note that this function still only gives back a boldid class object with one to many identifiers. See `get_boldid` to get back all, or a subset, of the raw data that you are presented during the ask process.
- **rank**: (character) A taxonomic rank name. See `rank_ref` for possible options. Though note that some data sources use atypical ranks, so inspect the data itself for options. Optional. See Filtering below.
- **division**: (character) A division (aka phylum) name. Optional. See Filtering below.
- **parent**: (character) A parent name (i.e., the parent of the target search taxon). Optional. See Filtering below.
- **...**: Curl options passed on to GET
- **x**: Input to `as.boldid`
- **check**: logical; Check if ID matches any existing on the DB, only used in `as.boldid`

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if `ask` = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See `get_id_details` for further details including attributes and exceptions

Filtering

The parameters division, parent, and rank are not used in the search to the data provider, but are used in filtering the data down to a subset that is closer to the target you want. For all these parameters, you can use regex strings since we use `grep` internally to match. Filtering narrows down to the set that matches your query, and removes the rest.
get_boldid

See Also

classification

Other taxonomic-ids: get_colid, get_eolid, get_gbifid, get_ids, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

Examples

## Not run:
get_boldid(searchterm = "Agapostemon")
get_boldid(searchterm = "Chironomus riparius")
get_boldid(c("Chironomus riparius", "Quercus douglasii"))
splist <- names_list('species')
get_boldid(splist, verbose=FALSE)

# Fuzzy searching
get_boldid(searchterm="Osmi", fuzzy=TRUE)

# Get back a subset
get_boldid(searchterm="Osmi", fuzzy=TRUE, rows = 1)
get_boldid(searchterm="Osmi", fuzzy=TRUE, rows = 1:10)
get_boldid(searchterm=c("Osmi", "Ag", fuzzy=TRUE, rows = 1)
get_boldid(searchterm=c("Osmi", "Ag", fuzzy=TRUE, rows = 1:3)

# When not found
get_boldid("howdy")
get_boldid(c("Chironomus riparius", "howdy"))
get_boldid('Epicordulia princeps')
get_boldid('Arigomphus furcifer')
get_boldid("Cordulegaster erronea")
get_boldid("Nasiaesrna pentacantha")

# Narrow down results to a division or rank, or both
## Satyrion example
#### Results w/o narrowing
get_boldid("Satyrion")
#### w/ phylum
get_boldid("Satyrion", division = "Plants")
get_boldid("Satyrion", division = "Animals")

## Rank example
get_boldid("Osmia", fuzzy = TRUE)
get_boldid("Osmia", fuzzy = TRUE, rank = "genus")

# Fuzzy filter on any filtering fields
## uses grep on the inside
get_boldid("Satyrion", division = "anim")
get_boldid("Ag", fuzzy = TRUE, parent = "*idae")

# Convert a boldid without class information to a boldid class
as.boldid(get_boldid("Agapostemon"))  # already a boldid, returns the same
as.boldid(get_boldid(c("Agapostemon", "Quercus douglasii")))  # same
as.boldid(1973)  # numeric
get_colid

as.boldid(c(1973,101009,98597)) # numeric vector, length > 1
as.boldid("1973") # character
as.boldid(c("1973","101009","98597")) # character vector, length > 1
as.boldid(list("1973","101009","98597")) # list, either numeric or character
## dont check, much faster
as.boldid("1973", check=FALSE)
as.boldid(1973, check=FALSE)
as.boldid(c("1973","101009","98597"), check=FALSE)
as.boldid(list("1973","101009","98597"), check=FALSE)

(out <- as.boldid(c(1973,101009,98597)))
data.frame(out)
as.boldid( data.frame(out) )

# Get all data back
get_boldid_("Osmia", fuzzy=TRUE, rows=1:5)
get_boldid_("Osmia", fuzzy=TRUE, rows=1)
get_boldid_(c("Osmia","Aga"), fuzzy=TRUE, rows = 1:3)

## End(Not run)

-----

get_colid

Get the Catalogue of Life ID from taxonomic names.

Description

Get the Catalogue of Life ID from taxonomic names.

Usage

get_colid(sciname, ask = TRUE, verbose = TRUE, rows = NA,
  kingdom = NULL, phylum = NULL, class = NULL, order = NULL,
  family = NULL, rank = NULL, ...)

as.colid(x, check = TRUE)

## S3 method for class 'colid'
as.colid(x, check = TRUE)

## S3 method for class 'character'
as.colid(x, check = TRUE)

## S3 method for class 'list'
as.colid(x, check = TRUE)

## S3 method for class 'data.frame'
as.colid(x, check = TRUE)

## S3 method for class 'colid'
get_colid

as.data.frame(x, ...)

getcolid(sciname, verbose = TRUE, rows = NA)

Arguments

sciname character; scientific name.
ask logical; should get_colid be run in interactive mode? If TRUE and more than
one ID is found for the species, the user is asked for input. If FALSE NA is
returned for multiple matches.
verbose logical; If TRUE the actual taxon queried is printed on the console.
rows numeric; Any number from 1 to infinity. If the default NA, all rows are consid-
ered. Note that this function still only gives back a cold class object with one
to many identifiers. See get_colid_ to get back all, or a subset, of the raw data
that you are presented during the ask process.
kingdom (character) A kingdom name. Optional. See Filtering below.
phylum (character) A phylum (aka division) name. Optional. See Filtering below.
class (character) A class name. Optional. See Filtering below.
order (character) An order name. Optional. See Filtering below.
family (character) A family name. Optional. See Filtering below.
rank (character) A taxonomic rank name. See rank_ref for possible options. Though
note that some data sources use atypical ranks, so inspect the data itself for
options. Optional. See Filtering below.
...
Ignored
x Input to as.colid
check logical; Check if ID matches any existing on the DB, only used in as.colid

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more
than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA.
If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class,
which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions

Filtering

The parameters kingdom, phylum, class, order, family, and rank are not used in the search to
the data provider, but are used in filtering the data down to a subset that is closer to the target you
want. For all these parameters, you can use regex strings since we use grep internally to match.
Filtering narrows down to the set that matches your query, and removes the rest.

Author(s)

Scott Chamberlain, <myrmecocystus@gmail.com>
get_colid

See Also
classification

Other taxonomic-ids: get_boldid, get_eolid, get_gbifid, get_ids, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

Examples

## Not run:
get_colid(sciname='Poa annua')
get_colid(sciname='Pinus contorta')
get_colid(sciname='Puma concolor')
# get_colid(sciname="Abudefduf saxatilis")

get_colid(c("Poa annua", "Pinus contorta"))

# specify rows to limit choices available
get_colid(sciname='Poa annua')
get_colid(sciname='Poa annua', rows=1)
get_colid(sciname='Poa annua', rows=2)
get_colid(sciname='Poa annua', rows=1:2)

# When not found
get_colid(sciname="uaudnadndj")
get_colid(c("Chironomus riparius", "uaudnadndj"))

# Narrow down results to a division or rank, or both
### Satyrium example
#### Results w/o narrowing
get_colid("Satyrium")
#### w/ division
get_colid("Satyrium", kingdom = "Plantae")
get_colid("Satyrium", kingdom = "Animalia")

### Rank example
get_colid("Poa")
get_colid("Poa", kingdom = "Plantae")
get_colid("Poa", kingdom = "Animalia")

# Fuzzy filter on any filtering fields
# uses grep on the inside
get_colid("Satyrium", kingdom = "p")

# Convert a uid without class information to a uid class
as.colid(get_colid("Chironomus riparius")) # already a uid, returns the same
as.colid(get_colid("Chironomus riparius","Pinus contorta"))) # same
as.colid("714831352ad94741e4321eccdeb29f58") # character
# character vector, length > 1
as.colid(c("714831352ad94741e4321eccdeb29f58", "3b3590f74ff6e4b073db95c32b1f8d"))
# list, either numeric or character
as.colid(list("714831352ad94741e4321eccdeb29f58", "3b3590f74ff6e4b073db95c32b1f8d"))
## dont check, much faster
as.colid("714831352ad94741e4321eccdeb29f58", check=FALSE)
get_eolid

Get the EOL ID from Encyclopedia of Life from taxonomic names.

Description

Note that EOL doesn’t expose an API endpoint for directly querying for EOL taxon ID’s, so we first use the function `eol_search` to find pages that deal with the species of interest, then use `eol_pages` to find the actual taxon IDs.

Usage

```r
get_eolid(sciname, ask = TRUE, verbose = TRUE, key = NULL, rows = NA, ...)

as.eolid(x, check = TRUE)
```

## S3 method for class 'eolid'

```r
as.eolid(x, check = TRUE)
```

## S3 method for class 'character'

```r
as.eolid(x, check = TRUE)
```

## S3 method for class 'list'

```r
as.eolid(x, check = TRUE)
```
## S3 method for class 'numeric'

as.eolid(x, check = TRUE)

## S3 method for class 'data.frame'

as.eolid(x, check = TRUE)

## S3 method for class 'eolid'

as.data.frame(x, ...)

get_eolid_(sciname, verbose = TRUE, key = NULL, rows = NA, ...)

### Arguments

- **sciname**: character; scientific name.
- **ask**: logical; should get_eolid be run in interactive mode? If TRUE and more than one ID is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.
- **verbose**: logical; If TRUE the actual taxon queried is printed on the console.
- **key**: API key. passed on to eol_search and eol_pages internally
- **rows**: numeric; Any number from 1 to infinity. If the default NA, all rows are considered. Note that this function still only gives back a eolid class object with one to many identifiers. See get_eolid_ to get back all, or a subset, of the raw data that you are presented during the ask process.
- **...**: Further args passed on to eol_search
- **x**: Input to as.eolid
- **check**: logical; Check if ID matches any existing on the DB, only used in as.eolid

### Details

EOL is a bit odd in that they have page IDs for each taxon, but then within that, they have taxon ids for various taxa within that page (e.g., GBIF and NCBI each have a taxon they refer to within the page [i.e., taxon]). And we need the taxon ids from a particular data provider (e.g, NCBI) to do other things, like get a higher classification tree. However, humans want the page id, not the taxon id. So, the id returned from this function is the taxon id, not the page id. You can get the page id for a taxon by using eol_search and eol_pages, and the URI returned in the attributes for a taxon will lead you to the taxon page, and the ID in the URL is the page id.

### Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions

### Author(s)

Scott Chamberlain, <myrmecocystus@gmail.com>
**get_eolid**

**See Also**

classification

Other taxonomic-ids: get_boldid, get_colid, get_gbifid, get_ids, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

**Examples**

```r
## Not run:
get_eolid(sciname="Pinus contorta")
get_eolid(sciname="Puma concolor")

get_eolid(c("Puma concolor", "Pinus contorta"))

# specify rows to limit choices available
get_eolid('Poa annua')
get_eolid('Poa annua', rows=1)
get_eolid('Poa annua', rows=2)
get_eolid('Poa annua', rows=1:2)

# When not found
get_eolid(sciname="uaudnadndj")
get_eolid(c("Chironomus riparius", "uaudnadndj"))

# Convert a eolid without class information to a eolid class
# already a eolid, returns the same
as.eolid(get_eolid("Chironomus riparius"))
# same
as.eolid(get_eolid(c("Chironomus riparius","Pinus contorta")))
# numeric
as.eolid(24954444)
# numeric vector, length > 1
as.eolid(c(24954444,51389511,57266265))
# character
as.eolid("24954444")
# character vector, length > 1
as.eolid(c("24954444","51389511","57266265"))
# list, either numeric or character
as.eolid(list("24954444","51389511","57266265"))
## dont check, much faster
as.eolid("24954444", check=FALSE)
as.eolid(24954444, check=FALSE)
as.eolid(c("24954444","51389511","57266265"), check=FALSE)
as.eolid(list("24954444","51389511","57266265"), check=FALSE)

(out <- as.eolid(c(24954444,51389511,57266265)))
data.frame(out)
as.eolid(data.frame(out) )

# Get all data back
get_eolid("Poa annua")
get_eolid("Poa annua", rows=2)
get_eolid("Poa annua", rows=1:2)
```
Description

Get the GBIF backbone taxon ID from taxonomic names.

Usage

```
get_gbifid(sciname, ask = TRUE, verbose = TRUE, rows = NA,
    phylum = NULL, class = NULL, order = NULL, family = NULL,
    rank = NULL, method = "backbone", ...)
```

```
as.gbifid(x, check = FALSE)
```

```
## S3 method for class 'gbifid'
as.gbifid(x, check = FALSE)
```

```
## S3 method for class 'character'
as.gbifid(x, check = TRUE)
```

```
## S3 method for class 'list'
as.gbifid(x, check = TRUE)
```

```
## S3 method for class 'numeric'
as.gbifid(x, check = TRUE)
```

```
## S3 method for class 'data.frame'
as.gbifid(x, check = TRUE)
```

```
## S3 method for class 'gbifid'
as.data.frame(x, ...)
```

```
get_gbifid_(sciname, verbose = TRUE, rows = NA, method = "backbone")
```

Arguments

- **sciname**: character; scientific name.
- **ask**: logical; should get_colid be run in interactive mode? If TRUE and more than one ID is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.
- **verbose**: logical; If TRUE the actual taxon queried is printed on the console.
get_gbifid

**rows** numeric; Any number from 1 to infinity. If the default NA, all rows are considered. Note that this function still only gives back a gbifid class object with one to many identifiers. See `get_gbifid` to get back all, or a subset, of the raw data that you are presented during the ask process.

**phylum** (character) A phylum (aka division) name. Optional. See Filtering below.

**class** (character) A class name. Optional. See Filtering below.

**order** (character) An order name. Optional. See Filtering below.

**family** (character) A family name. Optional. See Filtering below.

**rank** (character) A taxonomic rank name. See rank_ref for possible options. Though note that some data sources use atypical ranks, so inspect the data itself for options. Optional. See Filtering below.

**method** (character) one of "backbone" or "lookup". See Details.

... Ignored

**x** Input to as.gbifid

**check** logical; Check if ID matches any existing on the DB, only used in as.gbifid

### Details

Internally in this function we use a function to search GBIF’s taxonomy, and if we find an exact match we return the ID for that match. If there isn’t an exact match we return the options to you to pick from.

### Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions

### method parameter

"backbone" uses the /species/match GBIF API route, matching against their backbone taxonomy. We turn on fuzzy matching by default, as the search without fuzzy against backbone is quite narrow. "lookup" uses the /species/search GBIF API route, doing a full text search of name usages covering scientific and vernacular named, species descriptions, distributions and the entire classification.

### Filtering

The parameters phylum, class, order, family, and rank are not used in the search to the data provider, but are used in filtering the data down to a subset that is closer to the target you want. For all these parameters, you can use regex strings since we use grep internally to match. Filtering narrows down to the set that matches your query, and removes the rest.
**get_gbifid**

**Author(s)**
Scott Chamberlain, <myrmecocystus@gmail.com>

**See Also**
- classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_ids, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

**Examples**

```r
## Not run:
gbifid <- function(sciname) {
  split <- split(gbifid, sciname)
  list(gbifid = split, sciname = sciname)
}

gbifid <- gbifid('Poa annua')
gbifid <- gbifid('Pinus contorta')
gbifid <- gbifid('Puma concolor')

# multiple names
gbifid <- gbifid(c('Poa annua', 'Pinus contorta'))

# specify rows to limit choices available
gbifid <- gbifid('Pinus', rows=10)
gbifid <- gbifid('Pinus', rows=1:3)

# When not found, NA given
gbifid <- gbifid('Chironomus riparius', 'uaudnadndj')

# Narrow down results to a division or rank, or both
# Satyrion example
## Results w/o narrowing
gbifid <- gbifid('Satyrion')
## w/ phylum
gbifid <- gbifid('Satyrion', phylum = 'Tracheophyta')
gbifid <- gbifid('Satyrion', phylum = 'Arthropoda')
## w/ phylum & rank
gbifid <- gbifid('Satyrion', phylum = 'Arthropoda', rank = 'genus')

# Rank example
gbifid <- gbifid('Poa', method = 'lookup')
gbifid <- gbifid('Poa', method = 'lookup', rank = 'genus')

# Fuzzy filter on any filtering fields
# uses grep on the inside
gbifid <- gbifid('Satyrion', phylum = 'arthropoda')
gbifid <- gbifid('Ax*', method = 'lookup', order = 'xtera')

# Convert a uid without class information to a uid class
as.gbid(gbifid('Poa annua')) # already a uid, returns the same
```
get_ids

Retrieve taxonomic identifiers for a given taxon name.

Description

This is a convenience function to get identifiers across all data sources. You can use other get_*
functions to get identifiers from specific sources if you like.

Usage

get_ids(names, db = c("itis", "ncbi", "eol", "col", "tropicos", "gbif", "nbn"), ...)

get_ids(names, db = c("itis", "ncbi", "eol", "col", "tropicos", "gbif", "nbn"), rows = NA, ...)

Arguments

names character; Taxonomic name to query.
get_ids

db character; database to query. One or more of ncbi, itis, eol, col, tropicos, gbif, or nbn. By default db is set to search all data sources. Note that each taxonomic data source has their own identifiers, so that if you vide the wrong db value for the identifier you could get a result, it will likely be wrong (not what you were expecting).

... Other arguments passed to get_tsn, get_uid, get_eolid, get_colid, get_tpsid, get_gbifid, get_nbnid.

rows numeric; Any number from 1 to infinity. If the default NA, all rows are returned. When used in get_ids this function still only gives back a ids class object with one to many identifiers. See get_ids_ to get back all, or a subset, of the raw data that you are presented during the ask process.

Value

A vector of taxonomic identifiers, each retaining their respective S3 classes so that each element can be passed on to another function (see e.g.'s).

Note

There is a timeout of 1/3 seconds between queries to NCBI.

See Also

classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

Examples

## Not run:
# Plug in taxon names directly
## By default you get ids for all data sources
get_ids(names="Chironomus riparius")

# specify rows to limit choices available
get_ids(names="Poa annua", db=c("col","eol"), rows=1)
get_ids(names="Poa annua", db=c("col","eol"), rows=1:2)

## Or you can specify which source you want via the db parameter
get_ids(names="Chironomus riparius", db = 'ncbi')
get_ids(names="Salvelinus fontinalis", db = 'nbn')
get_ids(names=c("Chironomus riparius", "Pinus contorta"), db = 'ncbi')
get_ids(names=c("Chironomus riparius", "Pinus contorta"), db = c('ncbi','itis'))
get_ids(names=c("Chironomus riparius", "Pinus contorta"), db = c('ncbi','itis','col'))
get_ids(names="Pinus contorta", db = c('ncbi','itis','col','eol','tropicos'))
get_ids(names="ava avvva", db = c('ncbi','itis','col','eol','tropicos'))
get_ids(names="ava avvva", db = c('ncbi','itis','col','eol','tropicos'), verbose=FALSE)
get_id_details

Details on get_*() functions

Description

Including outputs from get_*() functions, as well as their attributes, and all exception behaviors.

Details

This document applies to the following functions:

- `get_boldid`
- `get_colid`
- `get_eolid`
- `get_gbifid`
- `get_ids`
- `get_iucn`
- `get_natservid`
- `get_nbnid`
- `get_tolid`
- `get_tpsid`
- `get_tsn`
- `get_ubioiid`
- `get_uid`
- `get_wiki`
- `get_wormsid`
attributes

Each output from get_*( ) functions have the following attributes:

• **match** (character) - the reason for NA, either ’not found’, ’found’ or if ask = FALSE then ’NA due to ask=FALSE’

• **multiple_matches** (logical) - Whether multiple matches were returned by the data source. This can be TRUE, even if you get 1 name back because we try to pattern match the name to see if there's any direct matches. So sometimes this attribute is TRUE, as well as pattern_match, which then returns 1 resulting name without user prompt.

• **pattern_match** (logical) - Whether a pattern match was made. If TRUE then multiple_matches must be TRUE, and we found a perfect match to your name, ignoring case. If FALSE, there wasn’t a direct match, and likely you need to pick from many choices or further parameters can be used to limit results

• **uri** (character) - The URI where more information can be read on the taxon - includes the taxonomic identifier in the URL somewhere. This may be missing if the value returned is NA

exceptions

The following are the various ways in which get_*( ) functions behave:

• success - the value returned is a character string or numeric

• no matches found - you’ll get an NA, refine your search or possible the taxon searched for does not exist in the database you’re using

• more than on match and ask = FALSE - if there’s more than one matching result, and you have set ask = FALSE, then we can’t determine the single match to return, so we give back NA. However, in this case we do set the match attribute to say NA due to ask=FALSE & > 1 result so it’s very clear what happened - and you can even programatically check this as well

• NA due to some other reason - some get_*( ) functions have additional parameters for filtering taxa. It’s possible that even though there’s results (that is, found will say TRUE), you can get back an NA. This is most likely if the parameter filters taxa after they are returned from the data provider and the value passed to the parameter leads to no matches.

---

**get_iucn**

Get a IUCN Redlist taxon

**Description**

Get a IUCN Redlist taxon
get_iucn

Usage

get_iucn(x, verbose = TRUE, key = NULL, ...)

as.iucn(x, check = TRUE, key = NULL)

## S3 method for class 'iucn'
as.iucn(x, check = TRUE, key = NULL)

## S3 method for class 'character'
as.iucn(x, check = TRUE, key = NULL)

## S3 method for class 'list'
as.iucn(x, check = TRUE, key = NULL)

## S3 method for class 'numeric'
as.iucn(x, check = TRUE, key = NULL)

## S3 method for class 'data.frame'
as.iucn(x, check = TRUE, key = NULL)

## S3 method for class 'iucn'
as.data.frame(x, ...)

Arguments

x (character) A vector of common or scientific names
verbose logical; should progress be printed?
key (character) required. you IUCN Redlist API key. See rredlist-package for help on authenticating with IUCN Redlist
... Ignored
check (logical) Check if ID matches any existing on the DB, only used in as.iucn

Details

There is no underscore method, because there’s no real search for IUCN, that is, where you search for a string, and get back a bunch of results due to fuzzy matching. If that exists in the future we’ll add an underscore method here.

IUCN ids only work with synonyms and sci2comm methods.

Value

A vector of taxonomic identifiers as an S3 class.

Comes with the following attributes:

- *match* (character) - the reason for NA, either ’not found’, ’found’ or if ask = FALSE then ’NA due to ask=FALSE’

get_natservid

- **name** (character) - the taxonomic name, which is needed in synonyms and sci2comm methods since they internally use reddlist functions which require the taxonomic name, and not the taxonomic identifier

- **uri** (character) - The URI where more information can be read on the taxon - includes the taxonomic identifier in the URL somewhere

*multiple_matches* and *pattern_match* do not apply here as in other get_* methods since there is no IUCN Redlist search, so you either get a match or you do not get a match.

**See Also**

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

**Examples**

```r
## Not run:
get_iucn(x = "Branta canadensis")
get_iucn(x = "Branta bernicla")
get_iucn(x = "Panthera uncia")

# as coercion
as.iucn(22732)
as.iucn("22732")
(res <- as.iucn(c(22679946, 22732, 22679935)))
data.frame(res)
as.iucn(data.frame(res))

## End(Not run)
```

---

**Description**

Get NatureServe taxonomic ID for a taxon name

**Usage**

```r
get_natservid(query, searchtype = "scientific", ask = TRUE, 
             verbose = TRUE, rows = NA, key = NULL, ...)
```

```r
as.natservid(x, check = TRUE)
```

**S3 method for class 'natservid'**

```r
as.natservid(x, check = TRUE)
```

**S3 method for class 'character'**
get_natservid

as.natservid(x, check = TRUE)

## S3 method for class 'list'
as.natservid(x, check = TRUE)

## S3 method for class 'numeric'
as.natservid(x, check = TRUE)

## S3 method for class 'data.frame'
as.natservid(x, check = TRUE)

## S3 method for class 'natservid'
as.data.frame(x, ...)

get_natservid_(query, verbose = TRUE, rows = NA, key = NULL, ...)

Arguments

query character; A vector of common or scientific names.

searchtype character; One of 'scientific' (default) or 'common'. This doesn’t affect the query to NatureServe - but rather affects what column of data is targeted in name filtering post data request.

ask logical; should get_natservid be run in interactive mode? If TRUE and more than one wormsid is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.

verbose logical; should progress be printed?

rows numeric; Any number from 1 to infinity. If the default NaN, all rows are considered. Note that this function still only gives back a natservid class object with one to many identifiers. See get_natservid_ to get back all, or a subset, of the raw data that you are presented during the ask process.

key (character) your NatureServe API key. Required. See Authentication below for more.

... Ignored

x Input to as.natservid

check logical; Check if ID matches any existing on the DB, only used in as.natservid

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions
get_natservid

Authentication

Get an API key from NatureServe at https://services.natureserve.org/developer/index.jsp. You can pass your token in as an argument or store it one of two places:

- your .Rprofile file with an entry like `options(natureserveKey = "your-natureserve-key")`
- your .Renviron file with an entry like `NATURE_SERVE_KEY=your-natureserve-key`

See Startup for information on how to create/find your .Rprofile and .Renviron files

See Also

classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_iucn, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

Examples

```r
## Not run:
(x <- get_natservid("Helianthus annuus"))
attributes(x)
attr(x, "match")
attr(x, "multiple_matches")
attr(x, "pattern_match")
attr(x, "uri")

get_natservid("Gadus morhua")
get_natservid(c("Helianthus annuus", 'Gadus morhua'))

# specify rows to limit choices available
get_natservid('Ruby Quaker Moth', 'common')
get_natservid('Ruby*', 'common')
get_natservid('Ruby*', 'common', rows=1)
get_natservid('Ruby*', 'common', rows=1:2)

# When not found
get_natservid("howdy")
get_natservid(c("Gadus morhua", "howdy"))

# Convert a natservid without class information to a natservid class
# already a natservid, returns the same
as.natservid(get_natservid('Gadus morhua'))
# same
as.natservid(get_natservid(c('Gadus morhua', 'Pomatomus saltatrix')))
# character
as.natservid("ELEMENT_GLOBAL.2.101905")
# character vector, length > 1
as.natservid(c("ELEMENT_GLOBAL.2.101905", "ELEMENT_GLOBAL.2.101998"))
# list, either numeric or character
as.natservid(list("ELEMENT_GLOBAL.2.101905", "ELEMENT_GLOBAL.2.101998"))
# dont check, much faster
as.natservid("ELEMENT_GLOBAL.2.101905", check = FALSE)
```
get_nbnid

Get the UK National Biodiversity Network ID from taxonomic names.

Description

Get the UK National Biodiversity Network ID from taxonomic names.

Usage

get_nbnid(name, ask = TRUE, verbose = TRUE, rec_only = FALSE, 
  rank = NULL, rows = NA, ...)

as.nbnid(x, check = TRUE)

## S3 method for class 'nbnid'
as.nbnid(x, check = TRUE)

## S3 method for class 'character'
as.nbnid(x, check = TRUE)

## S3 method for class 'list'
as.nbnid(x, check = TRUE)

## S3 method for class 'data.frame'
as.nbnid(x, check = TRUE)

## S3 method for class 'nbnid'
as.data.frame(x, ...)

get_nbnid(name, verbose = TRUE, rec_only = FALSE, rank = NULL, 
  rows = NA, ...)
get_nbnid

Arguments

name character; scientific name.
ask logical; should get_nbnid be run in interactive mode? If TRUE and more than one ID is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.
verbose logical; If TRUE the actual taxon queried is printed on the console.
rec_only (logical) If TRUE ids of recommended names are returned (i.e. synonyms are removed). Defaults to FALSE. Remember, the id of a synonym is a taxa with 'recommended' name status.
rank (character) If given, we attempt to limit the results to those taxa with the matching rank.
rows numeric; Any number from 1 to infinity. If the default NA, all rows are considered. Note that this function still only gives back a nbnid class object with one to many identifiers. See get_nbnid_ to get back all, or a subset, of the raw data that you are presented during the ask process.
... Further args passed on to nbn_search
x Input to as.nbnid
check logical; Check if ID matches any existing on the DB, only used in as.nbnid

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.
See get_id_details for further details including attributes and exceptions
an object of class nbnid, a light wrapper around a character string that is the taxonomic ID - includes attributes with relevant metadata

Author(s)

Scott Chamberlain, <myrmecocystus@gmail.com>

References

<https://api.nbnatlas.org/>

See Also

classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_iucn, get_natservid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

Other nbn: nbn_classification, nbn_search, nbn_synonyms
get_nbnid

Examples

```r
## Not run:
get_nbnid(name='Poa annua')
get_nbnid(name='Poa annua', rec_only=TRUE)
get_nbnid(name='Poa annua', rank='Species')
get_nbnid(name='Poa annua', rec_only=TRUE, rank='Species')
get_nbnid(name='Pinus contorta')

# The NBN service handles common names too
get_nbnid(name='red-winged blackbird')

# specify rows to limit choices available
get_nbnid('Poa annua')
get_nbnid('Poa annua', rows=1)
get_nbnid('Poa annua', rows=25)
get_nbnid('Poa annua', rows=1:2)

# When not found
get_nbnid(name="uaudnadndj")
get_nbnid(c("Zootoca vivipara", "uaudnadndj"))
get_nbnid(c("Zootoca vivipara","Chironomus riparius", "uaudnadndj"))

# Convert an nbnid without class information to a nbnid class
as.nbnid(get_nbnid("Zootoca vivipara")) # already a nbnid, returns the same
as.nbnid(get_nbnid(c("Zootoca vivipara","Pinus contorta"))) # same
as.nbnid("NHMSYS0001706186") # character
# character vector, length > 1
as.nbnid(c("NHMSYS0001706186","NHMSYS0000494848","NBNSYS000010867"))
# list
as.nbnid(list("NHMSYS0001706186","NHMSYS0000494848","NBNSYS000010867"))
## dont check, much faster
as.nbnid("NHMSYS0001706186", check=FALSE)
as.nbnid(list("NHMSYS0001706186","NHMSYS0000494848","NBNSYS000010867"),
check=FALSE)

(out <- as.nbnid(c("NHMSYS0001706186","NHMSYS0000494848",
"NBNSYS000010867")))
data.frame(out)
as.nbnid( data.frame(out) )

# Get all data back
get_nbnid("Zootoca vivipara")
get_nbnid("Poa annua", rows=2)
get_nbnid("Poa annua", rows=1:2)
get_nbnid(c("asdfadfasd","Pinus contorta"), rows=1:5)

# use curl options
library("httr")
get_nbnid("Quercus douglasii", config=verbose())
bb <- get_nbnid("Quercus douglasii", config=progress())

## End(Not run)
```
get_tolid  

*Get the OTT id for a search term*

**Description**

Retrieve the Open Tree of Life Taxonomy (OTT) id of a taxon from OpenTreeOfLife

**Usage**

```r
get_tolid(sciname, ask = TRUE, verbose = TRUE, rows = NA, ...)

as.tolid(x, check = TRUE)
```

## S3 method for class 'tolid'

```r
as.tolid(x, check = TRUE)
```

## S3 method for class 'character'

```r
as.tolid(x, check = TRUE)
```

## S3 method for class 'list'

```r
as.tolid(x, check = TRUE)
```

## S3 method for class 'numeric'

```r
as.tolid(x, check = TRUE)
```

## S3 method for class 'data.frame'

```r
as.tolid(x, check = TRUE)
```

## S3 method for class 'tolid'

```r
as.data.frame(x, ...)
```

**Arguments**

- **sciname** character; scientific name.
- **ask** logical; should `get_tolid` be run in interactive mode? If TRUE and more than one TOL is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.
- **verbose** logical; should progress be printed?
- **rows** numeric; Any number from 1 to infinity. If the default NA, all rows are considered. Note that this function still only gives back a tol class object with one to many identifiers. See `get_tolid` to get back all, or a subset, of the raw data that you are presented during the ask process.
- **...** Ignored
get_tolid

x Input to as.tolid

check logical; Check if ID matches any existing on the DB, only used in as.tolid

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions

See Also

classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_iucn, get_natservid, get_nbnid, get_tpsid, get_tsn, get_uid, get_wiki, get_wormsid

Examples

```r
## Not run:
get_tolid(sciname = "Quercus douglasii")
get_tolid(sciname = "Chironomus riparius")
get_tolid(c("Chironomus riparius","Quercus douglasii"))
splist <- c("annona cherimola", "annona muricata", "quercus robur", "shorea robusta", "pandanus patina", "oryza sativa", "durio zibethinus")
ge t_tolid(splist, verbose=FALSE)

# specify rows to limit choices available
get_tolid('Arni')
get_tolid('Arni', rows=1)
get_tolid('Arni', rows=1:2)

# When not found
get_tolid("howdy")
get_tolid(c("Chironomus riparius", "howdy"))

# Convert a tol without class information to a tol class
as.tolid(get_tolid("Quercus douglasii")) # already a tol, returns the same
as.tolid(get_tolid(c("Chironomus riparius","Pinus contorta"))) # same
as.tolid(3930798) # numeric
as.tolid(c(3930798,515712,872577)) # numeric vector, length > 1
as.tolid("3930798") # character
as.tolid(c("3930798","515712","872577")) # character vector, length > 1
as.tolid(list("3930798","515712","872577")) # list, either numeric or character
# dont check, much faster
as.tolid("3930798", check=FALSE)
as.tolid(3930798, check=FALSE)
as.tolid(c("3930798","515712","872577"), check=FALSE)
as.tolid(list("3930798","515712","872577"), check=FALSE)

(out <- as.tolid(c(3930798,515712,872577)))
```
data.frame(out)
as.tolid( data.frame(out) )

# Get all data back
get_tolid_(sciname="Arni")
get_tolid_("Arni", rows=1)
get_tolid_("Arni", rows=1:2)
get_tolid_(c("asdfadasd","Pinus contorta"))

## End(Not run)

---

**get_tpsid**

Get the NameID codes from Tropicos for taxonomic names.

**Description**

Get the NameID codes from Tropicos for taxonomic names.

**Usage**

get_tpsid(sciname, ask = TRUE, verbose = TRUE, key = NULL, rows = NA, family = NULL, rank = NULL, ...)

as.tpsid(x, check = TRUE)

## S3 method for class 'tpsid'
as.tpsid(x, check = TRUE)

## S3 method for class 'character'
as.tpsid(x, check = TRUE)

## S3 method for class 'list'
as.tpsid(x, check = TRUE)

## S3 method for class 'numeric'
as.tpsid(x, check = TRUE)

## S3 method for class 'data.frame'
as.tpsid(x, check = TRUE)

## S3 method for class 'tpsid'
as.data.frame(x, ...)

get_tpsid_(sciname, verbose = TRUE, key = NULL, rows = NA, ...)
get_tpsid

Arguments

  sciname  (character) One or more scientific name's as a vector or list.
  ask      logical; should get_tpsid be run in interactive mode? If TRUE and more than
            one ID is found for the species, the user is asked for input. If FALSE NA is
            returned for multiple matches.
  verbose  logical; If TRUE the actual taxon queried is printed on the console.
  key      Your API key; loads from .Rprofile.
  rows     numeric; Any number from 1 to infinity. If the default NA, all rows are consid-
            ered. Note that this function still only gives back a tpsid class object with one
            to many identifiers. See get_tpsid_ to get back all, or a subset, of the raw data
            that you are presented during the ask process.
  family   (character) A family name. Optional. See Filtering below.
  rank     (character) A taxonomic rank name. See rank_ref for possible options. Though
            note that some data sources use atypical ranks, so inspect the data itself for
            options. Optional. See Filtering below.
  ...      Other arguments passed to tp_search.
  x        Input to as.tpsid
  check    logical; Check if ID matches any existing on the DB, only used in as.tpsid

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more
than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA.
If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class,
which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions

Filtering

The parameters family and rank are not used in the search to the data provider, but are used in
filtering the data down to a subset that is closer to the target you want. For all these parameters, you
can use regex strings since we use grep internally to match. Filtering narrows down to the set that
matches your query, and removes the rest.

Author(s)

Scott Chamberlain, <myrmecocystus@gmail.com>

See Also

classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_iucn,
get_natservid, get_nbnid, get_tolid, get_tsn, get_uid, get_wiki, get_wormsid
Examples

```r
## Not run:
get_tpsid(sciname="Poa annua")
get_tpsid(sciname="Pinus contorta")

get_tpsid(c("Poa annua", "Pinus contorta"))

# specify rows to limit choices available
get_tpsid('Poa annua')
get_tpsid('Poa annua', rows=1)
get_tpsid('Poa annua', rows=25)
get_tpsid('Poa annua', rows=1:2)

# When not found, NA given (howdy is not a species name, and Chironomus is a fly)
get_tpsid("howdy")
get_tpsid(c("Chironomus riparius", "howdy"))

# Narrow down results to a division or rank, or both
## Satyrium example
### Results w/o narrowing
get_tpsid("Satyrium")
### w/ rank
get_tpsid("Satyrium", rank = "var.")
get_tpsid("Satyrium", rank = "sp.")

### w/ family
get_tpsid("Poa")
get_tpsid("Poa", family = "Iridaceae")
get_tpsid("Poa", family = "Orchidaceae")
get_tpsid("Poa", family = "Orchidaceae", rank = "gen.")

# Fuzzy filter on any filtering fields
## uses grep on the inside
get_tpsid("Poa", family = "orchidaceae")
get_tpsid("Aga", fuzzy = TRUE, parent = "*idae")

# pass to classification function to get a taxonomic hierarchy
classification(get_tpsid(sciname="Poa annua"))

# factor class names are converted to character internally
spnames <- as.factor(c("Poa annua", "Pinus contorta"))
class(spnames)
get_tpsid(spnames)

# pass in a list, works fine
get_tpsid(list("Poa annua", "Pinus contorta"))

# Convert a tpsid without class information to a tpsid class
as.tpsid(get_tpsid("Pinus contorta")) # already a tpsid, returns the same
as.tpsid(get_tpsid(c("Chironomus riparius","Pinus contorta"))) # same
as.tpsid(24900183) # numeric
as.tpsid(c(24900183,50150089,50079838)) # numeric vector, length > 1
```
get_tsn

Get the TSN code for a search term.

Description

Retrieve the taxonomic serial numbers (TSN) of a taxon from ITIS.

Usage

get_tsn(searchterm, searchtype = "scientific", accepted = FALSE,
   ask = TRUE, verbose = TRUE, rows = NA, ...)

as.tsn(x, check = TRUE)

## S3 method for class 'tsn'
as.tsn(x, check = TRUE)

## S3 method for class 'character'
as.tsn(x, check = TRUE)

## S3 method for class 'list'
as.tsn(x, check = TRUE)
## S3 method for class 'numeric'

as.tsn(x, check = TRUE)

## S3 method for class 'data.frame'

as.tsn(x, check = TRUE)

## S3 method for class 'tsn'

data.frame(x, ...)

get_tsn_(searchterm, verbose = TRUE, searchtype = "scientific",
          accepted = TRUE, rows = NA, ...)

### Arguments

- **searchterm**: character; A vector of common or scientific names.
- **searchtype**: character; One of 'scientific' or 'common', or any unique abbreviation
- **accepted**: logical; If TRUE, removes names that are not accepted valid names by ITIS. Set to FALSE (default) to give back both accepted and unaccepted names.
- **ask**: logical; should get_tsn be run in interactive mode? If TRUE and more than one TSN is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.
- **verbose**: logical; should progress be printed?
- **rows**: numeric; Any number from 1 to infinity. If the default NA, all rows are considered. Note that this function still only gives back a tsn class object with one to many identifiers. See get_tsn_ to get back all, or a subset, of the raw data that you are presented during the ask process.
- **...**: Ignored
- **x**: Input to as.tsn
- **check**: logical; Check if ID matches any existing on the DB, only used in as.tsn

### Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See [get_id_details](#) for further details including attributes and exceptions

### See Also

classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_uid, get_wiki, get_wormsid
get_ubioid  

Get the uBio id for a search term

---

### Examples

```r
## Not run:
get_tsn("Quercus douglasii")
get_tsn("Chironomus riparius")
get_tsn(c("Chironomus riparius","Quercus douglasii"))
splist <- c("annona cherimola", "annona muricata", "quercus robur", "shorea robusta", "pandanus patina", "oryza sativa", "durio zibethinus")
get_tsn(splist, verbose=FALSE)

# specify rows to limit choices available
get_tsn('Arni')
get_tsn('Arni', rows=1)
get_tsn('Arni', rows=1:2)

# When not found
get_tsn("howdy")
get_tsn(c("Chironomus riparius", "howdy"))

# Using common names
get_tsn(searchterm="black bear", searchtype="common")

# Convert a tsn without class information to a tsn class
as.tsn(get_tsn("Quercus douglasii")) # already a tsn, returns the same
as.tsn(get_tsn(c("Chironomus riparius","Pinus contorta"))) # same
as.tsn(19322) # numeric
as.tsn(c(19322,129313,506198)) # numeric vector, length > 1
as.tsn("19322") # character
as.tsn(c("19322","129313","506198")) # character vector, length > 1
as.tsn(list("19322","129313","506198")) # list, either numeric or character
## dont check, much faster
as.tsn("19322", check=FALSE)
as.tsn(19322, check=FALSE)
as.tsn(c("19322","129313","506198"), check=FALSE)
as.tsn(list("19322","129313","506198"), check=FALSE)

(out <- as.tsn(c(19322,129313,506198)))
data.frame(out)
as.tsn( data.frame(out) )

# Get all data back
get_tsn("Arni")
get_tsn("Arni", rows=1)
get_tsn("Arni", rows=1:2)
get_tsn(c("asdfadfasd","Pinus contorta"), rows=1:5)

## End(Not run)
```
Description

THIS FUNCTION IS DEFUNCT.

Usage

get_ubioid(searchterm, searchtype = "scientific", ask = TRUE,
    verbose = TRUE, rows = NA, family = NULL, rank = NULL, ...)

as.ubioid(x, check = TRUE)

## S3 method for class 'ubioid'
as.ubioid(x, check = TRUE)

## S3 method for class 'character'
as.ubioid(x, check = TRUE)

## S3 method for class 'list'
as.ubioid(x, check = TRUE)

## S3 method for class 'numeric'
as.ubioid(x, check = TRUE)

## S3 method for class 'data.frame'
as.ubioid(x, check = TRUE)

## S3 method for class 'ubioid'
as.data.frame(x, ...)

get_ubioid_(searchterm, verbose = TRUE, searchtype = "scientific",
    rows = NA)

Arguments

searchterm  character; A vector of common or scientific names.
searchtype  character; One of 'scientific' or 'common', or any unique abbreviation
ask         logical; should get_tsn be run in interactive mode? If TRUE and more than
            one TSN is found for teh species, the user is asked for input. If FALSE NA is
            returned for multiple matches.
verbose     logical; should progress be printed?
rows        numeric; Any number from 1 to infinity. If the default NA, all rows are consid-
            ered. Note that this function still only gives back a ubioid class object with one
            to many identifiers. See get_ubioid_ to get back all, or a subset, of the raw
            data that you are presented during the ask process.
family      (character) A family name. Optional. See Filtering below.
rank        (character) A taxonomic rank name. See rank_ref for possible options. Though
            note that some data sources use atypical ranks, so inspect the data itself for
            options. Optional. See Filtering below.
get_uid

... Ignored
x Input to as.ubioid
check logical; Check if ID matches any existing on the DB, only used in as.ubioid

Value
A vector of uBio ids. If a taxon is not found NA is given. If more than one uBio id is found the function asks for user input (if ask = TRUE), otherwise returns NA. Comes with an attribute match to investigate the reason for NA (either 'not found', 'found' or if ask = FALSE 'NA due to ask=FALSE')

Filtering
The parameters family and rank are not used in the search to the data provider, but are used in filtering the data down to a subset that is closer to the target you want. For all these parameters, you can use regex strings since we use grep internally to match. Filtering narrows down to the set that matches your query, and removes the rest.

See Also
get_uid, ubio_search

get_uid

Get the UID codes from NCBI for taxonomic names.

Description
Retrieve the Unique Identifier (UID) of a taxon from NCBI taxonomy browser.

Usage
get_uid(sciname, ask = TRUE, verbose = TRUE, rows = NA, modifier = NULL,
  rank_query = NULL, division_filter = NULL, rank_filter = NULL, ...)

as.uid(x, check = TRUE)

## S3 method for class 'uid'
as.uid(x, check = TRUE)

## S3 method for class 'character'
as.uid(x, check = TRUE)

## S3 method for class 'list'
as.uid(x, check = TRUE)

## S3 method for class 'numeric'
as.uid(x, check = TRUE)
get_uid

## S3 method for class 'data.frame'
as.uid(x, check = TRUE)

## S3 method for class 'uid'
as.data.frame(x, ...)

get_uid_(sciname, verbose = TRUE, rows = NA)

### Arguments

- **sciname**: character; scientific name.
- **ask**: logical; should get_uid be run in interactive mode? If TRUE and more than one TSN is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.
- **verbose**: logical; If TRUE the actual taxon queried is printed on the console.
- **rows**: numeric; Any number from 1 to infinity. If the default NA, all rows are considered. Note that this function still only gives back a uid class object with one to many identifiers. See get_uid_ to get back all, or a subset, of the raw data that you are presented during the ask process.
- **modifier**: (character) A modifier to the sciname given. Options include: Organism, Scientific Name, Common Name, All Names, Division, Filter, Lineage, GC, MGC, Name Tokens, Next Level, PGC, Properties, Rank, Subtree, Synonym, Text Word. These are not checked, so make sure they are entered correctly, as is.
- **rank_query**: (character) A taxonomic rank name to modify the query sent to NCBI. See rank_ref for possible options. Though note that some data sources use atypical ranks, so inspect the data itself for options. Optional. See Querying below.
- **division_filter**: (character) A division (aka phylum) name to filter data after retrieved from NCBI. Optional. See Filtering below.
- **rank_filter**: (character) A taxonomic rank name to filter data after retrieved from NCBI. See rank_ref for possible options. Though note that some data sources use atypical ranks, so inspect the data itself for options. Optional. See Filtering below.
- **...**: Ignored
- **x**: Input to as.uid
- **check**: logical; Check if ID matches any existing on the DB, only used in as.uid

### Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions
Querying

The parameter rank_query is used in the search sent to NCBI, whereas rank_filter filters data after it comes back. The parameter modifier adds modifiers to the name. For example, modifier="Organism" adds that to the name, giving e.g., Helianthus[Organism].

Filtering

The parameters division_filter and rank_filter are not used in the search to the data provider, but are used in filtering the data down to a subset that is closer to the target you want. For all these parameters, you can use regex strings since we use grep internally to match. Filtering narrows down to the set that matches your query, and removes the rest.

Beware

NCBI does funny things sometimes. E.g., if you search on Fringella morel, a slight misspelling of the genus name, and a non-existent epithet, NCBI gives back a morel fungal species. In addition, NCBI doesn’t really do fuzzy searching very well, so if there is a slight mis-spelling in your names, you likely won’t get what you are expecting. The lesson: clean your names before using this function. Other data sources are better about fuzzy matching.

Author(s)

Eduard Szoecs, <eduardszoeCs@gmail.com>

See Also

classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_wiki, get_wormsid

Examples

```r
## Not run:
get_uid(c("Chironomus riparius", "Chaetopteryx"))
get_uid(c("Chironomus riparius", "aaa vva"))

# When not found
get_uid("howdy")
get_uid(c("Chironomus riparius", "howdy"))

# Narrow down results to a division or rank, or both
## By modifying the query
### w/ modifiers to the name
get_uid(sciname = "Aratinga acuticauda", modifier = "Organism")
get_uid(sciname = "bear", modifier = "Common Name")

### w/ rank query
get_uid(sciname = "Pinus", rank_query = "genus")
get_uid(sciname = "Pinus", rank_query = "subgenus")

### division query doesn't really work, for unknown reasons, so not available
```
## By filtering the result

### Echinacea example

#### Results w/o narrowing

`get_uid("Echinacea")`

#### w/ division

`get_uid(sciname = "Echinacea", division_filter = "eudicots")`
`get_uid(sciname = "Echinacea", division_filter = "sea urchins")`

### Satyrium example

#### Results w/o narrowing

`get_uid(sciname = "Satyrium")`

#### w/ division

`get_uid(sciname = "Satyrium", division_filter = "monocots")`
`get_uid(sciname = "Satyrium", division_filter = "butterflies")`

### Rank example

`get_uid(sciname = "Pinus")`

`get_uid(sciname = "Pinus", rank_filter = "genus")`
`get_uid(sciname = "Pinus", rank_filter = "subgenus")`

### Fuzzy filter on any filtering fields

#### uses grep on the inside

`get_uid("Satyrium", division_filter = "m")`

### specify rows to limit choices available

`get_uid('Dugesia')` # user prompt needed

`get_uid('Dugesia', rows=1)` # 2 choices, so returns only 1 row, so no choices

`get_uid('Dugesia', ask = FALSE)` # returns NA for multiple matches

### Go to a website with more info on the taxon

`res <- get_uid("Chironomus riparius")`
`browseURL(attr(res, "uri"))`

### Convert a uid without class information to a uid class

`as.uid(get_uid("Chironomus riparius"))` # already a uid, returns the same

`as.uid(get_uid(c("Chironomus riparius","Pinus contorta")))` # same

`as.uid(315567)` # numeric

`as.uid(c(315567,3339,9696))` # numeric vector, length > 1

`as.uid("315567")` # character

`as.uid(c("315567","3339","9696"))` # character vector, length > 1

`as.uid(list("315567","3339","9696"))` # list, either numeric or character

### dont check, much faster

`as.uid("315567", check=FALSE)`

`as.uid(315567, check=FALSE)`

`as.uid(c("315567","3339","9696"), check=FALSE)`

`as.uid(list("315567","3339","9696"), check=FALSE)`

(out <- as.uid(c(315567,3339,9696)))

`data.frame(out)`

`as.uid( data.frame(out) )`

### Get all data back
get_uid("Puma concolor")
get_uid("Dugesia")
get_uid("Dugesia", rows=2)
get_uid("Dugesia", rows=1:2)
get_uid(c("asdfadfasd","Pinus contorta"))

# use curl options
library(httr)
get_uid("Quercus douglasii", config=verbose())
bb <- get_uid("Quercus douglasii", config=progress())

## End(Not run)

get_wiki

Get the page name for a Wiki taxon

Description
Get the page name for a Wiki taxon

Usage

get_wiki(x, wiki_site = "species", wiki = "en", ask = TRUE,
verbose = TRUE, limit = 100, rows = NA, ...)
as.wiki(x, check = TRUE, wiki_site = "species",
wiki = "en")

## S3 method for class 'wiki'
as.wiki(x, check = TRUE, wiki_site = "species",
wiki = "en")

## S3 method for class 'character'
as.wiki(x, check = TRUE, wiki_site = "species",
wiki = "en")

## S3 method for class 'list'
as.wiki(x, check = TRUE, wiki_site = "species",
wiki = "en")

## S3 method for class 'numeric'
as.wiki(x, check = TRUE, wiki_site = "species",
wiki = "en")

## S3 method for class 'data.frame'
as.wiki(x, check = TRUE, wiki_site = "species",
wiki = "en")

## S3 method for class 'wiki'
as.data.frame(x, ...)

get.wiki(x, verbose = TRUE, wiki_site = "species", wiki = "en",
         limit = 100, rows = NA, ...)

Arguments

x (character) A vector of common or scientific names.
wiki_site (character) Wiki site. One of species (default), pedia, commons
wiki (character) language. Default: en
ask logical; should get.wiki be run in interactive mode? If TRUE and more than one
     wiki is found for the species, the user is asked for input. If FALSE NA is returned
     for multiple matches.
verbose logical; should progress be printed?
limit (integer) number of records to return
rows numeric; Any number from 1 to infinity. If the default NA, all rows are consid-
     ered. Note that this function still only gives back a wiki class object with one to
     many identifiers. See get.wiki to get back all, or a subset, of the raw data that
     you are presented during the ask process.
... Ignored
check logical; Check if ID matches any existing on the DB, only used in as.wiki

Details

For type = pedia, we use the english language site by default. Set the language parameter for a
different language site.

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more
than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA.
If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class,
which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions

See Also

classification

Other taxonomic-ids: get.boldid, get.colid, get.eolid, get_gbifid, get_ids, get_iucn,
get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wormsid

Examples

## Not run:
get.wiki(x = "Quercus douglasii")
get.wiki(x = "Quercus")
get.wiki(x = "Quercus", "pedia")
get_wormsid

get_wormsid

get_wormsid(x = "Quercu", "commons")

# diff. wikis with wikipedia
get_wiki("Malus domestica", "pedia")
get_wiki("Malus domestica", "pedia", "fr")

# as coercion
as.wiki("Malus_domestica")
as.wiki("Malus_domestica", wiki_site = "commons")
as.wiki("Malus_domestica", wiki_site = "pedia")
as.wiki("Malus_domestica", wiki_site = "pedia", wiki = "fr")
as.wiki("Malus_domestica", wiki_site = "pedia", wiki = "da")

## End(Not run)

get_wormsid  

---

Get Worms ID for a taxon name

---

Description

Retrieve Worms ID of a taxon from World Register of Marine Species (WORMS).

Usage

get_wormsid(query, searchtype = "scientific", accepted = FALSE,
    ask = TRUE, verbose = TRUE, rows = NA, ...)

as.wormsid(x, check = TRUE)

## S3 method for class 'wormsid'
as.wormsid(x, check = TRUE)

## S3 method for class 'character'
as.wormsid(x, check = TRUE)

## S3 method for class 'list'
as.wormsid(x, check = TRUE)

## S3 method for class 'numeric'
as.wormsid(x, check = TRUE)

## S3 method for class 'data.frame'
as.wormsid(x, check = TRUE)

## S3 method for class 'wormsid'
as.data.frame(x, ...)

get_wormsid(query, verbose = TRUE, searchtype = "scientific",
    accepted = TRUE, rows = NA, ...)
get_wormsid

Arguments

query character; A vector of common or scientific names.
searchtype character; One of ‘scientific’ or ‘common’, or any unique abbreviation
accepted logical; If TRUE, removes names that are not accepted valid names by WORMS. Set to FALSE (default) to give back both accepted and unaccepted names.
ask logical; should get_wormsid be run in interactive mode? If TRUE and more than one wormsid is found for the species, the user is asked for input. If FALSE NA is returned for multiple matches.
verbose logical; should progress be printed?
rows numeric; Any number from 1 to infinity. If the default NaN, all rows are considered. Note that this function still only gives back a wormsid class object with one to many identifiers. See get_wormsid_ to get back all, or a subset, of the raw data that you are presented during the ask process.

Value

A vector of taxonomic identifiers as an S3 class. If a taxon is not found an NA is given. If more than one identifier is found the function asks for user input if ask = TRUE, otherwise returns NA. If ask=FALSE and rows does not equal NA, then a data.frame is given back, but not of the uid class, which you can’t pass on to other functions as you normally can.

See get_id_details for further details including attributes and exceptions

See Also
classification

Other taxonomic-ids: get_boldid, get_colid, get_eolid, get_gbifid, get_ids, get_iucn, get_natservid, get_nbnid, get_tolid, get_tpsid, get_tsn, get_uid, get_wiki

Examples

## Not run:
(x <- get_wormsid('Platanista gangetica'))
attributes(x)
attr(x, "match")
attr(x, "multiple_matches")
attr(x, "pattern_match")
attr(x, "uri")

gewormsid('Gadus morhua')
gewormsid('Pomatomus saltatrix')
gewormsid(c("Platanista gangetica", "Lichenopora neapolitana"))

# by common name
gewormsid("dolphin", 'common')
gni_details

Search for taxonomic name details using the Global Names Index.

Description

Uses the Global Names Index, see http://gni.globalnames.org/.
Usage

gni_details(id, all_records = 1, ...)

Arguments

id Name id. Required.
all_records If all_records is 1, GNI returns all records from all repositories for the name string (takes 0, or 1 [default]).
... Curl options passed on to GET

Value

Data.frame of results.

Author(s)

Scott Chamberlain myrmecocystus@gmail.com

See Also

gnr_datasources, gni_search.

Examples

## Not run:
gni_details(id = 17802847)
library("plyr")
ldply(list(1265133, 17802847), gni_details)

# pass on curl options to httr
library("httr")
gni_details(id = 17802847, config = verbose())

## End(Not run)

---

**gni_parse**

Parse scientific names using EOL's name parser.

Description

Parse scientific names using EOL's name parser.

Usage

gni_parse(names, ...)

Usage

gni_details(id, all_records = 1, ...)

Arguments

id Name id. Required.
all_records If all_records is 1, GNI returns all records from all repositories for the name string (takes 0, or 1 [default]).
... Curl options passed on to GET

Value

Data.frame of results.

Author(s)

Scott Chamberlain myrmecocystus@gmail.com

See Also

gnr_datasources, gni_search.

Examples

## Not run:
gni_details(id = 17802847)
library("plyr")
ldply(list(1265133, 17802847), gni_details)

# pass on curl options to httr
library("httr")
gni_details(id = 17802847, config = verbose())

## End(Not run)
gni_search

Arguments

names A vector of length 1 or more of taxonomic names
... Curl options passed on to GET

Value

A data.frame with results, the submitted names, and the parsed names with additional information.

References

http://gni.globalnames.org/

See Also

gbif_parse

Examples

## Not run:
gni_parse("Cyanistes caeruleus")
gni_parse("Plantago minor")
gni_parse("Plantago minor minor")
gni_parse(c("Plantago minor minor","Helianthus annuus texanus"))

# pass on curl options to httr
library("httr")
gni_parse("Cyanistes caeruleus", config = verbose())

## End(Not run)

---

gni_search Search for taxonomic names using the Global Names Index.

Description

Uses the Global Names Index, see http://gni.globalnames.org/.

Usage

gni_search(search_term = NULL, per_page = NULL, page = NULL,
justtotal = FALSE, parse_names = FALSE, ...)

Arguments

search_term  Name pattern you want to search for. WARNING: Does not work for vernacular/common names. Search term may include following options (Note: can, uni, gen, sp, ssp, au, yr work only for parsed names):
  - * wild card - Search by part of a word (E.g.: planta*)
  - exact exact match - Search for exact match of a literal string (E.g.: exact:Parus major)
  - ns name string- Search for literal string from its beginning (other modifiers will be ignored) (E.g.: ns:parus maj*)
  - can canonical form- Search name without authors (other modifiers will be ignored) (E.g.: can:parus major)
  - uni uninomial- Search for higher taxa (E.g.: uni:parus)
  - gen genus - Search by genus epithet of species name (E.g.: gen:parus)
  - sp species - Search by species epithet (E.g.: sp:major)
  - ssp subspecies - Search by infraspecies epithet (E.g.: ssp:major)
  - au author - Search by author word (E.g.: au:Shipunov)
  - yr year - Search by year (E.g.: yr:2005)

per_page  Number of items per one page (numbers larger than 1000 will be decreased to 1000) (default is 30).

page  Page number you want to see (default is 1).

justtotal  Return only the total results found.

parse_names  If TRUE, use gni_parse to parse names. Default: FALSE

...  Curl options passed on to GET

Details

Note that you can use fuzzy searching, e.g., by attaching an asterisk to the end of a search term. See the first two examples below.

Value

data.frame of results.

Author(s)

Scott Chamberlain myrmecocystus@gmail.com

References


See Also

gnr_datasources, gni_search.
**Examples**

```r
## Not run:
gni_search(search_term = "ani")
gni_search(search_term = "ama*", per_page = 3, page = 2)
gni_search(search_term = "animalia", per_page = 8, page = 1)
gni_search(search_term = "animalia", per_page = 8, page = 1, justtotal=TRUE)

gni_search(search_term = "Cyanistes caeruleus", parse_names=TRUE)

# pass on curl options to httr
library("httr")
gni_search(search_term = "ani", config = verbose())

## End(Not run)
```

---

**gnr_datasources**  
*Get data sources for the Global Names Resolver.*

**Description**

Retrieve data sources used in Global Names Index, see [http://gni.globalnames.org/](http://gni.globalnames.org/) for information.

**Usage**

```r
gnr_datasources(todf = TRUE)
```

**Arguments**

- `todf` logical; Should a data.frame be returned?

**Value**

json or a data.frame

**Author(s)**

Scott Chamberlain myrmecocystus@gmail.com

**See Also**

`gnr_resolve`
Examples

## Not run:

```r
# all data sources
gnr_datasources()

# give me the id for EOL
out <- gnr_datasources()
out[out$title == "EOL", "id"]

# Fuzzy search for sources with the word zoo
out <- gnr_datasources()
out[agrep("zoo", out$title, ignore.case = TRUE), ]

# Output as a list
gnr_datasources(FALSE)

## End(Not run)
```

---

gnr_resolve

Resolve names using Global Names Resolver.

Description

Resolve names using Global Names Resolver.

Usage

```r
gnr_resolve(names, data_source_ids = NULL, resolve_once = FALSE,
            with_context = FALSE, canonical = FALSE, highestscore = TRUE,
            best_match_only = FALSE, preferred_data_sources = NULL,
            with_canonical_ranks = FALSE, http = "get", cap_first = TRUE,
            fields = "minimal", ...)
```

Arguments

- **names** character; taxonomic names to be resolved. Doesn’t work for vernacular/common names.
- **data_source_ids** character; IDs to specify what data source is searched. See `gnr_datasources`.
- **resolve_once** logical; Find the first available match instead of matches across all data sources with all possible renderings of a name. When TRUE, response is rapid but incomplete.
- **with_context** logical; Reduce the likelihood of matches to taxonomic homonyms. When TRUE, a common taxonomic context is calculated for all supplied names from matches in data sources that have classification tree paths. Names out of determined context are penalized during score calculation.
canonical logical; If FALSE (default), gives back names with taxonomic authorities. If TRUE, returns canonical names (without tax. authorities and abbreviations).

highestscore logical; Return those names with the highest score for each searched name? Defunct

best_match_only (logical) If TRUE, best match only returned. Default: FALSE

preferred_data_sources (character) A vector of one or more data source IDs.

with_canonical_ranks (logical) Returns names with infraspecific ranks, if present. If TRUE, we force canonical=TRUE, otherwise this parameter would have no effect. Default: FALSE

http The HTTP method to use, one of "get" or "post". Default: "get". Use http="post" with large queries. Queries with > 300 records use "post" automatically because "get" would fail

cap_first (logical) For each name, fix so that the first name part is capitalized, while others are not. This web service is sensitive to capitalization, so you’ll get different results depending on capitalization. First name capitalized is likely what you’ll want and is the default. If FALSE, names are not modified. Default: TRUE

fields (character) One of minimal (default) or all. Minimal gives back just four fields, whereas all gives all fields back.

... Curl options passed on to GET

Value

A data.frame with one attribute not_known: a character vector of taxa unknown to the Global Names Index. Access like attr(output, "not_known"), or attributes(output)$not_known. Columns of the output data.frame:

- user_supplied_name (character) - the name you passed in to the names parameter, unchanged.
- submitted_name (character) - the actual name submitted to the GNR service
- data_source_id (integer/numeric) - data source ID
- data_source_title (character) - data source name
- gni_uuid (character) - Global Names Index UUID (aka identifier)
- matched_name (character) - the matched name in the GNR service
- matched_name2 (character) - returned if canonical=TRUE, in which case matched_name is not returned
- classification_path (character) - names of the taxonomic classification tree, with names separated by pipes ()
- classification_path_ranks (character) - ranks of the taxonomic classification tree, with names separated by pipes ()
- classification_path_ids (character) - identifiers of the taxonomic classification tree, with names separated by pipes ()
- taxon_id (character) - taxon identifier
- edit_distance (integer/numeric) - edit distance
• imported_at (character) - date imported
• match_type (integer/numeric) - match type
• match_value (character) - description of match type
• prescore (character) - pre score
• score (numeric) - score
• local_id (character) - local identifier
• url (character) - URL for taxon
• global_id (character) - global identifier
• current_taxon_id (character) - current taxon id
• current_name_string (character) - current name string

Note that names (i.e. rows) are dropped that are NA, are zero length strings, are not character vectors, or are not found by the API.

Author(s)
Scott Chamberlain <myrmecocystus@gmail.com>

References
http://gnrd.globalnames.org/api http://gnrd.globalnames.org/

See Also
gnr_datasources tnrs

Examples

```r
# Not run:
gnr_resolve(names = c("Helianthus annuus", "Homo sapiens"))
gnr_resolve(names = c("Asteraceae", "Plantae"))

# Using data source 12 (Encyclopedia of Life)
sources <- gnr_datasources()
sources
eol <- sources$id[sources$title == 'EOL']
gnr_resolve(names=c("Helianthus annuus","Homo sapiens"), data_source_ids=eol)

# Two species in the NE Brazil catalogue
sps <- c("Justicia brasiliiana","Schinopsis brasiliensis")
gnr_resolve(names = sps, data_source_ids = 145)

# Best match only, compare the two
gnr_resolve(names = "Helianthus annuus", best_match_only = FALSE)
gnr_resolve(names = "Helianthus annuus", best_match_only = TRUE)

# Preferred data source
gnr_resolve(names = "Helianthus annuus", preferred_data_sources = c(3,4))
```
# Return canonical names - default is canonical=FALSE
head(gnr_resolve(names = "Helianthus annuus"))
head(gnr_resolve(names = "Helianthus annuus", canonical=TRUE))

# Return canonical names with authority stripped but
# ranks still present
gnr_resolve("Scorzonera hispanica L. subsp. asphodeloides Wallr.")
## vs.
gnr_resolve("Scorzonera hispanica L. subsp. asphodeloides Wallr.",
with_canonical_ranks = TRUE)

## End(Not run)

---

ion

**ION - Index to Organism Names**

**Description**

ION - Index to Organism Names

**Usage**

ion(x, ...)

**Arguments**

- **x**
  - An LSID number. Required.
- **...**
  - Curl options passed on to `GET`

**Value**

A data.frame

**References**

http://www.organismnames.com

**Examples**

## Not run:
ion(155166)
ion(298678)
ion(4796748) # ursus americanus
ion(1280626) # puma concolor

## End(Not run)
iplant_resolve  
*iPlant name resolution*

**Description**

*iPlant name resolution*

**Usage**

```
iplant_resolve(query, retrieve = "all", ...)
```

**Arguments**

- `query` Vector of one or more taxonomic names. (no common names)
- `retrieve` Specifies whether to retrieve all matches for the names submitted. One of ‘best’ (retrieves only the single best match for each name submitted) or ‘all’ (retrieves all matches)
- `...` Curl options passed on to *GET*

**Value**

A data.frame

**Examples**

```r
## Not run:
iplant_resolve(query=c("Helianthus annuus", "Homo sapiens"))
iplant_resolve("Helianthusss")
iplant_resolve("Pooa")

library("httr")
iplant_resolve("Helianthusss", config=verbose())

## End(Not run)
```

ipni_search  
*Search for names in the International Plant Names Index (IPNI).*

**Description**

Note: This data source is also provided in the Global Names Index (GNI) (http://gni.globalnames.org/data_sources). The interface to the data is different among the two services though.
Usage

```r
ipni_search(family = NULL, infrafamily = NULL, genus = NULL, infragenus = NULL, species = NULL, infraspecies = NULL, publicationtitle = NULL, authorabbrev = NULL, includepublicationauthors = NULL, includebasionymauthors = NULL, geounit = NULL, addedsince = NULL, modifiedsince = NULL, isapnirecord = NULL, isgcirecord = NULL, isikrecord = NULL, ranktoreturn = NULL, output = "minimal", ...)
```

Arguments

- **family**: Family name to search on (Optional)
- **infrafamily**: Infrafamilial name to search on (Optional)
- **genus**: Genus name to search on (Optional)
- **infragenus**: Infrageneric name to search on (Optional)
- **species**: Species name to search on (Optional) - Note, this is the epithet, not the full genus - epithet name combination.
- **infraspecies**: Infraspecific name to search on (Optional)
- **publicationtitle**: Publication name or abbreviation to search on. Again, replace any spaces with a '+' (e.g. 'J.+Bot.') (Optional)
- **authorabbrev**: Author standard form to search on (publishing author, basionym author or both - see below) (Optional)
- **includepublicationauthors**: TRUE (default) to include the taxon author in the search or FALSE to exclude it
- **includebasionymauthors**: TRUE (default) to include the basionym author in the search or FALSE to exclude it
- **geounit**: Country name or other geographical unit to search on (see the help pages for more information and warnings about the use of this option) (Optional)
- **addedsince**: Date to search on in the format 'yyyy-mm-dd', e.g. 2005-08-01 for all records added since the first of August, 2005. (see the help pages for more information and warnings about the use of this option) (Optional. If supplied must be in format YYYY-MM-DD and must be greater than or equal to 1984-01-01.)
- **modifiedsince**: Date to search on in the format 'yyyy-mm-dd', e.g. 2005-08-01 for all records edited since the first of August, 2005. (See the help pages for more information about the use of this option) (Optional. If supplied must be in format YYYY-MM-DD and must be greater than or equal to 1993-01-01.)
- **isapnirecord**: FALSE (default) to exclude records from the Australian Plant Name Index
- **isgcirecord**: FALSE (default) to exclude records from the Gray Cards Index
- **isikrecord**: FALSE (default) to exclude records from the Index Kewensis
- **ranktoreturn**: One of a few options to choose the ranks returned. See details.
- **output**: One of minimal (default), classic, short, or extended
- **...**: Curl options passed on to GET (Optional). Default: returns all ranks.
itis_acceptname

**Details**

`rankToReturn` options:

- "all" - all records
- "fam" - family records
- "infrafam" - infrafamilial records
- "gen" - generic records
- "infragen" - infrageneric records
- "spec" - species records
- "infraspec" - infraspecific records

**Value**

A data frame

**References**

http://www.ipni.org/link_to_ipni.html

**Examples**

```r
## Not run:
ipni_search(genus='Brintonia', isapnirecord=TRUE, isgcirecord=TRUE, isikrecord=TRUE)
head(ipni_search(genus='Ceanothus'))
head(ipni_search(genus='Pinus', species='contorta'))

# Different output formats
ead(ipni_search(genus='Ceanothus'))
ead(ipni_search(genus='Ceanothus', output='short'))
ead(ipni_search(genus='Ceanothus', output='extended'))

## End(Not run)
```

### itis_acceptname

*Retrieve accepted TSN and name*

**Description**

Retrieve accepted TSN and name

**Usage**

`itis_acceptname(searchtsn, ...)`
Arguments

searchtsn One or more TSN for a taxon (numeric/integer)

... Curl options passed on to GET

Value

data.frame with with row number equal to input vector length, and with three columns:

- submittedtsn (numeric) - The submitted TSN
- acceptedname (character) - The accepted name - if the submitted TSN is the accepted TSN, then this is `NA_character_` because ITIS does not return a name along with the TSN if it’s an accepted name. We could make an extra HTTP request to ITIS, but that means additional time.
- acceptedtsn (numeric) - The accepted TSN
- author (character) - taxonomic authority

Examples

```r
## Not run:
# TSN accepted - good name
itis_acceptname(searchtsn = 208527)

# TSN not accepted - input TSN is old
itis_acceptname(searchtsn = 504239)

# many accepted names
ids <- c(18161, 18162, 18163, 18164, 18165, 18166, 46173, 46174, 46178, 46181, 46186, 46193, 46196, 46197, 46200, 46201, 46204, 46207, 46867, 46868)
itis_acceptname(searchtsn = ids)

# many unaccepted names
ids <- c(39087, 46208, 46973, 46976, 46978, 46980, 47295, 47445, 47448, 47512, 47515, 47527, 47546, 47622, 47783, 47786, 47787, 47788, 47835, 47839)
itis_acceptname(searchtsn = ids)

# many: mix of accepted and unaccepted names
ids <- c(18161, 18162, 47527, 47546, 47622, 46200)
itis_acceptname(searchtsn = ids)

## End(Not run)
```
itis_downstream

Retrieve all taxa names or TSNs downstream in hierarchy from given TSN.

Description

Retrieve all taxa names or TSNs downstream in hierarchy from given TSN.

Usage

itis_downstream(tsns, downto, intermediate = FALSE, ...)

Arguments

tsns A taxonomic serial number.
downto The taxonomic level you want to go down to. See examples below. The taxonomic level IS case sensitive, and you do have to spell it correctly. See data(rank_ref) for spelling.
intermediate (logical) If TRUE, return a list of length two with target taxon rank names, with additional list of data.frame’s of intermediate taxonomic groups. Default: FALSE
...

Further args passed on to rank_name and hierarchy_down

Value

Data.frame of taxonomic information downstream to family from e.g., Order, Class, etc., or if intermediate=TRUE, list of length two, with target taxon rank names, and intermediate names.

Author(s)

Scott Chamberlain <myrmecocystus@gmail.com>

Examples

```r
## Not run:
## the plant class Bangiophyceae, tsn 846509
itis_downstream(tsns = 846509, downto="genus")
itis_downstream(tsns = 846509, downto="genus", intermediate=TRUE)

# get families downstream from Acridoidea
itis_downstream(tsns = 650497, "family")
# here, intermediate leads to the same result as the target
itis_downstream(tsns = 650497, "family", intermediate=TRUE)

# get species downstream from Ursus
itis_downstream(tsns = 180541, "species")

# get orders down from the Division Rhodophyta (red algae)
```
**itis_getrecord**  
*Get full ITIS record for one or more ITIS TSN’s or lsid’s.*

**Description**

Get full ITIS record for one or more ITIS TSN’s or lsid’s.

**Usage**

```r
itis_getrecord(values, by = "tsn", ...)
```

**Arguments**

- **values** (character) One or more TSN’s (taxonomic serial number) or lsid’s for a taxonomic group
- **by** (character) By "tsn" (default) or "lsid"
- **...** Further arguments passed on to `full_record`

**Details**

You can only enter values in tsn parameter or lsid, not both.

**Examples**

```r
## Not run:
# by TSN
itis_getrecord(202385)
itis_getrecord(c(202385, 70340))

# by lsid
itis_getrecord("urn:lsid:itis.gov:itis_tsn:202385", "lsid")

## End(Not run)
```
itis_hierarchy

Description

Get hierarchies from TSN values, full, upstream only, or immediate downstream only

Usage

itis_hierarchy(translate, what = "full", ...)

Arguments

- **tsn**: One or more TSN’s (taxonomic serial number). Required.
- **what**: One of full (full hierarchy), up (immediate upstream), or down (immediate downstream)
- **...**: Further arguments passed on to hierarchy_full, hierarchy_up, or hierarchy_down

Details

Note that itis_downstream gets taxa downstream to a particular rank, while this function only gets immediate names downstream.

See Also

itis_downstream

Examples

```r
## Not run:
# Get full hierarchy
itis_hierarchy(translate=180543)

# Get hierarchy upstream
itis_hierarchy(translate=180543, "up")

# Get hierarchy downstream
itis_hierarchy(translate=180543, "down")

# Many tsn's
itis hierarchy(translate=c(180543,41074,36616))

## End(Not run)
```
**itis_kingdomnames**  
*Get kingdom names*

**Description**
Get kingdom names

**Usage**

```r
itis_kingdomnames(tsn = NULL, ...)
```

**Arguments**

- `tsn`  
  One or more TSN’s (taxonomic serial number)

- `...`  
  Further arguments passed on to `getkingdomnamefromtsn`

**Examples**

```r
# Not run:
itis_kingdomnames(202385)
itis_kingdomnames(tsn=c(202385,183833,180543))
```

# End(Not run)

---

**itis_lsid**  
*Get TSN from LSID*

**Description**
Get TSN from LSID

**Usage**

```r
itis_lsid(lsid = NULL, what = "tsn", ...)
```

**Arguments**

- `lsid`  
  One or more lsid’s

- `what`  
  What to retrieve. One of tsn, record, or fullrecord

- `...`  
  Further arguments passed on to `lsid2tsn, record, or full_record`
Examples

```r
## Not run:
# Get TSN
itis_lsid("urn:lsid:itis.gov:itis_tsn:180543")

# Get partial record
itis_lsid("urn:lsid:itis.gov:itis_tsn:180543", "record")

# Get full record
itis_lsid("urn:lsid:itis.gov:itis_tsn:180543", "fullrecord")

# An invalid lsid (a tsn actually)
itis_lsid(202385)

## End(Not run)
```

### itis_name

Get taxonomic names for a given taxonomic name query.

#### Description
Get taxonomic names for a given taxonomic name query.

#### Usage

`itis_name(query = NULL, get = NULL)`

#### Arguments

- `query` TSN number (taxonomic serial number).
- `get` The rank of the taxonomic name to get.

#### Value

Taxonomic name for the searched taxon.

#### Examples

```r
## Not run:
itis_name(query="Helianthus annuus", get="family")

## End(Not run)
```
itis_native

Get jurisdiction data, i.e., native or not native in a region.

Description

Get jurisdiction data, i.e., native or not native in a region.

Usage

itis_native(tsn = NULL, what = "bytsn", ...)

Arguments

tsn One or more TSN’s (taxonomic serial number)
what One of bytsn, values, or originvalues
... Further arguments passed on to jurisdictional_origin, jurisdiction_values, or jurisdiction_origin_values

Examples

## Not run:
# Get values
itis_native(what="values")

# Get origin values
itis_native(what="originvalues")

# Get values by tsn
itis_native(tsn=180543)
itis_native(tsn=c(180543,41074,36616))

## End(Not run)

itis.refs

Get references related to a ITIS TSN.

Description

Get references related to a ITIS TSN.

Usage

itis.refs(tsn, ...)


**Arguments**

- **tsn**: One or more TSN’s (taxonomic serial number) for a taxonomic group (numeric)
- ... Further arguments passed on to getpublicationsfromtsn

**Examples**

```r
## Not run:
itis.refs(202385)
itis.refs(c(202385, 70340))

## End(Not run)
```

**itis_taxrank**

Retrieve taxonomic rank name from given TSN.

**Description**

Retrieve taxonomic rank name from given TSN.

**Usage**

```r
itis_taxrank(query = NULL, ...)
```

**Arguments**

- **query**: TSN for a taxonomic group (numeric). If query is left as default (NULL), you get all possible rank names, and their TSN’s (using function `rank_names`). There is slightly different terminology for Monera vs. Plantae vs. Fungi vs. Animalia vs. Chromista, so there are separate terminologies for each group.
- ... Further arguments passed on to `rank_name`

**Details**

You can print messages by setting `verbose=FALSE`.

**Value**

Taxonomic rank names or data.frame of all ranks.

**Examples**

```r
## Not run:
# All ranks
itis_taxrank()

# A single TSN
itis_taxrank(query=202385)
```
**itis_terms**

Get ITIS terms, i.e., tsn’s, authors, common names, and scientific names.

### Description

Get ITIS terms, i.e., tsn’s, authors, common names, and scientific names.

### Usage

```r
itis_terms(query, what = "both", ...)
```

### Arguments

- **query**: One or more common or scientific names, or partial names
- **what**: One of both (search common and scientific names), common (search just common names), or scientific (search just scientific names)
- **...**: Further arguments passed on to `terms`

### Examples

```r
# Not run:
# Get terms searching both common and scientific names
itis_terms(query = 'bear')

# Get terms searching just common names
itis_terms(query = 'tarweed', "common")

# Get terms searching just scientific names
itis_terms(query = 'Poa annua', "scientific")

# End(Not run)
```
iucn_getname

Get any matching IUCN species names

Description

Get any matching IUCN species names

Usage

iucn_getname(name, verbose = TRUE, ...)

Arguments

name character; taxon name
verbose logical; should messages be printed?
... Further arguments passed on to iucn_summary

Details

Beware: IUCN functions can give back incorrect data. This isn’t our fault. We do our best to get you the correct data quickly, but sometimes IUCN gives back the wrong data, and sometimes Global Names gives back the wrong data. We will fix these as soon as possible. In the meantime, just make sure that the data you get back is correct.

Value

Character vector of names that matched in IUCN

See Also

iucn_summary iucn_status

Examples

## Not run:
iucn_getname(name = "Cyanistes caeruleus")
iucn_getname(name = "Panthera uncia")

# not found in global names
# iucn_getname(name = "Abronia pinsapo")

# not found in IUCN search
iucn_getname(name = "Acacia allenii")

## End(Not run)
iucn_id  

Get an ID for a IUCN listed taxon

Description

Get an ID for a IUCN listed taxon

Usage

iucn_id(sciname, key = NULL, ...)

Arguments

sciname character; Scientific name. Should be cleaned and in the format `<Genus> <Species>`. One or more.
key (character) required. your IUCN Redlist API key. See `rredlist-package` for help on authenticating with IUCN Redlist
... Curl options passed on to `curl::HttpClient`

Value

A named list (names are input taxa names) of one or more IUCN IDs. Taxa that aren’t found are silently dropped.

Author(s)

Scott Chamberlain, <myrmecocystus@gmail.com>

Examples

```r
## Not run:
iucn_id("Branta canadensis")
iucn_id("Branta bernicla")
iucn_id("Panthera uncia")
iucn_id("Lynx lynx")

# many names
iucn_id(c("Panthera uncia", "Lynx lynx"))

# many names, some not found
iucn_id(c("Panthera uncia", "Lynx lynx", "foo bar", "hello world"))

# a name not found
iucn_id("Foo bar")

## End(Not run)
```
**iucn_status**

*Extractor functions for iucn-class.*

**Description**

Extractor functions for iucn-class.

**Usage**

```r
desc <- iucn_status(x, ...)```

**Arguments**

- `x`: an iucn-object as returned by `iucn_summary`
- `...`: Currently not used

**Value**

A character vector with the status.

**See Also**

`iucn_summary`

**Examples**

```r
## Not run:
ia <- iucn_summary(c("Panthera uncia", "Lynx lynx"))
iucn_status(ia)
## End(Not run)
```

---

**iucn_summary**

*Get a summary from the IUCN Red List*

**Description**

Get a summary from the IUCN Red List (http://www.iucnredlist.org/).

**Usage**

```r
iucn_summary(x, parallel = FALSE, distr_detail = FALSE, key = NULL, ...)
iucn_summary_id(species_id, silent = TRUE, parallel = FALSE, distr_detail = FALSE, ...)
```
Arguments

- **x**: character; Scientific name. Should be cleaned and in the format `<Genus><Species>`.
- **parallel**: logical; Search in parallel to speed up search. You have to register a parallel backend if `TRUE`. See e.g., `doMC, doSNOW, etc.`
- **distr_detail**: logical; If `TRUE`, the geographic distribution is returned as a list of vectors corresponding to the different range types: native, introduced, etc.
- **key**: a Redlist API key, get one from [http://api3.iucnredlist.org/api/v3/token](http://api3.iucnredlist.org/api/v3/token) Required for `iucn_summary` but not needed for `iucn_summary_id`. Defaults to NULL in case you have your key stored (see Redlist Authentication below).
- **...** Currently not used.
- **species_id**: an IUCN ID
- **silent**: logical; Make errors silent or not (when species not found).

Details

Beware: IUCN functions can give back incorrect data. This isn’t our fault. We do our best to get you the correct data quickly, but sometimes IUCN gives back the wrong data, and sometimes Global Names gives back the wrong data. We will fix these as soon as possible. In the meantime, just make sure that the data you get back is correct.

`iucn_summary` has a default method that errors when anything’s passed in that’s not character or `iucn` class - a `iucn_summary` character method for when you pass in taxon names - and a `iucn_summary` `iucn` method so you can pass in `iucn` class objects as output from `get_iucn` or `as_iucn`. If you already have IUCN IDs, coerce them to `iucn` class via `as_iucn(. . ., check = FALSE)`

Value

A list (for every species one entry) of lists with the following items:

- **status**: Red List Category.
- **history**: History of status, if available.
- **distr**: Geographic distribution, if available.
- **trend**: Trend of population size, if available.

Redlist Authentication

`iucn_summary` uses the new Redlist API for searching for a IUCN ID, so we use the `rl_search` function internally. This function requires an API key. Get the key at [http://api3.iucnredlist.org/api/v3/token](http://api3.iucnredlist.org/api/v3/token), and pass it to the key parameter, or store it in your .Renviron file like `IUCN_REDLIST_KEY=yourkey` or in your .Rprofile file like `options(iucn_redlist_key=’yourkey’)`. We strongly encourage you to not pass the key in the function call but rather store it in one of those two files. This key will also set you up to use the `rredlist` package.
Note

Not all entries (history, distr, trend) are available for every species and NA is returned. `iucn_status` is an extractor function to easily extract status into a vector.

Author(s)

Eduard SzoeCs, <eduardszoeCs@gmail.com>
Philippe Marchand, <marchand.philippe@gmail.com>
Scott Chamberlain, <myrmecocystus@gmail.com>

See Also

`iucn_status`

Examples

```r
# Not run:
# if you send a taxon name, an IUCN API key is required
# here, the key is being detected from a .Rprofile file
# or .Renviron file, See "Redlist Authentication" above
iucn_summary("Lutra lutra")

ia <- iucn_summary(c("Panthera uncia", "Lynx lynx"))
ia <- iucn_summary(c("Panthera uncia", "Lynx lynx", "aaa"))

# get detailed distribution
iac <- iucn_summary(x="Ara chloropterus", distr_detail = TRUE)
iac[[1]]$distr

# If you pass in an IUCN ID, you don't need to pass in a Redlist API Key
ia <- iucn_summary_id(c(22732, 12519))
# extract status
iucn_status(ia)
# extract other available information
ia["Lynx lynx"]$history
ia["Panthera uncia"]$distr
ia[[2]]$trend
# the outputs aren't quite identical, but we're working on it
identical(
  iucn_summary_id(c(22732, 12519)),
  iucn_summary(as.iucn(c(22732, 12519))))
)

# using parallel, e.g., with doMC package, register cores first
# library(doMC)
# registerDoMC(cores = 2)
# nms <- c("Panthera uncia", "Lynx lynx", "Ara chloropterus", "Lutra lutra")
# (res <- iucn_summary(nms, parallel = TRUE))

# End(Not run)
```
lowest_common

Retrieve the lowest common taxon and rank for a given taxon name or ID

Description

Retrieve the lowest common taxon and rank for a given taxon name or ID

Usage

```r
lowest_common(...)
```

## Default S3 method:
```r
lowest_common(x, db = NULL, rows = NA,
    class_list = NULL, low_rank = NULL, ...)
```

## S3 method for class 'uid'
```r
lowest_common(x, class_list = NULL, low_rank = NULL, ...)
```

## S3 method for class 'tsn'
```r
lowest_common(x, class_list = NULL, low_rank = NULL, ...)
```

## S3 method for class 'gbifid'
```r
lowest_common(x, class_list = NULL, low_rank = NULL, ...)
```

## S3 method for class 'colid'
```r
lowest_common(x, class_list = NULL, low_rank = NULL, ...)
```

## S3 method for class 'tolid'
```r
lowest_common(x, class_list = NULL, low_rank = NULL, ...)
```

Arguments

- `...` Other arguments passed to `get_tsn`, `get_uid`, `get_colid`, `get_gbifid`, `get_tolid`
- `x` Vector of taxa names (character) or id (character or numeric) to query.
- `db` character; database to query. either ncbi, itis, gbif, col, or tol.
- `rows` (numeric) Any number from 1 to infinity. If the default NA, all rows are considered. Note that this parameter is ignored if you pass in a taxonomic id of any of the acceptable classes: tsn, colid, gbifid, tolid. NCBI has a method for this function but rows doesn’t work.
- `class_list` (list) A list of classifications, as returned from `classification`
- `low_rank` (character) taxonomic rank to return, of length 1
Value

NA when no match, or a data.frame with columns

- name
- rank
- id

Author(s)

Jimmy O'Donnell <jodonellbio@gmail.com> Scott Chamberlain <myrmecocystus@gmail.com>

Examples

```r
# Not run:
id <- c("9031", "9823", "9606", "9470")
id_class <- classification(id, db = 'ncbi')
lowest_common(id[2:4], db = "ncbi")
lowest_common(id[2:4], db = "ncbi", low_rank = 'class')
lowest_common(id[2:4], db = "ncbi", low_rank = 'family')
lowest_common(id[2:4], class_list = id_class)
lowest_common(id[2:4], class_list = id_class, low_rank = 'class')
lowest_common(id[2:4], class_list = id_class, low_rank = 'family')

# COL
taxa <- c('Nycticebus coucang', 'Homo sapiens', 'Sus scrofa')
cls <- classification(taxa, db = "col")
lowest_common(taxa, class_list = cls, db = "col")
lowest_common(get_colid(taxa), class_list = cls)
xx <- get_colid(taxa)
lowest_common(xx, class_list = cls)

# TOL
taxa <- c("Angraecum sesquipedale", "Dracula vampira",
             "Masdevallia coccinea")
(cls <- classification(taxa, db = "tol"))
lowest_common(taxa, db = "tol", class_list = cls)
lowest_common(get_tolid(taxa), class_list = cls)
xx <- get_tolid(taxa)
lowest_common(xx, class_list = cls)

spp <- c("Sus scrofa", "Homo sapiens", "Nycticebus coucang")
lowest_common(spp, db = "ncbi")
lowest_common(get_uid(spp))

lowest_common(spp, db = "itis")
lowest_common(get_tsn(spp))

gbifid <- c("2704179", "3119195")
lowest_common(gbifid, db = "gbif")
spp <- c("Poa annua", "Helianthus annuus")
```
names_list

Get a random vector of species names.

Description

Family and order names come from the APG plant names list. Genus and species names come from Theplantlist.org.
**Usage**

```r	names_list(rank = "genus", size = 10)
```

**Arguments**

- **rank**  
  Taxonomic rank, one of species, genus (default), family, order.
- **size**  
  Number of names to get. Maximum depends on the rank.

**Value**

Vector of taxonomic names.

**Author(s)**

Scott Chamberlain <myrmecocystus@gmail.com>

**Examples**

```r
names_list()
names_list('species')
names_list('genus')
names_list('family')
names_list('order')
names_list('order', '2')
names_list('order', '15')
```

# You can get a lot of genus or species names if you want
```r
nrow(plantlist)
names_list('genus', 500)
```

---

**nbn_classification**  
*Search UK National Biodiversity Network database for taxonomic classification*

---

**Description**

Search UK National Biodiversity Network database for taxonomic classification

**Usage**

```r
nbn_classification(id, ...)
```

**Arguments**

- **id**  
  (character) An NBN identifier.
- **...**  
  Further args passed on to `GET`. 
### nbn_search

**Value**

A data.frame

**Author(s)**

Scott Chamberlain, <myrmecocystus@gmail.com>

**References**

<https://api.nbnatlas.org/>

**See Also**

Other nbn: `get_nbnid`, `nbn_search`, `nbn_synonyms`

**Examples**

```r
## Not run:
nbn_classification(id="NHMSYS000037673")

# get id first, then pass to this fxn
id <- get_nbnid("Zootoca vivipara", rec_only = TRUE, rank = "Species")
nbn_classification(id)

library('httr')
nbn_classification(id="NHMSYS0000502940", config=verbose())

## End(Not run)
```

---

### Description

Search UK National Biodiversity Network

### Usage

```r
nbn_search(q, fq = NULL, order = NULL, sort = NULL, start = 0,
rows = 25, facets = NULL, ...)
```

### Arguments

- `q` *(character)* The query terms(s)
- `fq` *(character)* Filters to be applied to the original query. These are additional params of the form `fq=INDEXEDFIELD:VALUE` e.g. `fq=rank:kingdom`. See <https://species-ws.nbnatlas.org/indexFields> for all the fields that are queryable.
- `order` *(character)* Supports "asc" or "desc"
nbn_search

- **sort**: (character) The indexed field to sort by
- **start**: (integer) Record offset, to enable paging
- **rows**: (integer) Number of records to return
- **facets**: (list) Comma separated list of the fields to create facets on e.g. facets=basis_of_record.
  
  Further args passed on to `GET`.

**Value**

a list with slots for metadata ('meta') with list of response attributes, and data ('data”) with a data.frame of results

**Author(s)**

Scott Chamberlain, <myrmecocystus@gmail.com>

**References**

<https://api.nbnatlas.org/>

**See Also**

Other nbn: `get_nbnid`, `nbn_classification`, `nbn_synonyms`

**Examples**

```r
## Not run:
x <- nbn_search(q = "Vulpes")
x$meta$totalRecords
x$meta$pageSize
x$meta$urlParameters
x$meta$queryTitle
head(x$data)

nbn_search(q = "blackbird", start = 4)

# debug curl stuff
library('httr')
nbn_search(q = "blackbird", config = verbose())

## End(Not run)
```
nbn_synonyms

Return all synonyms for a taxon name with a given id from NBN

Description

Return all synonyms for a taxon name with a given id from NBN

Usage

nbn_synonyms(id, ...)

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>the taxon identifier code</td>
</tr>
<tr>
<td>...</td>
<td>Further args passed on to GET</td>
</tr>
</tbody>
</table>

Value

A data.frame

References

<https://api.nbnatlas.org/>

See Also

Other nbn: get_nbnid, nbn_classification, nbn_search

Examples

```r
## Not run:
nbn_synonyms(id = 'NHMSYS0001501147')
nbn_synonyms(id = 'NHMSYS0000456036')

# none
nbn_synonyms(id = 'NHMSYS0000502940')

## End(Not run)
```
ncbi_children  

Search NCBI for children of a taxon

Description

Search the NCBI Taxonomy database for uids of children of taxa. Taxa can be referenced by name or uid. Referencing by name is faster.

In a few cases, different taxa have the same name (e.g. Satyrium; see examples). If one of these are searched for then the children of both taxa will be returned. This can be avoided by using a uid instead of the name or specifying an ancestor. If an ancestor is provided, only children of both the taxon and its ancestor are returned. This will only fail if there are two taxa with the same name and the same specified ancestor.

Usage

ncbi_children(name = NULL, id = NULL, start = 0, max_return = 1000, ancestor = NULL, out_type = c("summary", "uid"), ambiguous = FALSE, ...)

Arguments

name (character) The string to search for. Only exact matches found the name given will be returned. Not compatible with id.

id (character) The uid to search for. Not compatible with name.

start The first record to return. If omitted, the results are returned from the first record (start=0).

max_return (numeric; length=1) The maximum number of children to return.

ancestor (character) The ancestor of the taxon being searched for. This is useful if there could be more than one taxon with the same name. Has no effect if id is used.

out_type (character) Currently either "summary" or "uid":

  summary The output is a list of data.frame with children uid, name, and rank.

  uid A list of character vectors of children uids

ambiguous logical; length 1 If FALSE, children taxa with words like "unclassified", "unknown", "uncultured", or "sp." are removed from the output. NOTE: This option only applies when out_type = "summary".

... Curl options passed on to GET

Value

The output type depends on the value of the out_type parameter. Taxa that cannot be found will result in NAs and a lack of children results in an empty data structure.

Author(s)

Zachary Foster <zacharyfoster1989@gmail.com>
**ncbi_downstream**

Retrieve all taxa names downstream in hierarchy for NCBI

See Also

ncbi_get_taxon_summary, children

Examples

```r
## Not run:
ncbi_children(name="Satyrium") # Satyrium is the name of two different genera
ncbi_children(name="Satyrium", ancestor="Eumaeini") # A genus of butterflies
ncbi_children(name="Satyrium", ancestor="Orchidaceae") # A genus of orchids
ncbi_children(id="266948") # "266948" is the uid for the butterfly genus
ncbi_children(id="62858") # "62858" is the uid for the orchid genus

# use curl options
library("httr")
ncbi_children(name="Satyrium", ancestor="Eumaeini", config=verbose())

## End(Not run)
```

---

**ncbi_downstream**

Retrieve all taxa names downstream in hierarchy for NCBI

Description

Retrieve all taxa names downstream in hierarchy for NCBI

Usage

```r
ncbi_downstream(id, downto, intermediate = FALSE, ...)
```

Arguments

- **id** (numeric/integer) An NCBI taxonomic identifier
- **downto** The taxonomic level you want to go down to. See examples below. The taxonomic level is case sensitive, and you do have to spell it correctly. See `data(rank_ref)` for spelling.
- **intermediate** (logical) If TRUE, return a list of length two with target taxon rank names, with additional list of data.frame's of intermediate taxonomic groups. Default: FALSE
- ... Further args passed on to `ncbi_children`

Value

Data.frame of taxonomic information downstream to family from e.g., Order, Class, etc., or if `intermediate=TRUE`, list of length two, with target taxon rank names, and intermediate names.
No Rank

A sticky point with NCBI is that they can have designation for taxonomic rank of "No Rank". So we have no way of programatically knowing what to do with that taxon. Of course one can manually look at a name and perhaps know what it is, or look it up on the web - but we can’t do anything programatically. So, no rank things will sometimes be missing.

Author(s)

Scott Chamberlain <myrmecocystus@gmail.com>

Examples

```r
## Not run:
## genus Apis
ncbi_downstream(id = 7459, downto="species")

## get intermediate taxa as a separate object
ncbi_downstream(id = 7459, downto="species", intermediate = TRUE)

## Lepidoptera
ncbi_downstream(id = 7088, downto="superfamily")

## families in the ferns (Moniliformopses)
(id <- get_uid("Moniliformopses"))
ncbi_downstream(id = id, downto = "order")

## End(Not run)
```

### Description

Downloads summary taxon information from the NCBI taxonomy databases for a set of taxonomy UIDs using eutils esummary.

### Usage

```r
ncbi_get_taxon_summary(id, ...)
```

### Arguments

- `id` (character) NCBI taxonomy uids to retrieve information for. See Details.
- `...` Curl options passed on to `GET`
Details

If your input vector or list of NCBI IDs is longer than about 8000 characters (use `nchar(paste(ids, collapse = "+"))`), split the list up into chunks since at about that number of characters you will run into the HTTP 414 error "Request-URI Too Long".

Value

A `data.frame` with the following columns:

- `uid` The uid queried for
- `name` The name of the taxon; a binomial name if the taxon is of rank species
- `rank` The taxonomic rank (e.g. 'Genus')

Author(s)

Zachary Foster <zacharyfoster1989@gmail.com>

Examples

```r
# Not run:
ncbi_get_taxon_summary(c(1430660, 4751))

# use curl options
library("httr")
ncbi_get_taxon_summary(c(1430660, 4751), config = verbose())
```

Description

THIS FUNCTION IS DEFUNCT.

Usage

`phylomatic_format(...)`

Arguments

... Parameters, ignored
**phylomatic_tree**  
*Query Phylomatic for a phylogenetic tree.*

**Description**  
THIS FUNCTION IS DEFUNCT.

**Usage**

```r
phylomatic_tree(...) 
```

**Arguments**

...  
Parameters, ignored

---

**ping**  
*Ping an API used in taxize to see if it's working.*

**Description**  
Ping an API used in taxize to see if it's working.

**Usage**

```r
col_ping(what = "status", ...) 
eol_ping(what = "status", ...) 
itis_ping(what = "status", ...) 
ncbi_ping(what = "status", ...)  
tropicos_ping(what = "status", ...) 
nbn_ping(what = "status", ...) 
gbif_ping(what = "status", ...) 
bold_ping(what = "status", ...) 
ipni_ping(what = "status", ...) 
vascan_ping(what = "status", ...) 
fg_ping(what = "status", ...) 
```
ping

Arguments

what (character) One of status (default), content, or an HTTP status code. If status, we just check that the HTTP status code is 200, or similar signifying the service is up. If content, we do a simple, quick check to determine if returned content matches what’s expected. If an HTTP status code, it must match an appropriate code. See status_codes.

... Curl options passed on to GET

Details

For ITIS, see description, which provides number of scientific and common names in a character string.

Value

A logical, TRUE or FALSE

Examples

```r
## Not run:
col_ping()
col_ping("content")
col_ping(200)
col_ping("200")
col_ping(204)

itis_ping()
eol_ping()
cmpi_ping()
tropicos_ping()
nbn_ping()

gbib_ping()
gbib_ping(200)

bold_ping()
bold_ping(200)
bold_ping("content")

ipni_ping()
ipni_ping(200)
ipni_ping("content")

avscan_ping()
avscan_ping(200)
avscan_ping("content")

# curl options
library("httr")
vascan_ping(config=verbose())
eol_ping(500, config=verbose())
```
### Description

These names are from http://www.theplantlist.org, and are a randomly chosen subset of genera names for the purpose of having some names to play with for examples in this package.

### Format

A vector of length 793

### Source

http://www.theplantlist.org

---

### plantminer

**Search for taxonomy data from Plantminer.com**

### Description

Search for taxonomy data from Plantminer.com

### Usage

```r
plantminer(plants, from = "tpl", key = NULL, verbose = TRUE)
```

### Arguments

- `plants` (character) Vector of plant species names. Required.
- `from` (character) One of `tpl` (for theplantlist.com data), or `flora` (for Brazilian Flora Checklist). Required. Default: `tpl`
- `key` (character) Your api key for the plantminer.com site. Go to http://www.plantminer.com/ to get your api key. Two options for inputting your key. 1) You can input it manually within the function as the second argument, or 2) you can put the key in your .Rprofile file, which will then be loaded when you start R. See http://bit.ly/135eG0b for help on how to put api keys in your .Rprofile file.
- `verbose` (logical) Verbose or not. Default: `TRUE`

### Value

`data.frame` of results.
Examples

```r
## Not run:
# A single taxon
plantminer("Ocotea pulchella")

# Many taxa
plants <- c("Myrcia lingua", "Myrcia bella", "Ocotea pulchella", "Miconia", "Coffee arabica var. amarella", "Bleh")
plantminer(plants)

# By default, tpl is used, for Theplantlist data,
# toggle the from parameter here
plantminer("Ocotea pulchella", from = "flora")

## End(Not run)
```

---

**plantNames**

*Vector of plant species (genus - specific epithet) names from ThePlantList*

---

**Description**

These names are from http://www.theplantlist.org, and are a randomly chosen subset of names of the form genus/specific epithet for the purpose of having some names to play with for examples in this package.

**Format**

A vector of length 1182

**Source**

http://www.theplantlist.org

---

**rankagg**

*Aggregate data by given taxonomic rank*

---

**Description**

Aggregate data by given taxonomic rank

**Usage**

```r
rankagg(data = NULL, datacol = NULL, rank = NULL, fxn = "sum")
```
Arguments

data A data.frame. Column headers must have capitalized ranks (e.g., Genus, Tribe, etc.) (data.frame)
datacol The data column (character)
rank Taxonomic rank to aggregate by (character)
fxn Arithmetic function or vector or functions (character)

Examples

library("vegan")
data(dune.taxon, package='vegan')
dat <- dune.taxon
set.seed(1234)
dat$abundance <- round(rlnorm(n=nrow(dat),meanlog=5,sdlog=2),0)
rankagg(data=dat, datacol="abundance", rank="Genus")
rankagg(data=dat, "abundance", rank="Family")
rankagg(data=dat, "abundance", rank="Genus", fxn="mean")
rankagg(data=dat, "abundance", rank="Subclass")
rankagg(data=dat, "abundance", rank="Subclass", fxn="sd")

---

rank_ref

 Lookup-table for IDs of taxonomic ranks

Description

data.frame of 36 rows, with 2 columns:

- rankid - a numeric rank id, consecutive
- ranks - a comma separated vector of names that are considered equal to one another within the row

Details

We use this data.frame to do data sorting/filtering based on the ordering of ranks.

Please let us know if there is a rank that occurs from one of the data sources taxize that we don’t have in rank_ref dataset.

Also let us know if you disagree with the ordering of ranks.
Description

Resolve names from iPlant’s name resolver, the Taxonomic Name Resolution Service (TNRS), and the Global Names Resolver (GNR)

Usage

```
resolve(query, db = "gnr", ...)
```

Arguments

- **query**: Vector of one or more taxonomic names (common names not supported)
- **db**: Source to check names against. One of iplant, tnrs, or gnr. Default: gnr Note that each taxonomic data source has their own identifiers, so that if you provide the wrong db value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).
- **...**: Curl options passed on to GET or POST. In addition, further named args passed on to each respective function. See examples

Value

A list with length equal to length of the db parameter (number of sources requested), with each element being a data.frame or list with results from that source.

Examples

```
# Not run:
resolve(query=c("Helianthus annuus", "Homo sapiens"))
resolve(query="Quercus kelloggii", db='gnr')
resolve(query=c("Helianthus annuus", "Homo sapiens"), db='tnrs')
resolve(query=c("Helianthus annuus", "Homo sapiens"), db=c('iplant', 'gnr'))
resolve(query="Quercus kelloggii", db=c('iplant', 'gnr'))
resolve(query="Quercus kelloggii", db=c('iplant', 'gnr', 'tnrs'))

# pass in options specific to each source
resolve("Helianthus annuus", db = 'gnr', preferred_data_sources = c(3, 4))
resolve("Helianthus annuus", db = 'iplant', retrieve = 'best')
identical(
  resolve("Helianthus annuus", db = 'iplant', retrieve = 'best')$iplant,
  iplant_resolve("Helianthus annuus", retrieve = 'best')
)

mynames <- c("Helianthus annuus", "Pinus contorta", "Poa annua",
  "Abies magnifica", "Rosa california")
resolve(mynames, db = 'tnrs', source = "NCBI")
resolve(mynames, db = 'tnrs', source = "iPlant_TNRS")
```
identical(
  resolve(mynames, db = 'tnrs', source = "iPlant_TNRS")$tnrs,
  tnrs(mynames, source = "iPlant_TNRS")
)

# pass in curl options
library("httr")
resolve(query="Qercuss", db = "iplant", config=verbose())
res <- resolve(query=c("Helianthus annuus", "Homo sapiens"), config=progress())

## End(Not run)

sci2comm

Get common names from scientific names.

Description
Get common names from scientific names.

Usage
sci2comm(...)

## Default S3 method:
sci2comm(scinames, db = "eol", simplify = TRUE, ...)

## S3 method for class 'uid'
sci2comm(id, ...)

## S3 method for class 'tsn'
sci2comm(id, simplify = TRUE, ...)

## S3 method for class 'wormsid'
sci2comm(id, simplify = TRUE, ...)

## S3 method for class 'iucn'
sci2comm(id, simplify = TRUE, ...)

Arguments
... Further arguments passed on to functions get_uid, get_tsn.
scinames character; One or more scientific names or partial names.
db character; Data source, one of "eol" (default), "itis", "ncbi", "worms", or "iucn". Note that each taxonomic data source has their own identifiers, so that if you provide the wrong db value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).
simplify (logical) If TRUE, simplify output to a vector of names. If FALSE, return variable formats from different sources, usually a data.frame. Only applies to eol and itis. Specify FALSE to obtain the language of each vernacular in the output for eol and itis.

id character; identifiers, as returned by get_tsn, get_uid.

Details

Note that EOL requires an API key. You can pass in your EOL api key in the function call like sci2comm('Helianthus annuus', key="<your eol api key>"). You can also store your EOL API key in your .Rprofile file as options(eolApiKey = "<your eol api key>"), or just for the current session by running options(eolApiKey = "<your eol api key>") in the console.

Note that IUCN also requires an API key. See rredlist-package for help on authentiating with IUCN Redlist

Value

List of character vectors, named by input taxon name, or taxon ID

Author(s)

Scott Chamberlain (myrmecocystus@gmail.com)

See Also

comm2sci

Examples

```r
## Not run:
sci2comm(scinames='Helianthus annuus', db='eol')
scci2comm(scinames='Helianthus annuus', db='itis')
sci2comm(scinames=c('Helianthus annuus', 'Poa annua'))
sci2comm(scinames='Puma concolor', db='ncbi')
sci2comm('Gadus morhua', db='worms')
sci2comm('Pomatomus saltatrix', db='worms')
sci2comm('Loxodonta africana', db='iucn')

# Passing id in, works for sources: itis and ncbi, not eol
sci2comm(get_tsn('Helianthus annuus'))
sci2comm(get_uid('Helianthus annuus'))
sci2comm(get_wormsid('Gadus morhua'))
sci2comm(get_iucn('Loxodonta africana'))

# Don't simplify returned
sci2comm(get_tsn('Helianthus annuus'), simplify=FALSE)
sci2comm(get_iucn('Loxodonta africana'), simplify=FALSE)

# Use curl options
library('httr')
sci2comm('Helianthus annuus', db="ncbi", config=verbose())
```
resolve_names <- function(url = NULL, file = NULL, text = NULL, engine = NULL, unique = NULL, verbatim = NULL, detect_language = NULL, all_data_sources = NULL, data_source_ids = NULL, return_content = FALSE, ...) 

## Description

Uses the Global Names Recognition and Discovery service, see [http://gnrd.globalnames.org/](http://gnrd.globalnames.org/).

Note: this function sometimes gives data back and sometimes not. The API that this function is extremely buggy.

## Usage

`resolve_names(url = NULL, file = NULL, text = NULL, engine = NULL, unique = NULL, verbatim = NULL, detect_language = NULL, all_data_sources = NULL, data_source_ids = NULL, return_content = FALSE, ...)`

## Arguments

- **url**
  - An encoded URL for a web page, PDF, Microsoft Office document, or image file, see examples

- **file**
  - When using multipart/form-data as the content-type, a file may be sent. This should be a path to your file on your machine.

- **text**
  - Type: string. Text content; best used with a POST request, see examples

- **engine**
  - (optional) (integer) Default: 0. Either 1 for TaxonFinder, 2 for NetiNeti, or 0 for both. If absent, both engines are used.

- **unique**
  - (optional) (logical) If TRUE (default), response has unique names without offsets.

- **verbatim**
  - (optional) Type: boolean, If TRUE (default to FALSE), response excludes verbatim strings.

- **detect_language**
  - (optional) Type: boolean, When TRUE (default), NetiNeti is not used if the language of incoming text is determined not to be English. When FALSE, NetiNeti will be used if requested.

- **all_data_sources**
  - (optional) Type: boolean. Resolve found names against all available Data Sources.

- **data_source_ids**
  - (optional) Type: string. Pipe separated list of data source ids to resolve found names against. See list of Data Sources [http://resolver.globalnames.org/data_sources](http://resolver.globalnames.org/data_sources).

- **return_content**
  - (logical) return OCR'ed text. returns text string in x$meta$content slot. Default: FALSE

... Further args passed to `GET`
Details

One of url, file, or text must be specified - and only one of them.

Value

A list of length two, first is metadata, second is the data as a data.frame.

Author(s)

Scott Chamberlain myrmecocystus@gmail.com

Examples

```r
## Not run:
# Get data from a website using its URL
scrapenames('http://en.wikipedia.org/wiki/Araneae')
scrapenames('http://en.wikipedia.org/wiki/Animalia')
scrapenames('http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0095068')
scrapenames('http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0008498')
scrapenames('http://ucjeps.berkeley.edu/cgi-bin/get_JM_treatment.pl?CARYOPHYLLACEAE')

# Scrape names from a pdf at a URL
scrapenames(url = sub('\n', '', url))

# With arguments
scrapenames(url = 'http://www.mapress/zootaxa/2012/f/z03372p265f.pdf',
             unique=TRUE)
scrapenames(url = 'http://en.wikipedia.org/wiki/Araneae',
             data_source_ids=c(1, 169))

# Get data from a file
speciesfile <- system.file("examples", "species.txt", package = "taxize")
scrapenames(file = speciesfile)

nms <- paste0(names_list("species"), collapse="\n")
file <- tempfile(fileext = ".txt")
writeLines(nms, file)
scrapenames(file = file)

# Get data from text string
scrapenames(text='A spider named Pardosa moesta Banks, 1892')

# return OCR content
scrapenames(url='http://www.mapress/zootaxa/2012/f/z03372p265f.pdf',
             return_content = TRUE)

# use curl options
library("httr")
scrapenames(text='A spider named Pardosa moesta Banks, 1892')
```
## status_codes

*Get HTTP status codes*

### Description

Get HTTP status codes

### Usage

```r
status_codes()
```

### See Also

*ping*

### Examples

```r
status_codes()
```

## synonyms

*Retrieve synonyms from various sources given input taxonomic names or identifiers*

### Description

Retrieve synonyms from various sources given input taxonomic names or identifiers

### Usage

```r
synonyms(...)  

## Default S3 method:
synonyms(x, db = NULL, rows = NA, ...)

## S3 method for class 'tsn'
synonyms(id, ...)

## S3 method for class 'colid'
synonyms(id, ...)

## S3 method for class 'tpsid'
synonyms(id, ...)

## S3 method for class 'nbnid'
```
synonyms <- function(id, ...) {
  stopifnot(is.character(id))
  stopifnot(is.character(...) || length(...) == 0)
  stopifnot(all(sapply(id, is.factor)) || all(sapply(id, is.character)))
  stopifnot(all(sapply(..., is.null) || is.character(...)))
  stopifnot(all(sapply(id, is.character) || is.factor(id)))
  synonyms(id, ...)}

## S3 method for class 'wormsid'
synonyms(id, ...)

## S3 method for class 'iucn'
synonyms(id, ...)

## S3 method for class 'ids'
synonyms(id, ...)

synonyms_df(x)

**Arguments**

... Other passed arguments to internal functions get_*(()) and functions to gather synonyms.

x Vector of taxa names (character) or IDs (character or numeric) to query.

db character; database to query. either itis, tropicos, col, nbn, or worms. Note that each taxonomic data source has their own identifiers, so that if you provide the wrong db value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).

rows (numeric) Any number from 1 to infinity. If the default NA, all rows are considered. Note that this parameter is ignored if you pass in a taxonomic id of any of the acceptable classes: tsn, tpsid, nbnid, ids.

id character; identifiers, returned by get_tsn, get_tpsid, get_nbnid, get_colid, get_wormsid

**Details**

If IDs are supplied directly (not from the get_* functions) you must specify the type of ID.

For db = "itis" you can pass in a parameter accepted to toggle whether only accepted names are used accepted = TRUE, or if all are used accepted = FALSE. The default is accepted = FALSE

Note that IUCN requires an API key. See rredlist-package for help on authentiating with IUCN Redlist

**Value**

A named list of data.frames with the synonyms of every supplied taxa.

**See Also**

get_tsn, get_tpsid, get_nbnid, get_colid, get_wormsid, get_iucn
Examples

```r
## Not run:
# Plug in taxon IDs
synonyms(183327, db="itis")
synonyms("25509881", db="tropicos")
synonyms("NBNSYS0000004629", db="nbn")
# synonyms("87e986b0873f648711908586fa8abde7", db='col') # FIXME
synonyms(105706, db='worms')
synonyms(12392, db='iucn')

# Plug in taxon names directly
synonyms("Pinus contorta", db="itis")
synonyms("Puma concolor", db="itis")
synonyms(c("Poa annua", "Pinus contorta", "Puma concolor"), db="itis")
synonyms("Poa annua", db="tropicos")
synonyms("Pinus contorta", db="tropicos")
synonyms(c("Poa annua", "Pinus contorta"), db="tropicos")
synonyms("Pinus sylvestris", db="nbn")
synonyms("Puma concolor", db="col")
synonyms("Ursus americanus", db="col")
synonyms("Amblyomma rotundatum", db="col")
synonyms("Pomatomus", db="worms")
synonyms("Pomatomus saltatrix", db="worms")

## not accepted names, with ITIS
## looks for whether the name given is an accepted name,
## and if not, uses the accepted name to look for synonyms
synonyms("Acer drumondii", db="itis")
synonyms("Spinus pinus", db="itis")

# Use get_* methods
synonyms(get_tsn("Poa annua"))
synonyms(get_tpsid("Poa annua"))
synonyms(get_nbnid("Carcharodon carcharias"))
synonyms(get_colid("Ornithodoros lagophilus"))
synonyms(get_iucn("Loxodonta africana"))

## Pass many ids from class "ids"
out <- get_ids(names="Poa annua", db = c('itis','tropicos'))
synonyms(out)

## Use the rows parameter to select certain rows
synonyms("Poa annua", db='tropicos', rows=1)
synonyms("Poa annua", db='tropicos', rows=1:3)
synonyms("Pinus sylvestris", db='nbn', rows=1:3)
synonyms("Amblyomma rotundatum", db='col', rows=2)
synonyms("Amblyomma rotundatum", db='col', rows=2:3)

## Use curl options
synonyms("Poa annua", db='tropicos', rows=1, config=verbose())
synonyms("Poa annua", db='itis', rows=1, config=verbose())
synonyms("Poa annua", db='col', rows=1, config=verbose())
```
# combine many outputs together
x <- synonyms(c("Osmia bicornis", "Osmia rufa", "Osmia"), db = "itis")
synonyms_df(x)

## note here how Pinus contorta is dropped due to no synonyms found
x <- synonyms(c("Poa annua", 'Pinus contorta', 'Puma concolor'), db="col")
synonyms_df(x)

## note here that ids are taxon identifiers b/c you start with them
x <- synonyms(c(25509881, 13100094), db="tropicos")
synonyms_df(x)

## xxx
x <- synonyms(c('Aglais io', 'Usnea hirta', 'Arctostaphylos uva-ursi'),
               db="nbn")
synonyms_df(x)

## End(Not run)

---

taxize-defunct  

**Defunct functions in taxize**

**Description**

The following functions are now defunct (no longer available):

**Details**

- `col_classification`: See [classification](classification)
- `eol_hierarchy`: See [classification](classification)
- `tp_classification`: See [classification](classification)
- `tpl_search`: Use the [Taxonstand](Taxonstand) functions TPL or TPLck directly.
- `get_seqs`: This function changed name to `ncbi_getbyname`.
- `get_genes`: This function changed name to `ncbi_getbyid`.
- `get_genes_avail`: This function changed name to `ncbi_search`.
- `ncbi_getbyname`: See `ncbi_byname` in the [traits](traits) package.
- `ncbi_getbyid`: See `ncbi_byid` in the [traits](traits) package.
- `ncbi_search`: See `ncbi_searcher` in the [traits](traits) package.
- `eol_invasive`: See `eol` in the [originr](originr) package.
- `gisd_isinvasive`: See `gisd` in the [originr](originr) package.
- `ubio_classification`: The uBio web services was down for quite a while, is now (as of 2016-05-09) back up, but we don’t trust that it will stay up and available.
• **ubio_classification_search**: The uBio web services was down for quite a while, is now (as of 2016-05-09) back up, but we don’t trust that it will stay up and available.

• **ubio_id**: The uBio web services was down for quite a while, is now (as of 2016-05-09) back up, but we don’t trust that it will stay up and available.

• **ubio_ping**: The uBio web services was down for quite a while, is now (as of 2016-05-09) back up, but we don’t trust that it will stay up and available.

• **ubio_search**: The uBio web services was down for quite a while, is now (as of 2016-05-09) back up, but we don’t trust that it will stay up and available.

• **ubio_synonyms**: The uBio web services was down for quite a while, is now (as of 2016-05-09) back up, but we don’t trust that it will stay up and available.

• **get_ubioid**: The uBio web services are apparently down indefinitely.

• **phylomatic_tree**: This function is defunct. See phylomatic in the package `bbranching`

• **phylomatic_format**: This function is defunct. See phylomatic_names in the package `bbranching`

---

taxize_capwords  
*Capitalize the first letter of a character string.*

### Description

Capitalize the first letter of a character string.

### Usage

taxize_capwords(s, strict = FALSE, onlyfirst = FALSE)

### Arguments

- **s**: A character string
- **strict**: Should the algorithm be strict about capitalizing. Defaults to FALSE.
- **onlyfirst**: Capitalize only first word, lowercase all others. Useful for taxonomic names.

### Examples

taxize_capwords(c("using AIC for model selection"))  
taxize_capwords(c("using AIC for model selection"), strict=TRUE)
taxize_cite  
Get citations and licenses for data sources used in taxize

Description
Get citations and licenses for data sources used in taxize

Usage
taxize_cite(fxn = "itis", what = "citation")

Arguments
fxn Function to search on. A special case is the package name 'taxize' that will give the citations for the package.
what One of citation (default), license, or both.

Examples
taxize_cite(fxn='eol_search')
taxize_cite(fxn='itis_hierarchy')
taxize_cite(fxn='tp_classification')
taxize_cite(fxn='gbif_ping')
taxize_cite(fxn='plantminer')
taxize_cite(fxn='get_natservid_')
taxize_cite(fxn='as.natservid')
taxize_cite(fxn='get_wormsid')
taxize_cite(fxn='as.wormsid')

# Functions that use many data sources
taxize_cite(fxn='synonyms')
taxize_cite(fxn='classification')

# Get the taxize citation
taxize_cite(fxn='taxize')

# Get license information
taxize_cite(fxn='taxize', "license")

tax_agg  
Aggregate species data to given taxonomic rank

Description
Aggregate species data to given taxonomic rank
Usage

\texttt{tax_agg(x, rank, db = "ncbi", verbose = FALSE, ...)}

\texttt{## S3 method for class 'tax_agg'
print(x, ...)}

Arguments

\textbf{\texttt{x}} 
Community data matrix. Taxa in columns, samples in rows.

\textbf{\texttt{rank}} 
character; Taxonomic rank to aggregate by.

\textbf{\texttt{db}} 
character; taxonomic API to use, 'ncbi', 'itis' or both, see \texttt{tax_name}. Note that each taxonomic data source has their own identifiers, so that if you provide the wrong db value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).

\textbf{\texttt{verbose}} 
(logical) If FALSE (Default) suppress messages

\textbf{...} 
Other arguments passed to \texttt{get_tsn} or \texttt{get_uid}.

Details

tax_agg aggregates (sum) taxa to a specific taxonomic level. If a taxon is not found in the database (ITIS or NCBI) or the supplied taxon is on higher taxonomic level this taxon is not aggregated.

Value

A list of class \texttt{tax_agg} with the following items:

\textbf{\texttt{x}} 
Community data matrix with aggregated data.

\textbf{\texttt{by}} 
A lookup-table showing which taxa were aggregated.

\textbf{\texttt{n_pre}} 
Number of taxa before aggregation.

\textbf{\texttt{rank}} 
Rank at which taxa have been aggregated.

See Also

tax_name

Examples

\texttt{## Not run:
if (requireNamespace("vegan", quietly = TRUE)) {
  # use dune dataset
  library("vegan")
  data(dune, package='vegan')

colnames(dune) <- species

# aggregate sample to families
(agg <- tax_agg(dune, rank = 'family', db = 'ncbi'))

# extract aggregated community data matrix for further usage
agg$x

# check which taxa have been aggregated
agg$by

# A use case where there are different taxonomic levels in the same dataset
spnames <- c('Puma', 'Ursus americanus', 'Ursidae')
df <- data.frame(c(1,2,3), c(11,12,13), c(1,4,5))
names(df) <- spnames
out <- tax_agg(df, rank = 'family', db='itis')
out$x

# You can input a matrix too
mat <- matrix(c(1,2,3, 11,12,13), nrow = 2, ncol = 3,
dimnames=list(NULL, c('Puma concolor', 'Ursus americanus', 'Ailuropoda melanoleuca')))
tax_agg(mat, rank = 'family', db='itis')

## End(Not run)

tax_name

Get taxonomic names for a given rank

Description

Get taxonomic names for a given rank

Usage

tax_name(query, get, db = "itis", pref = "ncbi", verbose = TRUE, ...)

Arguments

query (character) Vector of taxonomic names to query. required.
get (character) The ranks of the taxonomic name to get, see rank_ref. required.
db (character) The database to search from: 'itis', 'ncbi' or 'both'. If 'both' both NCBI and ITIS will be queried. Result will be the union of both.
pref (character) If db = 'both', sets the preference for the union. Either 'ncbi' (default) or 'itis'. Currently not implemented.
verbose (logical) If TRUE the actual taxon queried is printed on the console.

... Other arguments passed to get_tsn or get_uid.

Value
A data.frame with one column for every queried rank, in addition to a column for db and queried term.

Note
While tax_rank returns the actual rank of a taxon, tax_name searches and returns any specified rank higher in taxonomy.

See Also
classification

Examples

```r
## Not run:
# A case where itis and ncbi use the same names
tax_name(query = "Helianthus annuus", get = "family", db = "itis")
tax_name(query = "Helianthus annuus", get = "family", db = "ncbi")
tax_name(query = "Helianthus annuus", get = c("genus","family","order"),
          db = "ncbi")

# Case where itis and ncbi use different names
tax_name(query = "Helianthus annuus", get = "kingdom", db = "itis")
tax_name(query = "Helianthus annuus", get = "kingdom", db = "ncbi")

# multiple rank arguments
tax_name(query = c("Helianthus annuus","Baetis rhodani"), get = c("genus",
               "kingdom"), db = "ncbi")
tax_name(query = c("Helianthus annuus","Baetis rhodani"), get = c("genus",
               "kingdom"), db = "itis")

# query both sources
tax_name(query=c("Helianthus annuus", 'Baetis rhodani'), get=c("genus",
               "kingdom"), db="both")

## End(Not run)
```

**tax_rank**

Get rank for a given taxonomic name.

Description

Get rank for a given taxonomic name.
**tax_rank**

**Usage**

```r
tax_rank(x, db = NULL, ...)
```

**Arguments**

- `x`  
  (character) Vector of one or more taxon names (character) or IDs (character or numeric) to query. Or objects returned from `get_`() functions like `get_tsn`

- `db`  
  (character) database to query. either ncbi, itis, eol, col, tropicos, gbif, nbn, worms, natserv, bold. Note that each taxonomic data source has their own identifiers, so that if you provide the wrong `db` value for the identifier you may get a result, but it will likely be wrong (not what you were expecting).

...  
Additional arguments to `classification`

**Value**

A named list of character vectors with ranks (all lower-cased)

**Note**

While `tax_name` returns the name of a specified rank, `tax_rank` returns the actual rank of the taxon.

**See Also**

`classification, tax_name`

**Examples**

```r
## Not run:
tax_rank(x = "Helianthus annuus", db = "itis")
tax_rank(get_tsn("Helianthus annuus"))
tax_rank(c("Helianthus", "Pinus", "Poa"), db = "itis")
tax_rank(get_boldid("Helianthus annuus"))
tax_rank("421377", db = "bold")
tax_rank(421377, db = "bold")
tax_rank(c("Plantae", "Helianthus annuus", "Puma", "Homo sapiens"), db = 'itis')
tax_rank(c("Helianthus annuus", "Quercus", "Fabaceae"), db = 'tropicos')
tax_rank(names_list("species"), db = 'gbif')
tax_rank(names_list("family"), db = 'gbif')
tax_rank(c("Platanista gangetica", "Lichenopora neapolitana"), db = "worms")
## End(Not run)
```
theplantlist

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

**Description**

These names are from http://www.theplantlist.org, and are from version 1.1 of their data. This data is used in the function `names_list`. This is a randomly selected subset of the ~350K accepted species names in Theplantlist.

**Format**

A data frame with 10,000 rows and 3 variables:

- **family** family name
- **genus** genus name
- **species** specific epithet name

**Source**

http://www.theplantlist.org

---

**tnrs**

**Phylotastic Taxonomic Name Resolution Service.**

**Description**

Match taxonomic names using the Taxonomic Name Resolution Service (TNRS). Returns score of the matched name, and whether it was accepted or not.

**Usage**

```r
tnrs(query = NA, source = NULL, code = NULL, getpost = "POST",
     sleep = 0, splitby = 30, verbose = TRUE, ...)
```

**Arguments**

- **query** Vector of quoted taxonomic names to search (character).
- **source** Specify the source you want to match names against. Defaults to just retrieve data from all sources. Options: NCBI, iPlant_TNRS, or MSW3. Only available when using getpost="POST".
- **code** Nomenclatural code. One of: ICZN (zoological), ICN (algae, fungi, and plants), ICNB (bacteria), ICBN (botanical), ICNCP (cultivated plants), ICTV (viruses). Only available when using getpost="POST".
Use GET or POST method to send the query. If you have more than say 50 species or so in your query, you should probably use POST. IMPORTANT!!!!!
-> POST is the only option for this parameter if you want to use source or code parameters.

Number of seconds by which to pause between calls. Defaults to 0 seconds. Use when doing many calls in a for loop or apply type call.

Number by which to split species list for querying the TNRS.

Verbosity or not (default TRUE)

... Curl options to pass in GET or POST

Details

If there is no match in the Taxosaurus database, nothing is returned, so you will not get anything back for non-matches.

TNRS doesn’t provide any advice about the occurrence of homonyms when queries have no indication of a taxonomic name’s authority. So if there is any chance of a homonym, you probably want to send the authority as well, or use gnr_resolve. For example, tnrs(query="Jussiacea linearis", source="iPlant_TNRS") gives result of Jussiacea linearis (Willd.) Oliv. ex Kuntze, but there is a homonym. If you do tnrs(query="Jussiacea linearis Hochst.", source="iPlant_TNRS") you get a direct match for that name. So, beware that there’s no indication of homonyms.

Value

data.frame of results from TNRS plus the name submitted, with rows in order of user supplied names, though those with no matches are dropped

References

http://taxosaurus.org/

See Also

gnr_resolve

Examples

```r
## Not run:
mynames <- c("Helianthus annuus", "Poa annua", "Mimulus bicolor")
   tnrs(query = mynames, source = "iPlant_TNRS")

# Specifying the nomenclatural code to match against
mynames <- c("Helianthus annuus", "Poa annua")
   tnrs(query = mynames, code = "ICBN")

# You can specify multiple sources, by comma-separating them
mynames <- c("Panthera tigris", "Eutamias minimus", "Magnifera indica", "Humbert humbert")
   tnrs(query = mynames, source = "NCBI,MSW3")
```
tnrs_sources

### Description

Get sources for the Phylotastic Taxonomic Name Resolution Service

### Usage

```r
tnrs_sources(source = NULL, ...)
```

### Arguments

- `source` The source to get information on, one of "iPlant_TNRS", "NCBI", or "MSW3".
- `...` Curl options to pass in GET

### Value

Sources for the TNRS API in a vector or list

### Examples

```r
## Not run:
# All
tnrs_sources()

# A specific source
tnrs_sources(source="NCBI")

## End(Not run)
```
tol_resolve

Resolve names using Open Tree of Life (OTL) resolver

Usage

tol_resolve(names = NULL, context_name = NULL,
  do_approximate_matching = TRUE, ids = NULL, include_suppressed = FALSE,
  ...
)

Arguments

names (character vector) taxon names to be queried
context_name name of the taxonomic context to be searched (length-one character vector).
  Must match (case sensitive) one of the values returned by tnrS_contexts.
do_approximate_matching (logical) A logical indicating whether or not to perform approximate string
ids An array of OTL ids to use for identifying names. These will be assigned to
  each name in the names array. If ids is provided, then ids and names must be
  identical in length.
include_suppressed (logical) Ordinarily, some quasi-taxa, such as incertae sedis buckets and other
  non-OTUs, are suppressed from TNRS results. If this parameter is true, these
  quasi-taxa are allowed as possible TNRS results. Default: FALSE
...

Value

A data frame summarizing the results of the query. The original query output is appended as an
attribute to the returned object (and can be obtained using attr(object,"original_response")).

Author(s)

Francois Michonneau <francois.michonneau@gmail.com> Scott Chamberlain <myrmecocystus@gmail.com>

References

https://github.com/OpenTreeOfLife/germinator/wiki/TNRS-API-v3#match_names

See Also

gnr_resolve, tnrS
Examples

```r
## Not run:
tol_resolve(names=c("echinodermata", "xenacoelomorpha", "chordata", "hemicordata"))
tol_resolve(c("Hyla", "Salmo", "Diadema", "Nautilus"))
tol_resolve(c("Hyla", "Salmo", "Diadema", "Nautilus"), context_name = "Animals")

turducken_spp <- c("Meleagris gallopavo", "Anas platyrhynchos", "Gallus gallus")
tol_resolve(turducken_spp, context_name="Animals")

## End(Not run)
```

### tpl_families

*Get The Plant List families.*

**Description**

Get The Plant List families.

**Usage**

`tpl_families(...)`

**Arguments**

... (list) Curl options passed on to `GET`

**Details**

Requires an internet connection in order to connect to www.theplantlist.org.

**Value**

Returns a `data.frame` including the names of all families indexed by The Plant List, and the major groups into which they fall (i.e. Angiosperms, Gymnosperms, Bryophytes and Pteridophytes).

**Author(s)**

John Baumgartner (johnbb@student.unimelb.edu.au)

**See Also**

`tpl_get`
**Examples**

```r
## Not run:
# Get a data.frame of plant families, with the group name (Angiosperms, etc.)
head( tpl_families() )

## End(Not run)
```

---

**tpl_get**  
*Get The Plant List csv files.*

**Description**

Get The Plant List csv files.

**Usage**

```r
tpl_get(x, family = NULL, ...)
```

**Arguments**

- **x**  
  Directory to write csv files to.
- **family**  
  If you want just one, or >1 family, but not all, list them in a vector.
- **...**  
  (list) Curl options passed on to `GET`

**Details**

Throws a warning if you already have a directory of the one provided, but still works. Writes to your home directory, change `x` as needed.

**Value**

Returns nothing to console, except a message and progress bar. Writes csv files to `x`.

**Author(s)**

John Baumgartner (johnbb@student.unimelb.edu.au)

**References**

The Plant List http://www.theplantlist.org

**See Also**

- `tpl_families`
**Examples**

```r
## Not run:
# Get a few families
dir <- file.path(tempdir(), "abc")
tpl_get(dir, family = c("Platanaceae","Winteraceae"))
readLines(file.path(dir, "Platanaceae.csv"), n = 5)

# You can now get Gymnosperms as well
dir1 <- file.path(tempdir(), "def")
tpl_get(dir1, family = c("Pinaceae","Taxaceae"))

# You can get mosses too!
dir2 <- file.path(tempdir(), "ghi")
tpl_get(dir2, family = "Echinodiaceae")

# Get all families
## Beware, will take a while
## dir3 <- file.path(tempdir(), "jkl")
## tpl_get("dir3")

## End(Not run)
```

---

**tpl_search**

A light wrapper around the taxonstand fxn to call Theplantlist.org database.

**Description**

THIS FUNCTION IS DEFUNCT.

**Usage**

```r
tpl_search()
```

---

**tp_accnames**

Return all accepted names for a taxon name with a given id.

**Description**

Return all accepted names for a taxon name with a given id.

**Usage**

```r
tp_accnames(id, key = NULL, ...)
```
tp_dist

Arguments

id the taxon identifier code
key Your Tropicos API key; loads from .Rprofile.
... Curl options passed on to GET

Value

List or dataframe.

Examples

```r
## Not run:
tp_accnames(id = 25503923)
tp_accnames(id = 25538750)

# No accepted names found
tp_accnames(id = 25509881)

## End(Not run)
```

Description

Return all distribution records for a taxon name with a given id.

Usage

```r
tp_dist(id, key = NULL, ...)
```

Arguments

id the taxon identifier code
key Your Tropicos API key; loads from .Rprofile. Or you can pass in your key in this arg.
... Curl options passed on to GET

Value

List of two data.frame's, one named "location", and one "reference".

References

[http://services.tropicos.org/help?method=GetNameDistributionsXml](http://services.tropicos.org/help?method=GetNameDistributionsXml)
**Examples**

```r
## Not run:
# Query using a taxon name Id
out <- tp_dist(id = 25509881)
## just location data
head(out[['location']])
## just reference data
head(out[['reference']])

## End(Not run)
```

---

**tp_refs**  
_Return all reference records for a taxon name with a given id._

---

**Description**

Return all reference records for a taxon name with a given id.

**Usage**

```r
tp_refs(id, key = NULL, ...)
```

**Arguments**

- `id`  
  the taxon identifier code

- `key`  
  Your Tropicos API key; loads from .Rprofile.

- `...`  
  Curl options passed on to `GET`

**Value**

List or dataframe.

**Examples**

```r
## Not run:
tp_refs(id = 25509881)

## End(Not run)
```
Description

Search Tropicos by scientific name, common name, or Tropicos ID.

Usage

```r
tp_search(name = NULL, commonname = NULL, nameid = NULL, orderby = NULL, sortorder = NULL, pagesize = NULL, startrow = NULL, type = NULL, key = NULL, ...)
```

Arguments

- **name**: Your search string. For instance "poa annua". See Details.
- **commonname**: Your search string. For instance "annual blue grass"
- **nameid**: Your search string. For instance "25509881"
- **orderby**: Your search string. For instance "1"
- **sortorder**: Your search string. For instance "ascending"
- **pagesize**: Your search string. For instance "100"
- **startrow**: Your search string. For instance "1"
- **type**: Type of search, "wildcard" (default) will add a wildcard to the end of your search string. "exact" will use your search string exactly.
- **key**: Your Tropicos API key; loads from .Rprofile.
- **...**: Further args passed on to `GET`

Details

More details on the name parameter: Tropicos will fail if you include a period (.) in your name string, e.g., var., so we replace periods before the request is made to the Tropicos web service. In addition, Tropicos for some reason doesn’t want to see sub-specific rank names like var/subsp, so remove those from your query.

Value

List or dataframe.

References

[http://services.tropicos.org/help?method=SearchNameXml](http://services.tropicos.org/help?method=SearchNameXml)
tp_summary

**Examples**

```r
## Not run:
tp_search(name = 'Poa annua')
tp_search(name = 'Poa annua subsp. annua')
tp_search(name = 'Poa annua var. annua')
tp_search(name = 'Poa annua var annua')
tp_search(name = 'Poa annua annua')

## End(Not run)
```

---

**Description**

Return summary data a taxon name with a given id.

**Usage**

```
tp_summary(id, key = NULL, ...)
```

**Arguments**

- `id`: the taxon identifier code
- `key`: Your Tropicos API key; loads from `.Rprofile`
- `...`: Curl options passed on to GET

**Value**

A data.frame.

**Examples**

```r
## Not run:
tp_summary(id = 25509881)
tp_summary(id = 2700851)
tp_summary(id = 24900183)

## End(Not run)
```
tp_synonyms

Return all synonyms for a taxon name with a given id.

Description

Return all synonyms for a taxon name with a given id.

Usage

tp_synonyms(id, key = NULL, ...)

Arguments

id       the taxon identifier code
key      Your Tropicos API key; loads from .Rprofile.
...      Curl options passed on to GET

Value

List or dataframe.

Examples

## Not run:
  tp_synonyms(id = 25509881)

## End(Not run)

ubio_classification

uBio classification

Description

THIS FUNCTION IS DEFUNCT.

Usage

ubio_classification(...)

Arguments

... Parameters, ignored
ubio_classification_search
This function will return ClassificationBankIDs (hierarchiesIDs) that refer to the given NamebankID

Description
THIS FUNCTION IS DEFUNCT.

Usage
ubio_classification_search(...)  

Arguments
... Parameters, ignored

ubio_id
Search uBio by namebank ID.

Description
THIS FUNCTION IS DEFUNCT.

Usage
ubio_id(...)  

Arguments
... Parameters, ignored

ubio_ping
 uBio ping

Description
 uBio ping

Usage
ubio_ping()
**ubio_search**

This function will return NameBankIDs that match given search terms

**Description**

THIS FUNCTION IS DEFUNCT.

**Usage**

ubio_search(...)

**Arguments**

... Parameters, ignored

---

**ubio_synonyms**

Search uBio for taxonomic synonyms by hierarchiesID.

**Description**

THIS FUNCTION IS DEFUNCT.

**Usage**

ubio_synonyms(...)

**Arguments**

... Parameters, ignored

---

**upstream**

Retrieve the upstream taxa for a given taxon name or ID.

**Description**

This function uses a while loop to continually collect taxa up to the taxonomic rank that you specify in the upto parameter. You can get data from ITIS (itis) or Catalogue of Life (col). There is no method exposed by itis or col for getting taxa at a specific taxonomic rank, so we do it ourselves inside the function.
Usage

upstream(...)

## Default S3 method:
upstream(x, db = NULL, upto = NULL, rows = NA, ...)

## S3 method for class 'tsn'
upstream(x, db = NULL, upto = NULL, ...)

## S3 method for class 'colid'
upstream(x, db = NULL, upto = NULL, ...)

## S3 method for class 'ids'
upstream(x, db = NULL, upto = NULL, ...)

Arguments

... Further args passed on to itis_downstream or col_downstream
x Vector of taxa names (character) or IDs (character or numeric) to query.
db character; database to query. One or both of itis, col. Note that each taxonomic data source has their own identifiers, so that if you provide the wrong db value for the identifier you could get a result, but it will likely be wrong (not what you were expecting).
rows (numeric) Any number from 1 to infinity. If the default NA, all rows are considered. Note that this parameter is ignored if you pass in a taxonomic id of any of the acceptable classes: tsn, colid.

Value

A named list of data.frames with the upstream names of every supplied taxa. You get an NA if there was no match in the database.

Examples

## Not run:
## col
### get all genera at one level up
upstream("Pinus contorta", db = 'col', upto = 'genus')
### goes to same level, Abies is a genus
upstream("Abies", db = 'col', upto = 'genus')
upstream("Pinus contorta", db = 'col', upto = 'family')
upstream("Poa annua", db = 'col', upto = 'family')
upstream("Poa annua", db = 'col', upto = 'order')
## Description

Search the CANADENSYS Vascan API.

## Usage

```r
vascan_search(q, format = "json", raw = FALSE, ...)
```

## Arguments

- `q` (character) Can be a scientific name, a vernacular name or a VASCAN taxon identifier (e.g. 861)
- `format` (character) One of json (default) or xml.
- `raw` (logical) If TRUE, raw json or xml returned, if FALSE, parsed data returned.
- `...` (list) Further args passed on to GET

## Details

Note that we lowercase all outputs in data.frame’s, but when a list is given back, we don’t touch the list names.

## Value

- json, xml or a list.

## Author(s)

Scott Chamberlain myrmecocystus@gmail.com
References

API docs http://data.canadensys.net/vascan/api

Examples

```r
## Not run:
vascan_search(q = "Helianthus annuus")
vascan_search(q = "Helianthus annuus", raw=TRUE)
vascan_search(q = c("Helianthus annuus", "Crataegus dodgei"), raw=TRUE)

# format type
## json
c <- vascan_search(q = "Helianthus annuus", format="json", raw=TRUE)
library("jsonlite")
fromJSON(c, FALSE)

## xml
d <- vascan_search(q = "Helianthus annuus", format="xml", raw=TRUE)
library("xml2")
xml2::read_xml(d)

# lots of names, in this case 50
splist <- names_list(rank='species', size=50)
vascan_search(q = splist)

# Curl options
library("httr")
vascan_search(q = "Helianthus annuus", config = verbose())

## End(Not run)
```
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