Package 'pestr'

October 14, 2022

Title Interface to Download Data on Pests and Hosts from 'EPPO'

Version 0.8.2

Description Set of tools to automatize extraction of data on pests from 'EPPO
Data Services' and 'EPPO Global Database' and to put them into tables with
human readable format. Those function use 'EPPO database API', thus you
first need to register on <https://data.eppo.int> (free of charge).
Additional helpers allow to download, check and connect to
'SQLite EPPO database'.

Depends R (>= 3.6.0)

Imports curl, DBI, dplyr (>= 1.0.0), httr, jsonlite, magrittr, readr,
rlang, RSQLite, tidyr (>= 1.0.0), utils

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Suggests knitr, mockr, rmarkdown, roxygen2, testthat

URL <https://github.com/mczyzj/pestr>

BugReports <https://github.com/mczyzj/pestr/issues>

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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R topics documented:

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check_eppo_token   *EPPO Data Services token variable*

Description

Maturing `check_eppo_token` should be used after `create_eppo_token` to check if the token is correctly recognized by EPPO Data Services API. As a reference it uses link to *Xylella fastidiosa* hosts database - **XYLEFA** eppocode. If token is recognized there will be no message. In other cases function will show following messages: No internet connection or Forbidden (HTTP 403).

Usage

```
check_eppo_token(token)
```

Arguments

token   object of class pestr_token.

Value

Silent NULL when there is no error, otherwise message.

See Also

To obtain your free EPPO token please register to **EPPO Data Services** https://data.eppo.int/

Examples

```
## Not run:
eppo_token <- create_eppo_token("abcdef123456")
check_eppo_token(eppo_token)

## End(Not run)
```

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create_eppo_token   *EPPO Data Services token variable*

Description

Maturing create_eppo_token makes token thats should be saved in a variable and used argument
for eppo_tabletools_hosts, eppo_tabletools_pests, eppo_tabletools_cat and eppo_tabletools_taxo
functions. It contains token of class string, that is needed to communicate with EPPO Data Services
API.

Usage

```
create_eppo_token(x)
```

Arguments

x   A string.

Value

Token to access EPPO Data Services API in format recognized by eppo_tabletools_* functions.

See Also

To obtain your free EPPO token please register https://data.eppo.int/

Examples

```
## Not run:
  create_eppo_token("12345678abcdef")

## End(Not run)
```

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eppo_database   *EPPO Data Services Database connection tools*

Description

Stable eppo_database_check checks if there is a file *eppocodes.sqlite* and informs user if it is
outdated and should be downloaded. eppo_database_download downloads database in *SQLite*
format directly. The downloaded file is *zip* archive. On Linux this database will be extracted
automatically. On Windows user will need to extract the file manually. eppo_database_connect
allows user to connect to SQLite database downloaded from EPPO Data Services.

Usage

```
eppo_database_check(filepath = getwd(), filename = "eppocodes.sqlite")

eppo_database_download(filepath = getwd())

eppo_database_connect(filepath = getwd(), filename = "eppocodes.sqlite")
```

Arguments

`filepath`	A string with path where eppocodes.sqlite file is stored. By default it points to working directory.
`filename`	A string with name of the file. By default it takes name eppocodes.sqlite.

Value

Checks if database file exist in directory, if it is outdated, and establishes SQLite database connection

Manual download

If you will, you can download database directly from **EPPO Data Services** https://data.eppo.int

Examples

```
## Not run:
#to check if the db file exist in the directory (default working directory)

eppo_database_check(filepath = getwd())

#to download EPPO SQLite database into directory (default working directory).
#If you are Windows user, after download finishes you will need to unzip file
#manualy.

eppo_database_download(filepath = getwd())

#prior to use functions that check pest names in SQLite database,
#you need to set up connection to SQLite database. Doing so is
#straightforward with function below (once per sesion):

eppo_connection <- eppo_database_connect(filepath = getwd(),
                                         filename = "eppocodes.sqlite")

## End(Not run)
```

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eppo_names_tables *EPPO Data Services SQLite Database search tools*

Description

Maturing eppo_names_table checks if string (names or parts of the names) provided by user match any name in the EPPO database. If strings match any name in database, data frame with all names matching codeid, as well as preferred (binary), language and EPPOcode is returned.

Arguments

names_vector   A vector with organism or viruses names (or part of the names) to be checked for existence in EPPO SQLite Database.

sqlConnection   connection to SQLite EPPO Database. By default NULL; function will automatically connect to database with default credentials.

Value

Check if provided names are present in EPPO SQLite Database. Creates list which contains: data frame with matching names in database and their codeids, character vector of names from names_vector which do not match any entry in database, data frame with preferred names and their codeids, and data frame containing all names matching codeids of preferred names. Last data frame contains also column with preferred (binary), codelang (two letter character with language code), and EPPOcode.

Using with other functions

Output of the function might be passed to functions:

- eppo_tabletools_names
- eppo_tabletools_cat
- eppo_tabletools_hosts
- eppo_tabletools_distribution

Examples

```
## Not run:
  ##This code needs SQLite dabatase in working directory
  test_names <- c("Xylella", "dog", "leafhopper")
  test_names_table <- eppo_names_table(test_names)

## End(Not run)
```

---

eppo_tabletools   *EPPO table manipulation tools*

Description

Maturing eppo_tabletools_names creates tables with names – preferred, common and synonyms – of pests. It is particularly useful for creating whole table with eppo_table_full, otherwise it might be more informative to use eppo_names_tables which provides additional information for your query. eppo_tabletools_hosts creates tables with hosts of pests. eppo_tabletools_cat creates tables with categorization of pests. eppo_tabletools_taxo creates tables with taxonomy of pests/hosts. eppo_tabletools_distri creates tables with distribution of pests. eppo_tabletools_pests creates table with pests of host. All functions return both long table and compact, human friendly table.

Usage

```
eppo_tabletools_names(names_tables)

eppo_tabletools_hosts(
  names_tables = NULL,
  token,
  raw_eppocodes = NULL,
  use_raw_codes = FALSE
)

eppo_tabletools_cat(
  names_tables = NULL,
  token,
  raw_eppocodes = NULL,
  use_raw_codes = FALSE
)

eppo_tabletools_taxo(
  names_tables = NULL,
  token,
  raw_eppocodes = NULL,
  use_raw_codes = FALSE
)

eppo_tabletools_distri(
  names_tables = NULL,
  raw_eppocodes = NULL,
  use_raw_codes = FALSE
)

eppo_tabletools_pests(
  names_tables = NULL,
```

```
    token,
    raw_eppocodes = NULL,
    use_raw_codes = FALSE
)
```

Arguments

`names_tables`	A list of tables created via [eppo_names_tables()]().
`token`	An object containing EPPO API token created via [create_eppo_token()]().
`raw_eppocodes`	A character vector of eppocodes. Use with caution, and ONLY when sure that provided eppocodes are correct.
`use_raw_codes`	logical. Default FALSE. Set TRUE if you want to provide eppocodes directly.

Value

List containing two data frames. First is in a long format, and each row contains synonyms and names in other languages in respect to preferred names. The second data frame contains coerced synonyms and other names to single cell for each preferred name.

See Also

EPPO Data services https://data.eppo.int/ and *EPPO Global Database* https://gd.eppo.int/

Examples

```
## Not run:
 ## the code below requires SQLite DB in the working directory
 ## which can be downloaded with eppo_database_download function
 test_names <- eppo_names_tables(c("Xylella", "Poacea"))
 # get data on naming
 eppo_tabletools_names(test_names)

 ## below functions connect to EPPO Global Database or EPPO Global Services
 ## they need connection to internet.

 # get data on distribution
 eppo_tabletools_distri(test_names)
 # you can also get data using eppocodes directly
 eppo_tabletools_distri(raw_eppocodes = c("XYLEFA", "1GRAF"),
                        use_raw_codes = TRUE)

 ## below functions, beside internet connection require also valid token that
 ## can be obtained after free of charge registration at EPPO Data Services

 # first create token variable:
 create_eppo_token("paste_your_token_here")

 # then use result of eppo_names_tables or raw eppocodes to query REST API
 # get data on hosts
 eppo_tabletools_hosts(test_names, eppo_token)
```

```
eppo_tabletools_hosts(token = eppo_token,
                      raw_eppocodes = c("XYLEFA", "1GRAF"),
                      use_raw_codes = TRUE)

# get data on categorization
eppo_tabletools_cat(test_names, eppo_token)
eppo_tabletools_cat(token = eppo_token,
                    raw_eppocodes = c("XYLEFA", "1GRAF"),
                    use_raw_codes = TRUE)

# get data on taxonomy
eppo_tabletools_taxo(test_names, eppo_token)
eppo_tabletools_taxo(token = eppo_token,
                     raw_eppocodes = c("XYLEFA", "1GRAF"),
                     use_raw_codes = TRUE)

# get data on pests
eppo_tabletools_pests(test_names, eppo_token)
eppo_tabletools_pests(token = eppo_token,
                      raw_eppocodes = c("XYLEFA", "1GRAF"),
                      use_raw_codes = TRUE)

## End(Not run)
```

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eppo_table_full   *EPPO Data Services information table*

Description

Maturing eppo_table_full creates table in human friendly format with data on pest preferred name, synonyms and common names, hosts, categorization, taxonomy and its distribution.

Usage

```
eppo_table_full(names_vector, sqlConnection, token)
```

Arguments

names_vector	A vector with organism names (or part of the names) to be checked for existence in EPPO SQLite Database.
sqlConnection	connection to SQLite EPPO Database. By default NULL; function will automatically connect to database with default credentials.
token	An object containing EPPO API token created via create_eppo_token.

Value

Wraps results of function from eppo_tabletools, namely: eppo_tabletools_names, eppo_tabletools_hosts, eppo_tabletools_cat, eppo_tabletools_taxo, and eppo_tabletools_distri into one compact, human readable table.

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pestr	*pestr: A package for retrieving data from EPPO Data Services* https://data.eppo.int/

Description

The pestr package provides function for downloading SQLite EPPO database, searching for pest names in SQLite database, and retrieving all necessary data from EPPO Data Services API for selected pest names.

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