

Package ‘rfishnet2’

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Type Package

Title Exploratory Data Analysis for FishNet2 Data

Version 0.2.0

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Description Provides data processing and summarization of data from FishNet2.net in text and graphical outputs. Allows efficient filtering of information and data cleaning.

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URL <https://github.com/kdors/rfishnet2>

Encoding UTF-8

LazyData true

Depends R (>= 3.6), dplyr (>= 0.8.3)

Imports pracma (>= 2.2.5), ggplot2 (>= 3.2.1), sf (>= 0.8-0),
rworldmap(>= 1.3-6)

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NeedsCompilation no

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fishsummary	<i>Summarize a set of records downloaded from FishNet2</i>
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Description

Creates a simple summary of data returned by a FishNet2 search.

Usage

```
fishsummary(input, verbose = TRUE)
```

Arguments

- input A dataframe in FishNet2 standard format (by using read.csv())
- verbose Print progress and information messages. Default: TRUE

Value

- A list of summary statistics
- # summarize occurrence records

get_species	<i>Get unique species in a given genus in dataframe.</i>
-------------	--

Description

get_species returns all species name that correspond to genus name input in a FishNet2 dataframe.

Usage

```
get_species(df, genus)
```

Arguments

- df A dataframe in FishNet2 standard format (by using read.csv())
- genus Genus of species

Details

This is a function to get the species name of a given genus name. Names are found using the 'ScientificName' column in a FishNet2 dataframe. If "value is only one word, no species name is returned.

Value

Vector of unique species values or character(0) if empty

Examples

```
get_species(ictaluridae, "Ameirus")
get_species(ictaluridae, "Noturus")
get_species(louisiana, "Scaphirhynchus")
```

has_tissue

Filter a set of records downloaded from FishNet2 by Tissue column

Description

Filters data returned by a FishNet2 search for records that include tissue information.

Usage

```
has_tissue(input, verbose = TRUE)
```

Arguments

input	A dataframe in FishNet2 standard format (by using read.csv())
verbose	Print progress and information messages. Default: TRUE

Value

Filtered dataset with records that do not have a blank tissue value
summarize occurrence records

Examples

```
has_tissue(louisiana, TRUE)
```

heatmap_world	<i>Heat Map of Occurrence Frequency by Country</i>
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Description

Creates a heatmap of the frequency of an occurrence by country/region.

Usage

```
heatmap_world(df, name = "none")
```

Arguments

df	A dataframe in FishNet2 standard format with column labeled 'Country'
name	Value in 'ScientificName' or 'Family' column

Value

heatmap showing frequency by country

Examples

```
heatmap_world(ictaluridae)
```

ictaluridae	<i>Dataset of Ictaluridae Taxon from Years 2017 to 2019</i>
-------------	---

Description

A dataset as a result of a search query of taxon 'Ictaluridae' and date range '2017-2019' on fish-net2.net

Usage

```
ictaluridae
```

Format

A data frame with 273 rows and 16 variables:

InstitutionCode unique code given to institution who owns the data

IndividualCount Number of fish individuals

ScientificName Scientific name of fish observation

Family Family of fish observation

PreparationType Type of preparation
Tissues Whether observation contains tissues
Latitude Latitude observed
Longitude Longitude observed
Country Country that lot was observed in
StateProvince State or province where lot was observed
County County that lot was observed in
YearCollected Year collected
MonthCollected Month collected
DayCollected Day collected
BasisOfRecord Preserved Specimen
DateLastModified Data record last modified in database

Source

<http://www.fishnet2.net/search.aspx?t=ictaluridae&d=2017-2019>

louisiana

Dataset of Records from Louisiana from Years 2005 to 2006

Description

A dataset as a result of a search query of location 'Louisiana' and date range '2005-2006' on fishnet2.net

Usage

louisiana

Format

A data frame with 273 rows and 20 variables:

InstitutionCode unique code given to institution who owns the data
CollectionCode Collection Code
IndividualCount Number of fish individuals
ScientificName Scientific name of fish observation
Family Family of fish observation
PreparationType Type of preparation
Tissues Whether observation contains tissues
Latitude Latitude observed
Longitude Longitude observed

HorizontalDatum Horizontal Datum
Country Country that lot was observed in
StateProvince State or province where lot was observed
County County that lot was observed in
YearCollected Year collected
MonthCollected Month collected
DayCollected Day collected
Collector Name of collector
GeorefMethod Geo Reference Method
BasisOfRecord Preserved Specimen
DateLastModified Data record last modified in database

Source

<http://www.fishnet2.net/search.aspx?l=+Louisiana&d=2005-2006>

occ_map

Plot Longitude and Latitude Points on World Map

Description

occ_map returns a plot with columns 'Longitude' and 'Latitude' in FishNet2 dataframe on a world map.

Usage

```
occ_map(df, color = "darkred")
```

Arguments

df	A dataframe in FishNet2 standard format (by using read.csv())
color	Color of plotted points, default is dark red

Details

This is a function to get a plot of occurrence records from FishNet2 search query. Parameter is a dataframe that must have the columns 'Longitude' and 'Latitude'. NA values are removed in the function.

Value

Plot of latitude and longitude points on world map

Examples

```
occ_map(ictaluridae)
```

plot_records	<i>Plots record count by Scientific Name on a bar graph.</i>
--------------	--

Description

plot_records returns a bar graph showing the number of records for each distinct scientific name in the dataset.

Usage

```
plot_records(df, top_ten = TRUE, color = TRUE)
```

Arguments

df	A dataframe in FishNet2 standard format (by using read.csv())
top_ten	Top ten species occurrence counts
color	True if each bar should have a distinct color, FALSE for grey bars. Default: TRUE

Details

This is a function to visualize data by Scientific Name from FishNet2 search query. A dataframe is input from a standard FishNet2 search query.

Value

Plot of record count by Scientific Name on a bar graph

Examples

```
plot_records(louisiana)
```

spatial_search	<i>Filter data by longitude and latitude.</i>
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Description

spatalsearch returns the data that falls within radius given radius, and latitude and longitude coordinates.

Usage

```
spatial_search(df, lat, lon, r)
```

Arguments

df	A dataframe in FishNet2 standard format (by using read.csv())
lat	Latitude coordinate
lon	Longitude coordinate
r	Radius in kilometers

Details

This is a function to filter data given in the format of a csv file from FishNet2. For this to work properly, the dataframe must have column names using names given in standard csv format from FishNet2 website.

Value

Rows in file that fall within circle with center (lat,long) and radius r

Examples

```
spatial_search(ictaluridae, 36.12, -77.63, 1)

## Not run:
spatial_search(ictaluridae, -173,44,10)

## End(Not run)
```

top_n_plots	<i>Outputs a bar graph giving the top n in frequency in specified column of dataframe</i>
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Description

top_n_plots returns a bar graph that shows the top n (n is given as a parameter) labels in a given column in the dataframe with the highest frequency

Usage

```
top_n_plots(df, n, colName, color = "default colors")
```

Arguments

df	A dataframe in FishNet2 standard format (by using read.csv())
n	The number of the labels with the highest frequencies to be included in the graph
colName	The column name that the graph outputs
color	Color of the bars, by default is a different color for each bar

Details

This is a function to create and output a bar graph giving the top n in frequency in specified column of dataframe (columns include 'ScientificName', 'Family', 'Country', 'State/Province', 'County').

Value

A bar graph

Examples

```
top_n_plots(ictaluridae,10,"ScientificName")
```

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