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)

RoxygenNote 7.1.0

NeedsCompilation no

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R topics documented:

`fishsummary` *Summarize a set of records downloaded from FishNet2*

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` *Get unique species in a given genus in dataframe.*

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 *Heat Map of Occurrence Frequency by Country*

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 *Dataset of Ictaluridae Taxon from Years 2017 to 2019*

Description

A dataset as a result of a search query of taxon 'Ictaluridae' and date range '2017-2019' on fishnet2.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

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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 — *Plots record count by Scientific Name on a bar graph.*

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 — *Filter data by longitude and latitude.*

Description

spatialsearch 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)
```

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top_n_plots — *Outputs a bar graph giving the top n in frequency in specified column of dataframe*

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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