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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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)
Heat Map of Occurrence Frequency by Country

**Description**

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

**Usage**

```r
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**

```r
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**

```r
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**


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**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
**occ_map**

**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**


---

**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

spatial_search 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

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

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

---

**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

```r
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
**top_n_plots**

**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**

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