

# 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.

**License** MIT + file LICENSE

**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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**Repository** CRAN

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## R topics documented:

fishsummary . . . . .	2
get_species . . . . .	2
has_tissue . . . . .	3
heatmap_world . . . . .	4
ictaluridae . . . . .	4
louisiana . . . . .	5
occ_map . . . . .	6

plot_records . . . . .	7
spatial_search . . . . .	7
top_n_plots . . . . .	8

<b>Index</b>	<b>10</b>
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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

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get_species	<i>Get unique species in a given genus in dataframe.</i>
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### 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")
```

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has_tissue	<i>Filter a set of records downloaded from FishNet2 by Tissue column</i>
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**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)
```

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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)
```

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

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louisiana

*Dataset of Records from Louisiana from Years 2005 to 2006*

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#### 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*

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### 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)
```

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

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spatial_search	<i>Filter data by longitude and latitude.</i>
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**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	<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")
```

# Index

## \* datasets

ictaluridae, 4

louisiana, 5

fishsummary, 2

get\_species, 2

has\_tissue, 3

heatmap\_world, 4

ictaluridae, 4

louisiana, 5

occ\_map, 6

plot\_records, 7

spatial\_search, 7

top\_n\_plots, 8