

Package ‘icesVMS’

March 21, 2023

Version 1.1.4

Title Link to the ICES Vessel Monitoring System and Logbook Database
Web Services

Imports glue, httr, icesConnect (>= 1.0.0), icesVocab

Suggests sf

Description Links to the ICES Vessel Monitoring System (VMS) and logbook database web services
<<https://data.ices.dk/vms/webservices>> to allow users to download summaries and data products.

License GPL (>= 2)

URL <https://data.ices.dk/vms>,
<https://github.com/ices-tools-prod/icesVMS>

Encoding UTF-8

RoxygenNote 7.2.3

Depends R (>= 4.0)

BugReports <https://github.com/ices-tools-prod/icesVMS/issues>

NeedsCompilation no

Author Colin Millar [aut, cre],
Carlos Pinto [ctb]

Maintainer Colin Millar <colin.millar@ices.dk>

Repository CRAN

Date/Publication 2023-03-21 17:00:14 UTC

R topics documented:

icesVMS-package	2
check_ecoregion	3
get_benthis_parameters	3
get_csquare	4
get_ecoregion_list	5
get_effort_map	5

get_fo_effort	6
get_fo_landings	7
get_logbook	7
get_metier_lookup	8
get_passive_footprint	9
get_sar	10
get_sar_map	11
get_screening_details	12
get_screening_messages	12
get_upload_summary	13
get_vms	13
get_wgfbt_data1	15
get_wgfbt_data2	16
get_wgfbt_data3	17
screen_vms_file	18
sum_distinct_vessels	18
vms_api	20
wkt_csquare	20

Index 22

icesVMS-package *Functions to link to the ICES VMS and logbook database web services.*

Description

Functions to link to the ICES VMS and logbook database web services to allow users to download summaries and data products from the ICES VMS and logbook database.

Details

Download data:

<code>get_benthis_parameters</code>	download gear contact model parameters
<code>get_metier_lookup</code>	download metier to gear category lookup table
<code>get_vms</code>	download VMS data

Author(s)

Colin Millar.

References

ICES VMS and Logbook Database web services: <https://data.ices.dk/vms/webservices>.

check_ecoregion	<i>Lists of Vocabularies</i>
-----------------	------------------------------

Description

Get a list of vocabularies such as country codes or ecoregions.

Usage

```
check_ecoregion(arg, stop.on.fail = TRUE)
```

```
check_stat_recs(arg, stop.on.fail = TRUE)
```

```
check_countries(arg, stop.on.fail = TRUE)
```

Arguments

arg one of country code, ICES statistical rectangle or ICES ecoregion
stop.on.fail logical, if TRUE function will call stop()

Value

logical

Examples

```
check_ecoregion("Celtic Seas")
```

```
check_stat_recs("40F1")
```

```
check_countries("DK")
```

```
check_countries(c("DK", "GB"))
```

get_benthis_parameters

Get gear characteristics for 'benthis' gear categories

Description

Download a data.frame of gear contact models for 'benthis' gear categories used in calculating the swept area of a fishing gear.

Usage

```
get_benthis_parameters()
```

Value

a data.frame of model parameters

Examples

```
benthis_pars <- get_benthis_parameters()
```

get_csquare

Download C-square information

Description

Download a data.frame of information on a set of C-squares.

Usage

```
get_csquare(c_square, stat_rec, ices_area, ecoregion, convert2sf = FALSE)
```

Arguments

c_square	character 0.05 degree c-square name
stat_rec	ICES statistical rectangle
ices_area	ICES area
ecoregion	ICES ecoregion
convert2sf	logical, default FALSE, should an simple features object be returned if the sf package is installed?

Details

If the sf package is installed then a simple features object will be returned, if convert2sf flag is set to TRUE.

Value

a data.frame of VMS data

Examples

```
sq40F3 <- get_csquare(stat_rec = "40F3")

# if the sf package is installed, an simple feature object will be returned
NS <- get_csquare(ecoregion = "Greater North Sea", convert2sf = TRUE)
plot(NS["ices_area"], border = "transparent")
```

get_ecoregion_list *Lists of Vocabularies*

Description

Get a list of vocabularies such as country codes or ecoregions.

Usage

```
get_ecoregion_list()
```

```
get_stat_rec_list()
```

```
get_country_list()
```

Value

a character vector

Examples

```
ecoregions <- get_ecoregion_list()
"Celtic Seas" %in% ecoregions
```

```
stat_recs <- get_stat_rec_list()
"40F1" %in% stat_recs
```

```
countries <- get_country_list()
"DK" %in% countries
```

get_effort_map *Download fishing effort map data*

Description

Download a data.frame of kw fishing hours by c-square and gear category averaged over 4 years.

Usage

```
get_effort_map(ecoregion, year = NULL, convert2sf = FALSE)
```

Arguments

ecoregion	ICES ecoregion (see details)
year	which year to select (see details)
convert2sf	logical, default FALSE, should an simple features object be returned if the sf package is installed?

Details

The spatial data.frame contains average annual mega Watt fishing hours, averaged over 4 years.

Available ecoregions are given in the description field of the ICES ecoregion vocabulary <<http://vocab.ices.dk/?ref=1414>>

Value

a data.frame with a WKT column for the c-square polygons

Examples

```
## Not run:
# requires authorization
ns_effort_map <- get_effort_map("Greater North Sea", convert2sf = TRUE)
plot(
  ns_effort_map[ns_effort_map$fishing_category_FO == "Otter", "mw_fishinghours"],
  border = FALSE, logz = TRUE
)
## End(Not run)
```

get_fo_effort

Download fishing effort summaries

Description

Download a data.frame of kw fishing hours by country and year for a given ICES ecoregion.

Usage

```
get_fo_effort(ecoregion)
```

Arguments

ecoregion	ICES ecoregion
-----------	----------------

Value

a data.frame

Examples

```
## Not run:  
# requires authorization  
ns_effort_data <- get_fo_effort("Greater North Sea")  
  
## End(Not run)
```

get_fo_landings *Download fishing landings summaries*

Description

Download a data.frame of total weight by country and year for a given ICES ecoregion.

Usage

```
get_fo_landings(ecoregion)
```

Arguments

ecoregion ICES ecoregion

Value

a data.frame

Examples

```
## Not run:  
# requires authorization  
ns_landings_data <- get_fo_landings("Greater North Sea")  
  
## End(Not run)
```

get_logbook *Download Logbook data*

Description

RESTRICTED. Only core members of the ICES VMS data call can access this data. Download a data.frame of VMS data from the ICES VMS and logbook database.

Usage

```
get_logbook(  
  country,  
  year,  
  month,  
  gear_code,  
  metier,  
  stat_rec,  
  ices_area,  
  ecoregion  
)
```

Arguments

country	country code
year	integer year
month	integer month
gear_code	benthis gear code
metier	level 6 metier code
stat_rec	ICES statistical rectangle
ices_area	ICES area
ecoregion	ICES ecoregion

Value

a data.frame of VMS data

Examples

```
## Not run:  
# requires authorization  
logbook <- get_logbook(country = "DK", year = 2021, month = 1)  
  
## End(Not run)
```

get_metier_lookup *Link Metier level 6 to Benthis categories*

Description

Download a data.frame of Metier codes to link level 6 metier codes with different gear categories

Usage

```
get_metier_lookup()
```


Value

a data.frame

Examples

```
metier_lookup <- get_metier_lookup()
```

get_passive_footprint *Download passive fishing gear footprint*

Description

Download a data.frame of presence of fishing by c-square and year for passive fishing gears (see details).

Usage

```
get_passive_footprint(  
  ecoregion,  
  year,  
  metier_level4 = NULL,  
  datacall = NULL,  
  convert2sf = FALSE  
)
```

Arguments

ecoregion	ICES ecoregion
year	which year to select
metier_level4	optional gear code (metier level 4) ("FPO")
datacall	integer year giving which data call year to inquire about. If NULL returns the a summary of the most recent approved data.
convert2sf	logical, default FALSE, should an simple features object be returned if the sf package is installed?

Details

Passive gears defined as all gears registered under the metier level 4 codes, FPO (fishing pots), LLS (long lines) and GNS (set gill nets), with the exclusion of metier level 5 codes within the GNS category: GNS_SPF and GNS_LPF (set gill nets targeting small and large pelagic fish).

Value

a data.frame with a WKT column for the c-square polygons

Examples

```
## Not run:
# requires authorization
footprint_map <- get_passive_footprint("Celtic Seas", 2021, convert2sf = TRUE)
plot(footprint_map["ecoregion"], border = FALSE)

## End(Not run)
```

get_sar

Download VMS data

Description

RESTRICTED. Only core members of the ICES VMS data call can access this data. Download a data.frame of VMS swept area ratio values from the ICES VMS and logbook database.

Usage

```
get_sar(
  year,
  c_square,
  gear_code,
  stat_rec,
  ices_area,
  ecoregion,
  datacall = NULL
)
```

Arguments

year	integer year
c_square	character 0.05 degree c-square name
gear_code	benthis gear code
stat_rec	ICES statistical rectangle
ices_area	ICES area
ecoregion	ICES ecoregion
datacall	integer year giving which data call year to inquire about. If NULL returns the a summary of the most recent approved data.

Value

a data.frame of VMS data

Examples

```
## Not run:  
# requires authorization  
sar <- get_sar(2021, stat_rec = "40F1")  
  
## End(Not run)
```

`get_sar_map`*Download swept area ratio map data*

Description

Download a data.frame of surface and subsurface swept area ratio by c-square for a given ICES ecoregion.

Usage

```
get_sar_map(ecoregion, year = NULL, nyears = NULL, convert2sf = FALSE)
```

Arguments

ecoregion	ICES ecoregion
year	which year to select (see details)
nyears	the number of years to take an average over
convert2sf	logical, default FALSE, should an simple features object be returned if the sf package is installed?

Details

The spatial data.frame contains average annual surface-swept-area-ratio and subsurface-swept-area-ratio averaged over 4 years by default. If year is not specified (NULL) then the present year - 1 is assumed.

Value

a data.frame with a WKT column for the c-square polygons

Examples

```
## Not run:  
# requires authorization  
sar_map <- get_sar_map("Celtic Seas", 2021, convert2sf = TRUE)  
plot(sar_map["surface_sar"], border = FALSE, logz = TRUE)  
  
## End(Not run)
```

get_screening_details *Get the details of a file screening session*

Description

Download a list of information on a file upload screening session.

Usage

```
get_screening_details(sessionId)
```

Arguments

sessionId file screening session ID

Value

a list

Examples

```
screening_info <- get_screening_details(530)
```

get_screening_messages
Get all messages of a file screening session

Description

Download a list of error and warning messages on a file upload screening session.

Usage

```
get_screening_messages(sessionId)
```

Arguments

sessionId file screening session ID

Value

a list

Examples

```
tofix <- get_screening_messages(528)
```

get_upload_summary *Download a summary of submitted data*

Description

Download a summary of submitted data

Usage

```
get_upload_summary(datacall = NULL)
```

Arguments

datacall integer year giving which data call year to inquire about. If NULL returns the a summary of the most recent approved data.

Value

a data.frame of VMS summary data

Examples

```
## Not run:  
upload_summary <- get_upload_summary()  
  
## End(Not run)
```

get_vms *Download VMS data*

Description

RESTRICTED. Only core members of the ICES VMS data call can access this data. Download a data.frame of VMS data from the ICES VMS and logbook database.

Usage

```
get_vms(  
  country,  
  year,  
  month,  
  c_square,  
  gear_code,  
  metier,  
  stat_rec,  
  ices_area,  
  ecoregion,  
  datacall = NULL  
)
```

Arguments

country	country code
year	integer year
month	integer month
c_square	character 0.05 degree c-square name
gear_code	benthis gear code
metier	level 6 metier code
stat_rec	ICES statistical rectangle
ices_area	ICES area
ecoregion	ICES ecoregion
datacall	integer year giving which data call year to inquire about. If NULL returns the a summary of the most recent approved data.

Value

a data.frame of VMS data

Examples

```
## Not run:  
# requires authorization  
vms <- get_vms(country = "DK", year = 2021, month = 1)  
  
## End(Not run)
```

get_wgfbt_data1	<i>Download swept area ratio, landings and value map data</i>
-----------------	---

Description

Download a data.frame of surface and subsurface swept area ratio by c-square for a given ICES ecoregion, year and gear code.

Usage

```
get_wgfbt_data1(  
  ecoregion,  
  year,  
  fishing_category = NULL,  
  benthis_metier = NULL,  
  datacall = NULL,  
  convert2sf = FALSE  
)
```

Arguments

ecoregion	ICES ecoregion
year	which year to select
fishing_category	optional gear category ("Otter", "Dredge")
benthis_metier	optional benthis metier ("SDN_DMF")
datacall	integer year giving which data call year to inquire about. If NULL returns the a summary of the most recent approved data.
convert2sf	logical, default FALSE, should an simple features object be returned if the sf package is installed?

Details

fishing_category and benthis_metier may not both be supplied, if neither are supplied the total is calculated.

Value

a data.frame with a WKT column for the c-square polygons

Examples

```
## Not run:  
# requires authorization  
data1 <- get_wgfbt_data1("Celtic Seas", 2021, benthis_metier = "OT_DMF", convert2sf = TRUE)  
plot(data1["total_weight"], border = NA, logz = TRUE)
```

```
## End(Not run)
```

get_wgfbid_data2	<i>Download swept area ratio, landings and value map data</i>
------------------	---

Description

Download a data.frame of surface and subsurface swept area ratio by c-square for a given ICES ecoregion, year and gear code.

Usage

```
get_wgfbid_data2(ecoregion, year, convert2sf = FALSE)
```

Arguments

ecoregion	ICES ecoregion
year	which year to select
convert2sf	logical, default FALSE, should an simple features object be returned if the sf package is installed?

Value

a data.frame with a WKT column for the c-square polygons

Examples

```
## Not run:  
# requires authorization  
data2 <- get_wgfbid_data2("Celtic Seas", 2021, convert2sf = TRUE)  
plot(data2[data2$E_MET_level6 == "OTB_DEF_70-99_0_0", "total_weight"], border = NA, logz = TRUE)  
## End(Not run)
```

get_wgfbt_data3	<i>Download swept area ratio, landings and value map data</i>
-----------------	---

Description

Download a data.frame of surface and subsurface swept area ratio by c-square for a given ICES ecoregion, month, year and gear code.

Usage

```
get_wgfbt_data3(  
  year,  
  fishing_category = NULL,  
  benthis_metier = NULL,  
  datacall = NULL,  
  convert2sf = FALSE  
)
```

Arguments

year	which year to select
fishing_category	optional gear category ("Otter", "Dredge")
benthis_metier	optional benthis metier ("SDN_DMF")
datacall	integer year giving which data call year to inquire about. If NULL returns the a summary of the most recent approved data.
convert2sf	logical, default FALSE, should an simple features object be returned if the sf package is installed?

Details

gear_group and benthis_metier may not both be supplied, if neither are supplied the total is calculated.

Value

a data.frame with a WKT column for the c-square polygons

Examples

```
## Not run:  
# requires authorization  
data3 <- get_wgfbt_data3(2021, benthis_metier = "OT_DMF", convert2sf = TRUE)  
plot(data3["surface_sar"], border = NA, logz = TRUE)  
  
## End(Not run)
```

screen_vms_file *Screen a VMS file and submit for QC checks*

Description

In this web service the user can upload a file to be screen and validated by the VMS database. The service can be called using post and the file will have to be part of the body of the call. The user needs to be authenticated in order to call this service. This file can be later pushed to the database by the same user.

Usage

```
screen_vms_file(file, verbose = FALSE)
```

Arguments

file	file name of the file containing the data to screen
verbose	return verbose information about the POST request

Value

text message from the screening process

Examples

```
## Not run:
# requires authorization
filename <- system.file("test_files/vms_test.csv", package = "icesVMS")
screen_vms_file(filename)

## End(Not run)
```

sum_distinct_vessels *Add together anonymous ID entries*

Description

Anonymous vessel IDs are supplied when there are less than 2 vessels. Therefore when adding these values, if there is one or more values containing an empty string (? 2 vessels) then the results is an empty string also. Otherwise, a unique vector of vessel IDs is computed and if there are 2 or less unique entries they are returned, otherwise an empty string is returned.

Usage

```
sum_distinct_vessels(id, n)
```

```
sum_vessel_ids(id, n)
```

Arguments

id a vector vessel Ids entries: string vector of semi-colon separated IDs

n a vector corresponding to the number of unique vessel ids in the vector supplied in id where 3 codes for anything greater than 2.

Value

a single character

Note

the format of the vessel IDs is a semi-colon separated list of IDs contained in a character vector of length one.

Examples

```
sum_vessel_ids(c("id1;id2", "id1", "id2", "id1;id3", ""), c(2, 1, 1, 2, 3))
sum_vessel_ids(c("id1;id2", "id1", "id2", "id1;id3"), c(2, 1, 1, 2))

sum_distinct_vessels(c("id1;id2", "id1", "id2", "id1;id3", ""), c(2, 1, 1, 2, 3))
sum_distinct_vessels(c("id1;id2", "id1", "id2", "id1;id3"), c(2, 1, 1, 2))

## Not run:
require(dplyr)

data(vms)
vms <-
  vms %>%
  group_by(year, cSquare) %>%
  summarise(
    fishingHours = sum(fishingHours, na.rm = TRUE),
    totweight = sum(totweight, na.rm = TRUE),
    noDistinctVessels = sum_distinct_vessels(anonymizedVesselID, noDistinctVessels),
    anonymizedVesselID = sum_vessel_ids(anonymizedVesselID, noDistinctVessels),
    .groups = "drop"
  )

## End(Not run)
```

vms_api *Build a VMS web service url*

Description

utility to build a url with optional query arguments

Usage

```
vms_api(service, ...)
```

Arguments

service	the name of the service
...	named arguments will be added as queries

Value

a complete url as a character string

Examples

```
vms_api("hi", bye = 21)
vms_api("csquares", argument1 = 2021, argument2 = NULL)
```

wkt_csquare *Build a WKT string from latitude and longitude*

Description

utility to build a WKT (Well Known Text) polygon string for a c-square

Usage

```
wkt_csquare(lat, lon)
```

Arguments

lat	latitude
lon	longitude

Value

a string in WKT format

`wkt_csquare`

21

Examples

```
wkt_csquare(55, 0.1)
```

Index

check_countries (check_ecoregion), 3
check_ecoregion, 3
check_stat_recs (check_ecoregion), 3

get_benthis_parameters, 2, 3
get_country_list (get_ecoregion_list), 5
get_csquare, 4
get_ecoregion_list, 5
get_effort_map, 5
get_fo_effort, 6
get_fo_landings, 7
get_logbook, 7
get_metier_lookup, 2, 8
get_passive_footprint, 9
get_sar, 10
get_sar_map, 11
get_screening_details, 12
get_screening_messages, 12
get_stat_rec_list (get_ecoregion_list),
5
get_upload_summary, 13
get_vms, 2, 13
get_wgfbid_data1, 15
get_wgfbid_data2, 16
get_wgfbid_data3, 17

icesVMS (icesVMS-package), 2
icesVMS-package, 2

screen_vms_file, 18
sum_distinct_vessels, 18
sum_vessel_ids (sum_distinct_vessels),
18

vms_api, 20

wkt_csquare, 20