Extract to cerat cSV used to feed FGP/OGSL/ETC

Pablo Vergara

May 17 2019

This document is the narrative of how an Excel file called "sGSL-September-RV-FGP.csv" was generated.

The DFO Gulf Region September RV survey follows a stratified random sampling design and covers Division 4T of the Northwest Atlantic Fisheries Organisation (NAFO).

```
`%nin%` = Negate(`%in%`) ## a useful operator
suppressPackageStartupMessages(library(gulf))
```

SETS

Using the function "read.card" from the DFO Gulf Region's R package "gulf", read in the set cards and exclude hydrographic stations and null sets, so as to keep only representative tows in strata 415 to 439. Strata 401, 402 and 403 are excluded because they were not sampled prior to 1985.

```
yrs <- 1970:2019
x <- read.card(card.type="set", year=yrs)
## we want to keep only representative tows, within the historical context that some tows were identifie
uu <- sort(unique(x$experiment))
```

```
knitr::kable(data.frame(uu,experiment.str(uu)))## what are the experiment codes
```

uu	experiment.str.uu.
1	stratified random survey set
2	regular survey set (fixed)
3	unrepresentative catch - net damage
5	comparative fishing experiment
8	exploratory fishing
9	hydrography

```
#Need to remove data that is of no use for analysis

# true for sets other than NULL sets
logical1 <- (x$experiment != 3)

# true for all except 2 tows in 1982 that were true hydrography set cards
logical2 <- !((x$year==1982 & x$cruise.number==278) & x$experiment %in% c(8,9))

## true for all except true hydrography set cards after 1993
logical3 <- !(x$year>1993 & x$experiment %in% c(8,9))

## keep only the strata in NAFO 4T
logical4 <- x$stratum %in% c(415:439)


#Subset set cards with conditions
x <- x[logical1 & logical2 & logical3 & logical4,]
```

Add a few useful columns to the data frame containing the set card information (including depth and swept

area as requested).

```
## add useful columns
x$unique.id <- paste(x$year, x$cruise.number, x$vessel.code, x$set.number, sep="-")
x$experiment.str <- experiment.str(x$experiment)
x[x$vessel.code=="T" & x$year==2003,"vessel.code"] <- "TE" ## CCGS Templeman used in 2003
x$vessel.str <- vessel.str(x$vessel.code)
x$gear.str <- gear.str(x$gear)
x$longitude <- longitude(x)
x$latitude <- latitude(x)
x$mission <- paste(x$vessel.code, x$cruise.number, sep="")

ox <- order(x$year, x$month, x$day, x$start.hour)
x <- x[ox,] # reorder chronologically

## remove missions N176 and H245 which were comparative missions conducted in August 1992

x <- x[which(x$mission !="N176"),]
x <- x[which(x$mission !="H245"),]
```

To deal with "repeat tows" (fishing locations that were purposefully sampled more than once in a given year) an additional column called station.number is added to identify tows that were conducted at the same location within a survey and that should be treated differently when estimating species density. These repeating tows are not independent observations and should be treated accordingly in analyses.

```
x$station.number <- unlist(sapply(yrs, function(y){x.t <- x[x$year==y,]; station.number(x.t, method="ob
```

Catch cards contain the total catch information for the species of interest. Here they are adjusted for distance towed, estimated diurnal effects and estimated vessel-gear effects.

```
### Catch card for all years requesteed (1971 - 2018)
y <- read.card(card.type="catch", year = yrs)
```

CATCH

```
y <- adjust(y, x)

## Tow catches were adjusted to a standard tow distance of 1.75 nautical miles.
## Tow catches were adjusted for vessel and day-night effects to be equivalent to a Teleost day tow with
y$unique.id <- paste(y$year, y$cruise.number, y$vessel.code, y$set.number, sep="-")
y$english.name <- species.str(y$species, "english")
y$latin.name <- species.str(y$species, "latin")
y$french.name <- species.str(y$species, "french")

z <- merge(y,x, all.x = TRUE, by = "unique.id", names = c("longitude","latitude", "gear.str"))

##  CSV
## write catch cards to file
fn2 <- "sGSL-September-RV-FGP.csv"
fp  <- "e:/work/GC code/gulf/"
csv.fn2 <- file.path(fp,fn2)

ooz <- order(z$year, z$month, z$day, z$start.hour, z$start.minute, z$species)

#columns to keep
```

```r
fvars2 <- c("year","month","day","start.hour","start.minute","latitude","longitude","gear.str","species"
zz=  z[ooz,fvars2]
write.csv(zz, file=csv.fn2, row.names=FALSE)
```