

Extract to create a csv file used to feed FGP/OGSL/ETC

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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 401 to 403 and 415 to 439.

```
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 identified
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(401,402,403,415:439)
```

```
#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 (1970 - 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/GitHub projects/fgp-datasets/rv_survey/"
```

```
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
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)
```