

# Creation of Atlantic Cod ageing datasets for OpenData

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## Atlantic Cod

Atlantic Cod otoliths are collected on the annual September RV survey and during scientific sampling of commercial fisheries.

The goal here is to summarise the ageing materials that we have, and provide a dataset of the otoliths that we have at the Gulf Fisheries Centre.

```
## RV data
y <- read.card(species=10, card.type="bio")

## Warning in convert.vector(x[, vars[i]], to = format[vars[i], "format"]): Some
## numerical values were set to NA.

## commercial data
## what years are available for commercial ages?
## com.files <- list.files(path="//DFNBE1CwpFSP002/Hd2/commercial/age", pattern="codage")
y.c <- read.card(year=1982, sampling="commercial", species=10, card.type="age") ## this loads all pre-1983

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage4882.dat'"

for(yy in c(1983:2002,2004:2018)){ ## loop over years
  t.c <- read.card(year=yy, sampling="commercial", species=10, card.type="age")
  y.c <- rbind(y.c,t.c)
}

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1983.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1984.dat'"

## Warning in dmm2deg(x$longitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1985.dat'"

## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## Warning in dmm2deg(x$longitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1986.dat'"

## Warning in dmm2deg(x$longitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1987.dat'"

## Warning in dmm2deg(x$longitude.start/100): 'minutes' argument must lie between 0
## and 60.
```

```

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1988.dat'"
## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1989.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1990.dat'"
## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1991.4vn'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1991.dat'"
## Warning in dmm2deg(x$longitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1992.4vn'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1992.dat'"
## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1993.dat'"
## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1994.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1995.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1996.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1997.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1998.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage1999.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2000.dat'"
## Warning in dmm2deg(x$longitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2001.dat'"
## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2002.dat'"
## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

```

```

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2004.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2005.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2006.dat'"

## Warning in dmm2deg(x$latitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2007.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2008.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2009.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2010.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2011.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2012.dat'"

## Warning in dmm2deg(x$longitude.start/100): 'minutes' argument must lie between 0
## and 60.

## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2013.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2014.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2015.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2016.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2017.dat'"
## [1] "Reading: '//DFNBE1CwpFSP002/Hd2/commercial/age/codage2018.dat'"

l.4tvn <- which(substring(y.c$nafo.division,1,2)=="4T" | substring(y.c$nafo.division,1,3)=="4VN") ## keep

rv.df <- aggregate(fish.number~year+month, data=y[which(y$age.material==1),], length)
rv.df$source <- "RV"
names(rv.df)[3] <- "number.otoliths_nombre.otolithes"

comm.df <- aggregate(otolith.number~year+month, data=y.c[l.4tvn,], length)
names(comm.df)[3] <- "number.otoliths_nombre.otolithes"
comm.df$source <- "Commercial"

cod.out.df <- rbind(rv.df, comm.df)
cod.out.df$latin.name_nom.latin <- "Gadus morhua"
cod.out.df$english.name_nom.anglais <- "Atlantic Cod"
cod.out.df$french.name_nom.français <- "Morue franche"

vars <- c("source", "latin.name_nom.latin", "english.name_nom.anglais", "french.name_nom.français", "year", "month")
o1 <- order(cod.out.df$source, cod.out.df$year, cod.out.df$month)

cod.out.fn <- "NAFO-4T-Atlantic-Cod-ages.csv"
write.csv(cod.out.df[o1,vars], file=cod.out.fn, row.names = FALSE)

## and a so-called data dictionary to explain the different columns in the CSV file
vars.bilingual <- c("source", "latin.name_nom.latin", "english.name_nom.anglais", "french.name_nom.français", "year", "month")

data.dic <- data.frame(
  name_nom = vars.bilingual
)
data.dic$description_fr <- c("Source de otolithes, peut soit provenir du relevé par navire de recherche", "Source de otolithes, peut soit provenir du relevé par navire de recherche")
data.dic$description_en <- c("Source of otoliths, can be either from the Research Vessel (RV) survey or", "Source of otoliths, can be either from the Research Vessel (RV) survey or")

```

```
data.dic.fn <- "data-dictionary.csv"  
write.csv(data.dic, file=data.dic.fn, row.names = FALSE)
```

The Web Service to be associated with this dataset will just be a polygon of NAFO division 4T.