Annex I - STREAM: Auxiliary scripts for the conversion from DG MARE Med&BS format to DG MARE FDI format

M.T. Facchini and I. Bitetto

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Tools

R, Rstudio and packages.

```r
#R general option:
options(stringsAsFactors = FALSE)

#chunk option
knitr::opts_chunk$set(cache=TRUE,echo=TRUE, warning=FALSE,
    message=FALSE, fig.height=6,progress=FALSE,verbose=FALSE,
        include=TRUE,dev='png',autodep=FALSE)

#load packages
library(reshape2)
library(reshape)
library(dplyr)
library(knitr)
library(pander)

#pander options
panderOptions('table.split.table', 60)
panderOptions('table.style', 'grid')
panderOptions('table.split.cells', 10)
panderOptions('table.alignment.default', 'left')
panderOptions('table.alignment.rownames', 'right')
panderOptions('decimal.mark', ',')
panderOptions('graph.fontsize', '10')
```

script 01: *F_LANDINGS_AT_LENGHT*

This script allows to convert the DG MARE Med&BS B_Landings table into the DG MARE FDI (updated to 2019 formats) F_LANDINGS_AT_LENGTH using the communication table for the conversion of the FISHERY codes and the DG MARE Med&BS A_Catch table for the number of samples and the number of length measurements.

Settings

```r
# set the working directory
myWD <- paste("C:\\Users\\Bitetto Isabella\\OneDrive - Coispa Tecnologia & Ricerca
```

```
S.C.A.R.L\\MARE22\\STREAM\\FINAL REVISION OF DELIVERABLES\\DG_MARE_MedBS_to_FDI",
sep="")
setwd(myWD)

lev5 <- read.csv("./communicationTable_lev5.csv", sep=";")
loca_B <- read.csv("./B Landings_example.csv", sep=";")
loca_A <- read.csv("./A_Catch_example.csv", sep=";")
template_F <- read.csv("./TABLE_F_MBS_LANDINGS_LENGTH.csv", sep=";")

loca_YEAR <- 9999
loca_GSA <- "99"
```

Input Data

1) DG MARE Med&BS B_Landings

Table continues below

ID	COUNTRY	YEAR
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1GNS16D20DEMFSA 99	COUNTRY1	9999
COUNTRY19999-1-1GTR16D20DEMSPSA 99	COUNTRY1	9999

Table continues below

QUARTER	VESSEL_LENGTH	GEAR	MESH_SIZE_RANGE
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	GNS	16D20
-1	-1	GTR	16D20

Table continues below

FISHERY	AREA	SPECON	SPECIES	LANDINGS	UNIT
DEMSP	SA 99	-1	ANK	233,2	cm
MDDWSP	SA 99	-1	ANK	51,17	cm

MDDWSP	SA 99	-1	ARA	11,99	mm
MDDWSP	SA 99	-1	ARS	10,85	mm
DEMF	SA 99	-1	BOG	125,1	cm
DEMSP	SA 99	-1	BOG	4,204	cm

Table continues below

LENGTHCLASS0	LENGTHCLASS1	LENGTHCLASS2
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

LENGTHCLASS100_PLUS
0,581
0
0
0
0
0

2) DG MARE Med&BS A_Catch

Table continues below

ID	COUNTRY	YEAR
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999

Table continues below

QUARTER	VESSEL_LENGTH	GEAR	MESH_SIZE_RANGE

-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100

Table continues below

FISHERY	AREA	SPECON	SPECIES	LANDINGS
DEMSP	SA 99	-1	ANK	233,2
MDDWSP	SA 99	-1	ANK	51,17
MDDWSP	SA 99	-1	ARA	11,99
MDDWSP	SA 99	-1	ARS	10,85
DEMSP	SA 99	-1	BOG	125,1
MDDWSP	SA 99	-1	BOG	4,204

Table continues below

DISCARDS	NO_SAMPLES_LANDINGS
1,273	17
0,2438	4
0	4
0	4
149,4	17
0,07053	4

Table continues below

NO_LENGTH_MEASUREMENTS_LANDINGS
613
513
714
1302
1277
585

Table continues below

NO_AGE_MEASUREMENTS_LANDINGS	NO_SAMPLES_DISCARDS
-1	22
-1	4
-1	4
-1	4
-1	22
-1	4

Table continues below

NO_LENGTH_MEASUREMENTS_DISCARDS
136
57
0
0
1365
69

Table continues below

NO_AGE_MEASUREMENTS_DISCARDS	NO_SAMPLES_CATCH
-1	39
-1	8
-1	8
-1	8
-1	39
-1	8

Table continues below

NO_LENGTH_MEASUREMENTS_CATCH	NO_AGE_MEASUREMENTS_CATCH
749	-1
570	-1
714	-1
1302	-1

2642	-1
654	-1

Table continues below

MIN_AGE	MAX_AGE	AGE_0	AGE_0_NO_LANDED
0	20	0	12,31
0	10	0	1,142
1	11	0	0
0	4	0	56,35
0	4	0	97,68
0	4	0	1,193

Table continues below

AGE_0_MEAN_WEIGHT_LANDED	AGE_0_MEAN_LENGTH_LANDED
0,032	12,9
0,034	13,2
0	0
0,006	2,5
0,014	11,1
0,014	10,9

Table continues below

AGE_0_NO_DISCARD	AGE_0_MEAN_WEIGHT_DISCARD
59,92	0,013
4,435	0,026
-1	-1
-1	-1
665,5	0,012
0,624	0,013

Table continues below

AGE_0_MEAN_LENGTH_DISCARD	AGE_20_PLUS
9,1	20

11,8	20
-1	20
-1	20
10,5	20
10,8	20

Table continues below

AGE_20_PLUS_NO_LANDED	AGE_20_PLUS_MEAN_WEIGHT_LANDED
0,5813	14,6
0	0
0	0
0	0
0	0
0	0

Table continues below

AGE_20_PLUS_MEAN_LENGTH_LANDED	AGE_20_PLUS_NO_DISCARD
106,5	0
0	0
0	-1
0	-1
0	0
0	0

Table continues below

AGE_20_PLUS_MEAN_WEIGHT_DISCARD
0
0
-1
-1
0
0

AGE_20_PLUS_MEAN_LENGTH_DISCARD
0

0

-1

-1

0

0

3) Communication table for the FISHERY codes

JRC_FDI_codification	JRC_Med_BS_codification
MOL	MOL
DEF	DEMSP
DWS	DWS
MDD	MDD
SPF	SPF
FIF	FIF
CEP	CEP
LPF	LPF
DEF	DEF
CAT	CAT
SLP	SLP
NK	-1
MPD	MDP

4) DG MARE FDI F_LANDINGS_AT_LENGTH template

TABLE_F_LANDINGS_AT_LENGTH
COUNTRY
YEAR
QUARTER
SUB_REGION
GEAR_TYPE
TARGET_ASSEMBLAGE
DOMAIN_LANDINGS
SPECIES
TOTWGHTLANDG

NO_SAMPLES

NO_LENGTH_MEASUREMENTS

LENGTH_UNIT

MIN_LENGTH

MAX_LENGTH

LENGTH

NO_LENGTH

Processing tables

Using some data in the DG MARE Med&BS format :

```r
B_melt <- melt(loca_B, id=c( "ID" , "COUNTRY", "YEAR" , "QUARTER" ,
                             "VESSEL_LENGTH" ,"GEAR"  ,"MESH_SIZE_RANGE"  ,"FISHER
Y" ,
                             "AREA"  , "SPECON" , "SPECIES" , "LANDINGS" , "UNIT"
))

B_melt$variable <-   apply(B_melt, 1, function(x) substring(x[14], 12, nchar(x[14]
)) )

B_melt <- B_melt[B_melt$variable != "", ]

B_melt$variable[B_melt$variable == "100_PLUS"] <- 100

B_melt$variable <- as.numeric(as.character(B_melt$variable))
B_melt$value <- as.numeric(as.character(B_melt$value))


B_melt <- merge(B_melt, loca_A, by=c("FISHERY", "COUNTRY" , "YEAR", "QUARTER",
                                     "VESSEL_LENGTH", "GEAR", "MESH_SIZE_RANGE",
                                     "AREA", "SPECIES"), x.all=T)
#
B_melt <- B_melt[,c(1:9, 12:15, 20:21)]
colnames( B_melt)[colnames( B_melt) == "LANDINGS.x" ] <- "LANDINGS"
B_melt_length_piene <- B_melt[B_melt$value > 0, ]

# pander(head(B_melt_length_piene[,1:14]))

B_melt_length_piene_min_max <-  group_by(B_melt_length_piene, COUNTRY, YEAR, QUART
ER,
                                         GEAR, MESH_SIZE_RANGE, FISHERY,  AREA, SP
ECIES)

B_melt_min_max <- data.frame(summarise(B_melt_length_piene_min_max,
                                       LANDING= sum(unique(LANDINGS)),
                                       MIN_LENGTH= min(variable),
                                       MAX_LENGTH= max(variable) ))
```

```r
F_landings <- merge(B_melt_length_piene, B_melt_min_max, all=T)

# pander(head(F_landings[,1:ncol(F_landings)]))

F_landings$AREA <-  paste("GSA",as.numeric(substring(F_landings$AREA , 4,nchar(as.
character(F_landings$AREA)))),sep="")

#merge with the communication table
colnames(lev5)[2] <- "FISHERY"
F_landings_2 <- merge(F_landings , lev5 )

F_landings_2$DOMAIN_LANDINGS <- paste(F_landings_2$COUNTRY, "_", sep="")
F_landings_2$DOMAIN_LANDINGS  <-  apply(F_landings_2, 1, function(x)
  ifelse(x[4] == -1, paste(x[20], "all_", sep=""),
         paste( x[20], as.numeric(as.character(x[4])),"_" , sep="") ) )

F_landings_2$DOMAIN_LANDINGS <- with(F_landings_2, paste(DOMAIN_LANDINGS,
                                                 AREA, "_", GEAR, "_", JRC
_FDI_codification ,"_",
                                                 MESH_SIZE_RANGE ,  "_NA_N
A_" , sep="" )  )

F_landings_2$DOMAIN_LANDINGS  <-  apply(F_landings_2, 1, function(x)
  ifelse(x[9] == -1, paste(x[20], "all_", sep=""),
         paste( x[20], as.numeric(as.character(x[9])),"_" , sep="") ) )

F_landings_2$DOMAIN_LANDINGS <- with(F_landings_2, paste(DOMAIN_LANDINGS,
                                                 "all_NK" , sep="" )  )

table_F <- data.frame(with(F_landings_2, cbind(as.character(COUNTRY),
                                      cbind( as.numeric(as.character(YEAR
)),
                                                 cbind(as.numeric(as.
character((QUARTER))),
                                                 cbind(as.charact
er(AREA),
                                                 cbind(as.c
haracter(GEAR),
                                                 cbin
d(as.character(JRC_FDI_codification),
                                                 cbin
d(as.character(DOMAIN_LANDINGS),
                                                 cbind(
as.character(SPECIES),
                                                 cbind(as.numeric
(as.character(LANDING)),
                                                 cbind(as.n
umeric(as.character(NO_SAMPLES_LANDINGS)),
                                                 cbin
```

```
d( as.numeric(as.character(NO_LENGTH_MEASUREMENTS_LANDINGS)),

cbind(as.character(UNIT),

cbind( as.numeric(as.character(MIN_LENGTH)),

cbind(as.numeric(as.character(MAX_LENGTH)),

cbind( as.numeric(as.character(variable)) ,

as.numeric(as.character(value)) )))))))))))))))

colnames(table_F) <- colnames(template_F)

table_F$TARGET_ASSEMBLAGE=as.character(table_F$TARGET_ASSEMBLAGE)

table_F$NO_LENGTH <- round(as.numeric(as.character(table_F$NO_LENGTH)),3)
table_F$TOTWGHTLANDG<- round(as.numeric(as.character(table_F$TOTWGHTLANDG)),3)
```

Output

DG MARE FDI F_LANDINGS_AT_LENGTH table

Table continues below

	COUNTRY	YEAR	QUARTER	SUB_REGION
19	COUNTRY1	9999	ALL	GSA99
81	COUNTRY1	9999	ALL	GSA99
34	COUNTRY1	9999	ALL	GSA99
83	COUNTRY1	9999	ALL	GSA99
92	COUNTRY1	9999	ALL	GSA99
90	COUNTRY1	9999	ALL	GSA99

Table continues below

	GEAR_TYPE	TARGET_ASSEMBLAGE
19	OTB	DEF
81	OTB	DEF
34	OTB	DEF
83	OTB	DEF
92	OTB	DEF
90	OTB	DEF

Table continues below

	DOMAIN_LANDINGS
19	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
81	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
34	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
83	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
92	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
90	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK

Table continues below

	SPECIES	TOTWGHTLANDG	NO_SAMPLES
19	ANK	233,2	17
81	ANK	233,2	17
34	ANK	233,2	17
83	ANK	233,2	17
92	ANK	233,2	17
90	ANK	233,2	17

Table continues below

	NO_LENGTH_MEASUREMENTS	LENGTH_UNIT
19	613	cm
81	613	cm
34	613	cm
83	613	cm
92	613	cm
90	613	cm

	MIN_LENGTH	MAX_LENGTH	LENGTH	NO_LENGTH
19	12	100	100	0,581
81	12	100	12	6,975
34	12	100	13	9,3
83	12	100	14	30,23

92	12	100	15	43,01
90	12	100	16	37,2

script 02: *D_DISCARDS_AT_LENGTH*

This script allows to create the DG MARE FDI D_DISCARDS_AT_LENGTH starting from the DG MARE Med&BS C_Discard tables, the DG MARE Med&BS A_Catch table. The communication table is used for the conversion of the FISHERY codes.

Settings

```
# set the working directory
myWD <- paste("C:\\Users\\Bitetto Isabella\\OneDrive - Coispa Tecnologia & Ricerca
S.C.A.R.L\\MARE22\\STREAM\\FINAL REVISION OF DELIVERABLES\\DG_MARE_MedBS_to_FDI",
sep="")
setwd(myWD)

lev5 <- read.csv("./communicationTable_lev5.csv", sep=";")
loca_A <- read.csv("./A_Catch_example.csv", sep=";")
loca_C <- read.csv("./C Discards_example.csv", sep=";")
template_D <- read.csv("./TABLE_D_MBS_DISCARDS_LENGTH.csv", sep=";")

loca_YEAR <- 9999
loca_GSA <- "99"
```

Input Data

1) *DG MARE Med&BS C_Discards*
Table continues below

ID	COUNTRY	YEAR
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999

Table continues below

QUARTER	VESSEL_LENGTH	GEAR	MESH_SIZE_RANGE
-1	-1	OTB	50D100
-1	-1	OTB	50D100

-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100

Table continues below

FISHERY	AREA	SPECON	SPECIES	DISCARDS	UNIT
DEMSP	SA 99	-1	ANK	1,273	cm
MDDWSP	SA 99	-1	ANK	0,2438	cm
MDDWSP	SA 99	-1	ARA	0	mm
MDDWSP	SA 99	-1	ARS	0	mm
DEMSP	SA 99	-1	BOG	149,4	cm
MDDWSP	SA 99	-1	BOG	0,07053	cm

Table continues below

LENGTHCLASS0	LENGTHCLASS1	LENGTHCLASS2
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

LENGTHCLASS100_PLUS
0
0
0
0
0
0

2) *DG MARE Med&BS A_Catch*

Table continues below

ID	COUNTRY	YEAR
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999

COUNTRY19999-1-1OTB50D100MDDWSPSA 99   COUNTRY1   9999

COUNTRY19999-1-1OTB50D100MDDWSPSA 99   COUNTRY1   9999

COUNTRY19999-1-1OTB50D100MDDWSPSA 99   COUNTRY1   9999

COUNTRY19999-1-1OTB50D100DEMSPSA 99   COUNTRY1   9999

COUNTRY19999-1-1OTB50D100MDDWSPSA 99   COUNTRY1   9999

Table continues below

QUARTER	VESSEL_LENGTH	GEAR	MESH_SIZE_RANGE
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100

Table continues below

FISHERY	AREA	SPECON	SPECIES	LANDINGS
DEMSP	SA 99	-1	ANK	233,2
MDDWSP	SA 99	-1	ANK	51,17
MDDWSP	SA 99	-1	ARA	11,99
MDDWSP	SA 99	-1	ARS	10,85
DEMSP	SA 99	-1	BOG	125,1
MDDWSP	SA 99	-1	BOG	4,204

Table continues below

DISCARDS	NO_SAMPLES_LANDINGS
1,273	17
0,2438	4
0	4
0	4
149,4	17

0,07053   4

Table continues below

NO_LENGTH_MEASUREMENTS_LANDINGS
613
513
714
1302
1277
585

Table continues below

NO_AGE_MEASUREMENTS_LANDINGS	NO_SAMPLES_DISCARDS
-1	22
-1	4
-1	4
-1	4
-1	22
-1	4

Table continues below

NO_LENGTH_MEASUREMENTS_DISCARDS
136
57
0
0
1365
69

Table continues below

NO_AGE_MEASUREMENTS_DISCARDS	NO_SAMPLES_CATCH
-1	39
-1	8
-1	8
-1	8
-1	39

-1	8

Table continues below

NO_LENGTH_MEASUREMENTS_CATCH	NO_AGE_MEASUREMENTS_CATCH
749	-1
570	-1
714	-1
1302	-1
2642	-1
654	-1

Table continues below

MIN_AGE	MAX_AGE	AGE_0	AGE_0_NO_LANDED
0	20	0	12,31
0	10	0	1,142
1	11	0	0
0	4	0	56,35
0	4	0	97,68
0	4	0	1,193

Table continues below

AGE_0_MEAN_WEIGHT_LANDED	AGE_0_MEAN_LENGTH_LANDED
0,032	12,9
0,034	13,2
0	0
0,006	2,5
0,014	11,1
0,014	10,9

Table continues below

AGE_0_NO_DISCARD	AGE_0_MEAN_WEIGHT_DISCARD
59,92	0,013
4,435	0,026

-1	-1
-1	-1
665,5	0,012
0,624	0,013

Table continues below

AGE_0_MEAN_LENGTH_DISCARD	AGE_20_PLUS
9,1	20
11,8	20
-1	20
-1	20
10,5	20
10,8	20

Table continues below

AGE_20_PLUS_NO_LANDED	AGE_20_PLUS_MEAN_WEIGHT_LANDED
0,5813	14,6
0	0
0	0
0	0
0	0
0	0

Table continues below

AGE_20_PLUS_MEAN_LENGTH_LANDED	AGE_20_PLUS_NO_DISCARD
106,5	0
0	0
0	-1
0	-1
0	0
0	0

Table continues below

AGE_20_PLUS_MEAN_WEIGHT_DISCARD
0
0
-1
-1
0
0

AGE_20_PLUS_MEAN_LENGTH_DISCARD
0
0
-1
-1
0
0

3) *Communication table for the FISHERY codes*

JRC_FDI_codification	JRC_Med_BS_codification
MOL	MOL
DEF	DEMSP
DWS	DWS
MDD	MDD
SPF	SPF
FIF	FIF
CEP	CEP
LPF	LPF
DEF	DEF
CAT	CAT
SLP	SLP
NK	-1
MPD	MDP

4) *DG MARE FDI D_DISCARDS_AT_LENGTH template*

D_DISCARDS_AT_LENGTH

COUNTRY

YEAR

QUARTER

SUB_REGION

GEAR_TYPE

TARGET_ASSEMBLAGE

DOMAIN_DISCARDS

SPECIES

TOTWGHTLANDG

DISCARDS

NO_SAMPLES

NO_LENGTH_MEASUREMENTS

LENGTH_UNIT

MIN_LENGTH

MAX_LENGTH

LENGTH

NO_LENGTH

Processing tables

Using some data in the DG MARE Med&BS format :

```r
C_melt <- melt(loca_C, id=c( "ID" , "COUNTRY", "YEAR" , "QUARTER" , "VESSEL_LENGTH
",
                            "GEAR"  ,"MESH_SIZE_RANGE"  ,"FISHERY" , "AREA"  ,"SP
ECON" ,
                            "SPECIES" , "DISCARDS" , "UNIT" ))



C_melt$variable <-   apply(C_melt, 1, function(x) substring(x[14], 12, nchar(x[14]
)) )
C_melt$variable[C_melt$variable == "100_PLUS"] <- 100
C_melt$variable <- as.numeric(as.character(C_melt$variable))
C_melt$value <- as.numeric(as.character(C_melt$value))



C_melt_2 <- data.frame( ID = C_melt$ID,
                        COUNTRY=C_melt$COUNTRY,
                        YEAR  = C_melt$YEAR,
                        QUARTER  = C_melt$QUARTER,
                        VESSEL_LENGTH  = C_melt$VESSEL_LENGTH,
                        GEAR = C_melt$GEAR,
                        MESH_SIZE_RANGE  = C_melt$MESH_SIZE_RANGE,
                        FISHERY  = C_melt$FISHERY,
                        AREA    = C_melt$AREA,
```

```r
                          SPECON = C_melt$SPECON,
                          SPECIES = C_melt$SPECIES,
                          UNWANTED_CATCH = C_melt$DISCARDS,
                          UNIT = C_melt$UNIT,
                          variable = C_melt$variable,
                          value  = C_melt$value)


C_melt_2 <- merge(C_melt_2, loca_A[, 1:21], by=c("ID", "FISHERY", "COUNTRY", "YEAR
",
                                                "QUARTER", "VESSEL_LENGTH", "GEAR
", "MESH_SIZE_RANGE",
                                                "AREA", "SPECIES"), x.all=T)
C_melt_2 <- C_melt_2[, c(1:15, 22:23 ) ]
colnames(C_melt_2)[16:17] <- c( "NO_SAMPLES_UC", "NO_LENGTH_MEASUREMENTS_UC")

unwanted <- data.frame(C_melt_2)

unwanted$UNWANTED_CATCH[is.na(unwanted$UNWANTED_CATCH) ] <- 0

unwanted_catches <-  group_by(unwanted, ID, COUNTRY, YEAR, QUARTER, VESSEL_LENGTH,
                          GEAR, MESH_SIZE_RANGE, FISHERY, AREA, SPECIES,
                          UNWANTED_CATCH,  NO_SAMPLES_UC, NO_LENGTH_MEASUREMEN
TS_UC)

unwanted_catches <- data.frame(summarise(unwanted_catches,
                                    no_records = length(UNWANTED_CATCH) ))

unwanted_catches_sum <-  group_by(unwanted_catches, ID, COUNTRY, YEAR, QUARTER,
                             VESSEL_LENGTH, GEAR, MESH_SIZE_RANGE, FISHERY, A
REA, SPECIES)
unwanted_catches_sum <- data.frame(summarise(unwanted_catches_sum,
                                    total_unwanted_catch = sum(UNWANTED_C
ATCH) ,
                                    total_unwanted_samples = sum(NO_SAMPL
ES_UC),
                                    total_unwanted_length_measurements =
sum(NO_LENGTH_MEASUREMENTS_UC) ))

unwanted_numbers <-  group_by(unwanted, ID, COUNTRY, YEAR, QUARTER, VESSEL_LENGTH,
                          GEAR, MESH_SIZE_RANGE, FISHERY, AREA, SPECIES, UNIT,
variable )

unwanted_numbers <- data.frame(summarise(unwanted_numbers,
                                    NO_LENGTH_UC = sum(value) ))


unwanted_numbers <- unwanted_numbers[unwanted_numbers$NO_LENGTH_UC != 0, ]

D_unwanted_catch_min_max <-  group_by(unwanted_numbers, ID, COUNTRY, YEAR, QUARTER
```

```r
,
                                                 VESSEL_LENGTH, GEAR,  MESH_SIZE_RANGE, FISHE
RY,  AREA,
                                                 SPECIES)

D_UC_min_max <-  data.frame(summarise(D_unwanted_catch_min_max,
                                      MIN_LENGTH= min(variable),
                                      MAX_LENGTH= max(variable) ))

D_UC_min_max$MIN_LENGTH <- round(D_UC_min_max$MIN_LENGTH, 0)
D_UC_min_max$MAX_LENGTH <- round(D_UC_min_max$MAX_LENGTH, 0)


D_UC  <-  merge(unwanted_numbers, D_UC_min_max, by=c("ID", "FISHERY", "COUNTRY" ,
                                                  "YEAR", "QUARTER", "VESSEL_LE
NGTH", "GEAR",
                                                  "MESH_SIZE_RANGE","AREA", "SP
ECIES") , all=T)

D_UC_2  <-  merge(D_UC, unwanted_catches_sum, by=c("ID", "FISHERY", "COUNTRY" ,
                                                  "YEAR", "QUARTER", "VESSEL_LENG
TH", "GEAR",
                                                  "MESH_SIZE_RANGE", "AREA", "SPE
CIES") , all.x=T)

D_UC_2 <- merge(D_UC_2, loca_A[, c(1:9, 11:12)], by=c("ID", "FISHERY", "COUNTRY" ,
                                                  "YEAR", "QUARTER", "VESSEL_LE
NGTH", "GEAR",
                                                  "MESH_SIZE_RANGE", "AREA", "
SPECIES") , all.x=T)

D_UC_2$AREA <-  paste("GSA",as.numeric(substring(D_UC_2$AREA , 4,nchar(as.characte
r(D_UC_2$AREA)))) ,sep="")

#merge with the communication table
colnames(lev5)[2] <- "FISHERY"
D_UC_2 <- merge(D_UC_2 , lev5 )


D_UC_2$DOMAIN_DISCARDS <- paste(D_UC_2$COUNTRY, "_", sep="")
D_UC_2$DOMAIN_DISCARDS  <-  apply(D_UC_2, 1, function(x) ifelse(x[5] == -1, paste(
x[21],

"all_", sep=""), paste( x[21], as.numeric(as.character(x[5])),

"_" , sep="") ) )

D_UC_2$DOMAIN_DISCARDS <- with(D_UC_2, paste(DOMAIN_DISCARDS,
                                      AREA, "_", GEAR, "_", JRC_FDI_codific
ation ,"_",
```

```
                                        MESH_SIZE_RANGE ,  "_NA_NA_" , sep=""
) )

D_UC_2$DOMAIN_DISCARDS  <-  apply(D_UC_2, 1, function(x)
  ifelse(x[6] == -1, paste(x[21], "all_", sep=""),
         paste( x[21], as.numeric(as.character(x[6])),"_" , sep="") ) )

D_UC_2$DOMAIN_DISCARDS <- with(D_UC_2, paste(DOMAIN_DISCARDS, "all_NK" ,
                                            sep="" )  )

D_UC_3 <-  data.frame(COUNTRY = D_UC_2$COUNTRY,
                      YEAR  = D_UC_2$YEAR,
                      QUARTER=D_UC_2$QUARTER,
                      SUB_REGION=D_UC_2$AREA,
                      GEAR_TYPE=D_UC_2$GEAR,
                      TARGET_ASSEMBLAGE=D_UC_2$JRC_FDI_codification,
                      DOMAIN_DISCARDS =  D_UC_2$DOMAIN_DISCARDS ,
                      SPECIES  = D_UC_2$SPECIES,
                      TOTWGHTLANDG = D_UC_2$LANDINGS,
                      UNWANTED_CATCH  =  D_UC_2$total_unwanted_catch,
                      NO_SAMPLES_UC =   D_UC_2$total_unwanted_samples,
                      NO_LENGTH_MEASUREMENTS_UC = D_UC_2$total_unwanted_length_mea
surements,
                      LENGTHUNIT =  D_UC_2$UNIT,
                      MIN_LENGTH = D_UC_2$MIN_LENGTH,
                      MAX_LENGTH = D_UC_2$MAX_LENGTH,
                      LENGTH = D_UC_2$variable ,
                      NO_LENGTH_UC = D_UC_2$NO_LENGTH_UC )
```

Output

Table continues below

	COUNTRY	YEAR	QUARTER	SUB_REGION
8	COUNTRY1	9999	ALL	GSA99
9	COUNTRY1	9999	ALL	GSA99
10	COUNTRY1	9999	ALL	GSA99
11	COUNTRY1	9999	ALL	GSA99
12	COUNTRY1	9999	ALL	GSA99
13	COUNTRY1	9999	ALL	GSA99

Table continues below

	GEAR_TYPE	TARGET_ASSEMBLAGE
8	OTB	DEF
9	OTB	DEF

10	OTB	DEF
11	OTB	DEF
12	OTB	DEF
13	OTB	DEF

Table continues below

	DOMAIN_DISCARDS
8	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
9	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
10	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
11	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
12	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
13	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK

Table continues below

	SPECIES	TOTWGHTLANDG	DISCARDS
8	ANK	233,2	1,273
9	ANK	233,2	1,273
10	ANK	233,2	1,273
11	ANK	233,2	1,273
12	ANK	233,2	1,273
13	ANK	233,2	1,273

Table continues below

	NO_SAMPLES	NO_LENGTH_MEASUREMENTS
8	22	136
9	22	136
10	22	136
11	22	136
12	22	136
13	22	136

Table continues below

	LENGTH_UNIT	MIN_LENGTH	MAX_LENGTH
8	cm	5	18
9	cm	5	18
10	cm	5	18
11	cm	5	18
12	cm	5	18
13	cm	5	18

	LENGTH	NO_LENGTH
8	5	1,151
9	6	3,837
10	7	11,13
11	8	9,977
12	9	11,51
13	10	10,74

script 03: *E_LANDING_AT_AGE*

This script allows to convert the DG MARE Med&BS A_Catch table into the DG MARE FDI
E_LANDINGS_AT_AGE using the communication table for the conversion of the FISHERY codes.

Settings

```
# set the working directory
myWD <- paste("C:\\Users\\Bitetto Isabella\\OneDrive - Coispa Tecnologia & Ricerca
S.C.A.R.L\\MARE22\\STREAM\\FINAL REVISION OF DELIVERABLES\\DG_MARE_MedBS_to_FDI",
sep="")
setwd(myWD)

lev5 <- read.csv("./communicationTable_lev5.csv", sep=";")
loca_A <- read.csv("./A_Catch_example.csv", sep=";")
template_E <- read.csv("./TABLE_E_MBS_LANDINGS_AGE.csv", sep=";")

loca_YEAR <- 9999
loca_GSA <- "99"
```

Input Data

1) *DG MARE Med&BS A_Catch*

Table continues below

ID	COUNTRY	YEAR
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999

Table continues below

QUARTER	VESSEL_LENGTH	GEAR	MESH_SIZE_RANGE
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100

Table continues below

FISHERY	AREA	SPECON	SPECIES	LANDINGS
DEMSP	SA 99	-1	ANK	233,2
MDDWSP	SA 99	-1	ANK	51,17
MDDWSP	SA 99	-1	ARA	11,99
MDDWSP	SA 99	-1	ARS	10,85
DEMSP	SA 99	-1	BOG	125,1
MDDWSP	SA 99	-1	BOG	4,204

Table continues below

DISCARDS	NO_SAMPLES_LANDINGS
1,273	17

0,2438	4
0	4
0	4
149,4	17
0,07053	4

Table continues below

NO_LENGTH_MEASUREMENTS_LANDINGS
613
513
714
1302
1277
585

Table continues below

NO_AGE_MEASUREMENTS_LANDINGS	NO_SAMPLES_DISCARDS
-1	22
-1	4
-1	4
-1	4
-1	22
-1	4

Table continues below

NO_LENGTH_MEASUREMENTS_DISCARDS
136
57
0
0
1365
69

Table continues below

NO_AGE_MEASUREMENTS_DISCARDS	NO_SAMPLES_CATCH
-1	39

-1	8
-1	8
-1	8
-1	39
-1	8

Table continues below

NO_LENGTH_MEASUREMENTS_CATCH	NO_AGE_MEASUREMENTS_CATCH
749	-1
570	-1
714	-1
1302	-1
2642	-1
654	-1

MIN_AGE	MAX_AGE
0	20
0	10
1	11
0	4
0	4
0	4

2)   *Communication table for the FISHERY codes*

JRC_FDI_codification	JRC_Med_BS_codification
MOL	MOL
DEF	DEMSP
DWS	DWS
MDD	MDD
SPF	SPF
FIF	FIF

CEP	CEP
LPF	LPF
DEF	DEF
CAT	CAT
SLP	SLP
NK	-1
MPD	MDP

3) *DG MARE FDI E_LANDING_AT_AGE template*

E_LANDING_AT_AGE
COUNTRY
YEAR
QUARTER
SUB_REGION
GEAR_TYPE
TARGET_ASSEMBLAGE
DOMAIN_LANDINGS
SPECIES
TOTWGHTLANDG
NO_SAMPLES
NO_AGE_MEASUREMENTS
AGE_MEASUREMENTS_PROP
MIN_AGE
MAX_AGE
AGE
NO_AGE
MEAN_WEIGHT
MEAN_LENGTH

Processing tables

Using some data in the DG MARE Med&BS format :

```
loca_A_LAN <-  loca_A[,c(1:24)]

# NUMBERS
Landing_nb_age =  loca_A_LAN
for (i in 1:20){
  Landing_nb_age = cbind(Landing_nb_age,loca_A[,colnames(loca_A)==paste("AGE_",i-1
```

```
,
                                                              "_NO_LANDE
D",sep="")])
}
Landing_nb_age = cbind(Landing_nb_age,loca_A[,colnames(loca_A)=="AGE_20_PLUS_NO_LA
NDED"])

colnames(Landing_nb_age)=c(colnames(loca_A[1:24]),paste("AGE_",c(0:19),"_NO_LANDED
",
                                              sep=""),"AGE_20_PLUS_NO_LA
NDED")

Landing_nb_age <- Landing_nb_age[, !( colnames(Landing_nb_age) %in% c("DISCARDS",
                                              "NO_SAMPLES_
DISCARDS", "NO_LENGTH_MEASUREMENTS_DISCARDS",
                                              "NO_AGE_MEAS
UREMENTS_DISCARDS", "NO_SAMPLES_CATCH",
                                              "NO_LENGTH_M
EASUREMENTS_CATCH", "NO_AGE_MEASUREMENTS_CATCH",
                                              "NO_LENGTH_M
EASUREMENTS_LANDINGS", "SPECON", "ID") )]

loca_A_melt_NO <- melt(Landing_nb_age, id=c( "COUNTRY", "YEAR" , "QUARTER" ,
                                        "VESSEL_LENGTH" ,"GEAR"  ,"MESH_SIZE_
RANGE"  ,"FISHERY" ,
                                        "AREA"  , "SPECIES" , "LANDINGS", "NO
_SAMPLES_LANDINGS",
                                        "NO_AGE_MEASUREMENTS_LANDINGS" , "MIN
_AGE", "MAX_AGE" ))
colnames(loca_A_melt_NO)[ncol(loca_A_melt_NO)] <- "number"

loca_A_melt_NO$variable <-   apply(loca_A_melt_NO, 1, function(x)
  ifelse(nchar(x[15]) == 15, substring(x[15], 5, 5) , substring(x[15], 5, 6)))

loca_A_melt_NO$variable <- as.numeric(as.character(loca_A_melt_NO$variable))
loca_A_melt_NO$number <- as.numeric(as.character(loca_A_melt_NO$number))

# INDIVIDUAL WEIGHTS

Landing_wei_age =  loca_A_LAN
for (i in 1:20){
  Landing_wei_age = cbind(Landing_wei_age,loca_A[,colnames(loca_A)==paste("AGE_",i
-1,
                                              "_MEAN_W
EIGHT_LANDED",sep="")])
}
Landing_wei_age = cbind(Landing_wei_age,loca_A[,colnames(loca_A)==
                                        "AGE_20_PLUS_MEAN_WEIGHT_LANDED"]
)
colnames(Landing_wei_age)=c(colnames(loca_A[1:24]),paste("AGE_",c(0:19),
```

```r
                                                  "_MEAN_WEIGHT_LANDED",sep
=""),
                              "AGE_20_PLUS_MEAN_WEIGHT_LANDED")

Landing_wei_age <- Landing_wei_age[, !( colnames(Landing_wei_age) %in%
                                    c("DISCARDS", "NO_SAMPLES_LANDINGS", "NO
_SAMPLES_DISCARDS",
                                      "NO_LENGTH_MEASUREMENTS_DISCARDS", "NO
_AGE_MEASUREMENTS_DISCARDS",
                                      "NO_SAMPLES_CATCH", "NO_LENGTH_MEASURE
MENTS_CATCH",
                                      "NO_AGE_MEASUREMENTS_CATCH", "NO_LENGT
H_MEASUREMENTS_LANDINGS",
                                      "SPECON", "ID") )]

loca_A_melt_WEI <- melt(Landing_wei_age, id=c( "COUNTRY", "YEAR" , "QUARTER" ,
                                      "VESSEL_LENGTH" ,  "GEAR"  ,"MESH_S
IZE_RANGE"   ,"FISHERY",
                                      "AREA"   , "SPECIES" , "LANDINGS", "
NO_AGE_MEASUREMENTS_LANDINGS",
                                      "MIN_AGE", "MAX_AGE" ))

colnames(loca_A_melt_WEI)[ncol(loca_A_melt_WEI)] <- "ind_weight"
loca_A_melt_WEI$variable <- as.character(loca_A_melt_WEI$variable)

loca_A_melt_WEI$variable <-   apply(loca_A_melt_WEI, 1, function(x)
  ifelse(nchar(x[14]) == 24, substring(x[14], 5, 5) , substring(x[14], 5, 6)))
loca_A_melt_WEI$variable <- as.numeric(as.character(loca_A_melt_WEI$variable))
loca_A_melt_WEI$ind_weight <- as.numeric(as.character(loca_A_melt_WEI$ind_weight))

loca_A_melt_NO_WEI <- merge(loca_A_melt_NO, loca_A_melt_WEI, by=colnames(loca_A_me
lt_WEI)
                              [colnames(loca_A_melt_WEI) != "ind_weight"], all=T )
loca_A_melt_NO_WEI$ind_weight[loca_A_melt_NO_WEI$ind_weight == -1] <- 0


# INDIVIDUAL LENGTHS

Landing_len_age =  loca_A_LAN
for (i in 1:20){
  Landing_len_age = cbind(Landing_len_age,loca_A[,colnames(loca_A)==paste("AGE_",i
-1,
                                                  "_MEAN_L
ENGTH_LANDED",sep="")])
}
Landing_len_age = cbind(Landing_len_age,loca_A[,colnames(loca_A)==
                                      "AGE_20_PLUS_MEAN_LENGTH_LANDED"]
)
colnames(Landing_len_age)=c(colnames(loca_A[1:24]),paste("AGE_",c(0:19),
                                                  "_MEAN_LENGTH_LANDED",sep
```

```
=""),"AGE_20_PLUS_MEAN_LENGTH_LANDED")

Landing_len_age <- Landing_len_age[, !( colnames(Landing_len_age) %in% c("DISCARDS
",
                                                        "NO_SAMPL
ES_LANDINGS", "NO_SAMPLES_DISCARDS",
                                                        "NO_LENGT
H_MEASUREMENTS_DISCARDS", "NO_AGE_MEASUREMENTS_DISCARDS",
                                                        "NO_SAMPL
ES_CATCH", "NO_LENGTH_MEASUREMENTS_CATCH",
                                                        "NO_AGE_M
EASUREMENTS_CATCH", "NO_LENGTH_MEASUREMENTS_LANDINGS",
                                                        "SPECON",
"ID") )]

loca_A_melt_LEN <- melt(Landing_len_age, id=c( "COUNTRY", "YEAR" , "QUARTER" ,
                                                "VESSEL_LENGTH" , "GEAR"  ,"MESH_SI
ZE_RANGE"  ,"FISHERY" ,
                                                "AREA"  , "SPECIES" , "LANDINGS",
                                                "NO_AGE_MEASUREMENTS_LANDINGS" , "M
IN_AGE", "MAX_AGE" ))

colnames(loca_A_melt_LEN)[ncol(loca_A_melt_LEN)] <- "ind_length"

loca_A_melt_LEN$variable <- as.character(loca_A_melt_LEN$variable)
loca_A_melt_LEN$variable <-   apply(loca_A_melt_LEN, 1, function(x)
  ifelse(nchar(x[14]) == 24, substring(x[14], 5, 5) , substring(x[14], 5, 6)))

loca_A_melt_LEN$variable <- as.numeric(as.character(loca_A_melt_LEN$variable))
loca_A_melt_LEN$ind_length <- as.numeric(as.character(loca_A_melt_LEN$ind_length))

loca_A_melt_NO_LEN <- merge(loca_A_melt_NO, loca_A_melt_LEN,
                        by=colnames(loca_A_melt_LEN)
                        [colnames(loca_A_melt_LEN) != "ind_length"], all=T )

loca_A_melt_NO_LEN$ind_length[loca_A_melt_NO_LEN$ind_length == -1] <- 0

loca_A_melt_NO_WEI_LEN <- merge(loca_A_melt_NO, merge(loca_A_melt_NO_LEN,
                                        loca_A_melt_NO_WEI, all=T),
all=T)
loca_A_melt_NO_WEI_LEN <- loca_A_melt_NO_WEI_LEN[loca_A_melt_NO_WEI_LEN$number > 0
, ]
loca_A_melt_NO_WEI_LEN$NO_AGE_MEASUREMENTS_LANDINGS[loca_A_melt_NO_WEI_LEN$NO_AGE_
MEASUREMENTS_LANDINGS == -1] <- 0

kable(data.frame(Numbers_weights_lengths_from_A_Catch =colnames(loca_A_melt_NO_WEI
_LEN)))
```

Numbers_weights_lengths_from_A_Catch
COUNTRY

YEAR

QUARTER

VESSEL_LENGTH

GEAR

MESH_SIZE_RANGE

FISHERY

AREA

SPECIES

LANDINGS

NO_SAMPLES_LANDINGS

NO_AGE_MEASUREMENTS_LANDINGS

MIN_AGE

MAX_AGE

variable

number

ind_length

ind_weight

```r
#merge with the communication table
colnames(lev5)[2] <- "FISHERY"
loca_A_melt_NO_WEI_LEN_2 <- merge(loca_A_melt_NO_WEI_LEN , lev5 )

loca_A_melt_NO_WEI_LEN_2$AREA <- paste(as.numeric(substring(loca_A_melt_NO_WEI_LEN
_2$AREA, 4, 5)),sep="")

loca_A_melt_NO_WEI_LEN_2$DOMAIN_LANDINGS <- paste(loca_A_melt_NO_WEI_LEN_2$COUNTRY
,
                                                  "_", sep="")

loca_A_melt_NO_WEI_LEN_2$DOMAIN_LANDINGS<-apply(loca_A_melt_NO_WEI_LEN_2, 1, funct
ion(x)
  ifelse(x[4] == -1, paste(x[20], "all_", sep=""),
         paste( x[20], as.numeric(as.character(x[4])),"_" , sep="") ) )

loca_A_melt_NO_WEI_LEN_2$DOMAIN_LANDINGS <- with(loca_A_melt_NO_WEI_LEN_2,
                                            paste(DOMAIN_LANDINGS, "GSA",
                                                AREA, "_", GEAR, "_", JRC_F
DI_codification ,"_",
                                                MESH_SIZE_RANGE ,  "_NA_NA_
" , sep="" )  )

loca_A_melt_NO_WEI_LEN_2$DOMAIN_LANDINGS<-apply(loca_A_melt_NO_WEI_LEN_2, 1, funct
ion(x)
  ifelse(x[5] == -1, paste(x[20], "all_", sep=""),
         paste( x[20], as.numeric(as.character(x[5])),"_" , sep="") ) )
```

```r
loca_A_melt_NO_WEI_LEN_2$DOMAIN_LANDINGS <- with(loca_A_melt_NO_WEI_LEN_2,
                                               paste(DOMAIN_LANDINGS,
                                                     "all_NK" , sep="" ))

table_E <- data.frame(COUNTRY = loca_A_melt_NO_WEI_LEN_2$COUNTRY,
                      YEAR = loca_A_melt_NO_WEI_LEN_2$YEAR,
                      QUARTER=loca_A_melt_NO_WEI_LEN_2$QUARTER,
                      SUB_REGION=loca_A_melt_NO_WEI_LEN_2$AREA,
                      GEAR_TYPE=loca_A_melt_NO_WEI_LEN_2$GEAR,
                      TARGET_ASSEMBLAGE=loca_A_melt_NO_WEI_LEN_2$JRC_FDI_codificat
ion,
                      DOMAIN_LANDINGS = loca_A_melt_NO_WEI_LEN_2$DOMAIN_LANDINGS,
                      SPECIES = loca_A_melt_NO_WEI_LEN_2$SPECIES,
                      TOTWGHTLANDG =  loca_A_melt_NO_WEI_LEN_2$LANDINGS,
                      NO_SAMPLES_LANDINGS = loca_A_melt_NO_WEI_LEN_2$NO_SAMPLES_LA
NDINGS,
                      NO_AGE_MEASUREMENTS_LANDINGS = loca_A_melt_NO_WEI_LEN_2$NO_A
GE_MEASUREMENTS_LANDINGS,
                      MIN_AGE = loca_A_melt_NO_WEI_LEN_2$MIN_AGE,
                      MAX_AGE = loca_A_melt_NO_WEI_LEN_2$MAX_AGE,
                      AGE = loca_A_melt_NO_WEI_LEN_2$variable,
                      NO_LANDS_AGE = loca_A_melt_NO_WEI_LEN_2$number,
                      MEAN_WEIGHT_LANDS = loca_A_melt_NO_WEI_LEN_2$ind_weight,
                      MEAN_LENGTH_LANDS = loca_A_melt_NO_WEI_LEN_2$ind_length)

table_E <- table_E[with(table_E, order(COUNTRY, YEAR,  SPECIES, DOMAIN_LANDINGS, A
GE)), ]
table_E$TARGET_ASSEMBLAGE=as.character(table_E$TARGET_ASSEMBLAGE)

table_E$SUB_REGION <- paste("GSA",table_E$SUB_REGION,sep="")
table_E_props <- table_E

table_E_props_min_max  <- group_by(table_E, DOMAIN_LANDINGS, SPECIES)
table_E_props_min_max <- data.frame(summarise(table_E_props_min_max, MIN_AGE= min(
AGE) ,
                                              MAX_AGE= max(AGE) ))

table_E_props_ages  <- group_by(table_E_props, SPECIES)
table_E_props_ages <- data.frame(summarise(table_E_props_ages,
                                           TOTAL_NO_AGE_MEASUREMENTS_LANDINGS= sum
(unique(NO_AGE_MEASUREMENTS_LANDINGS))))

table_E_props <- table_E_props[, !( colnames(table_E_props) %in%
                                    c("MIN_AGE", "MAX_AGE") ) ]
final_E <- merge(table_E_props, merge(table_E_props_ages, table_E_props_min_max) )

final_E$AGE_MEASUREMENTS_PROP<-with(final_E,
                                    NO_AGE_MEASUREMENTS_LANDINGS/TOTAL_NO_AGE_MEAS
UREMENTS_LANDINGS)
```

```
final_E$NO_AGE_MEASUREMENTS_LANDINGS[final_E$NO_AGE_MEASUREMENTS_LANDINGS == 0 ] <
- "NK"
final_E$AGE_MEASUREMENTS_PROP[final_E$TOTAL_NO_AGE_MEASUREMENTS_LANDINGS == 0 ] <-
"NK"

final_E$NO_AGE_MEASUREMENTS_LANDINGS <-  final_E$TOTAL_NO_AGE_MEASUREMENTS_LANDING
S

final_E_2 <- data.frame(COUNTRY = final_E$COUNTRY ,
                        YEAR = final_E$YEAR,
                        QUARTER=final_E$QUARTER,
                        SUB_REGION=final_E$SUB_REGION,
                        GEAR_TYPE=final_E$GEAR_TYPE,
                        TARGET_ASSEMBLAGE=as.character(final_E$TARGET_ASSEMBLAGE),
                        DOMAIN_LANDINGS = final_E$DOMAIN_LANDINGS ,
                        SPECIES   = final_E$SPECIES,
                        TOTWGHTLANDG  = final_E$TOTWGHTLANDG ,
                        NO_SAMPLES_LANDINGS   = final_E$NO_SAMPLES_LANDINGS ,
                        NO_AGE_MEASUREMENTS_LANDINGS    = final_E$NO_AGE_MEASUREME
NTS_LANDINGS,
                        AGE_MEASUREMENTS_PROP = final_E$ AGE_MEASUREMENTS_PROP,
                        MIN_AGE     = final_E$MIN_AGE ,
                        MAX_AGE   = final_E$MAX_AGE ,
                        AGE  = final_E$AGE ,
                        NO_LANDS   = final_E$NO_LANDS_AGE ,
                        MEAN_WEIGHT  = final_E$MEAN_WEIGHT_LANDS ,
                        MEAN_LENGTH  = final_E$MEAN_LENGTH_LANDS)


final_E_2$NO_AGE <- round(final_E_2$NO_AGE,3)
final_E_2$TOTWGHTLANDG<- round(as.numeric(as.character(final_E_2$TOTWGHTLANDG)),3)
```

Output

Table continues below

	COUNTRY	YEAR	QUARTER	SUB_REGION
6	COUNTRY1	9999	ALL	GSA99
7	COUNTRY1	9999	ALL	GSA99
8	COUNTRY1	9999	ALL	GSA99
9	COUNTRY1	9999	ALL	GSA99
10	COUNTRY1	9999	ALL	GSA99
11	COUNTRY1	9999	ALL	GSA99

	GEAR_TYPE	TARGET_ASSEMBLAGE
6	OTB	DEF
7	OTB	DEF
8	OTB	DEF
9	OTB	DEF
10	OTB	DEF
11	OTB	DEF

	DOMAIN_LANDINGS
6	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
7	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
8	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
9	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
10	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
11	COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK

	SPECIES	TOTWGHTLANDG	NO_SAMPLES
6	ANK	233,2	17
7	ANK	233,2	17
8	ANK	233,2	17
9	ANK	233,2	17
10	ANK	233,2	17
11	ANK	233,2	17

	NO_AGE_MEASUREMENTS	AGE_MEASUREMENTS_PROP
6	0	NK
7	0	NK
8	0	NK

	0			NK
9	0			NK
10	0			NK
11	0			NK

Table continues below

	MIN_AGE	MAX_AGE	AGE	NO_AGE
6	0	20	0	12,31
7	0	20	1	257
8	0	20	2	268,9
9	0	20	3	126,8
10	0	20	4	80,11
11	0	20	5	33,95

	MEAN_WEIGHT	MEAN_LENGTH
6	0,032	12,9
7	0,066	16,7
8	0,147	22
9	0,247	26,3
10	0,377	30,3
11	0,564	34,8

script 04: *C_DISCARDS_AT_AGE*

This script allows to create the DG MARE FDI C_DISCARDS_AT_AGE starting from DG MARE Med&BS A_Catch table and the communication table used for the conversion of the FISHERY codes.

Settings

```
# set the working directory
myWD <- paste("C:\\Users\\Bitetto Isabella\\OneDrive - Coispa Tecnologia & Ricerca
S.C.A.R.L\\MARE22\\STREAM\\FINAL REVISION OF DELIVERABLES\\DG_MARE_MedBS_to_FDI",
sep="")
setwd(myWD)

lev5 <- read.csv("./communicationTable_lev5.csv", sep=";")
loca_A <- read.csv("./A_Catch_example.csv", sep=";")
```

```
JRC_FDI_Table_E <- read.csv("./E_LANDINGS_AT_AGE.csv", sep=";")
template_C <- read.csv("./TABLE_C_MBS_DISCARDS_AGE.csv", sep=";")

loca_YEAR <- 9999
loca_GSA <- "99"
```

Input Data

1) *DG MARE Med&BS A_Catch*

Table continues below

ID	COUNTRY	YEAR
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100DEMSPSA 99	COUNTRY1	9999
COUNTRY19999-1-1OTB50D100MDDWSPSA 99	COUNTRY1	9999

Table continues below

QUARTER	VESSEL_LENGTH	GEAR	MESH_SIZE_RANGE
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100
-1	-1	OTB	50D100

Table continues below

FISHERY	AREA	SPECON	SPECIES	LANDINGS
DEMSP	SA 99	-1	ANK	233,2
MDDWSP	SA 99	-1	ANK	51,17
MDDWSP	SA 99	-1	ARA	11,99
MDDWSP	SA 99	-1	ARS	10,85
DEMSP	SA 99	-1	BOG	125,1
MDDWSP	SA 99	-1	BOG	4,204

Table continues below

DISCARDS	NO_SAMPLES_LANDINGS
1,273	17
0,2438	4
0	4
0	4
149,4	17
0,07053	4

Table continues below

NO_LENGTH_MEASUREMENTS_LANDINGS
613
513
714
1302
1277
585

Table continues below

NO_AGE_MEASUREMENTS_LANDINGS	NO_SAMPLES_DISCARDS
-1	22
-1	4
-1	4
-1	4
-1	22
-1	4

Table continues below

NO_LENGTH_MEASUREMENTS_DISCARDS
136
57
0
0
1365
69

Table continues below

NO_AGE_MEASUREMENTS_DISCARDS	NO_SAMPLES_CATCH
-1	39
-1	8
-1	8
-1	8
-1	39
-1	8

Table continues below

NO_LENGTH_MEASUREMENTS_CATCH	NO_AGE_MEASUREMENTS_CATCH
749	-1
570	-1
714	-1
1302	-1
2642	-1
654	-1

MIN_AGE	MAX_AGE
0	20
0	10
1	11
0	4
0	4
0	4

2) *Communication table for the FISHERY codes*

JRC_FDI_codification	JRC_Med_BS_codification
MOL	MOL
DEF	DEMSP
DWS	DWS
MDD	MDD

SPF	SPF
FIF	FIF
CEP	CEP
LPF	LPF
DEF	DEF
CAT	CAT
SLP	SLP
NK	-1
MPD	MDP

3) *DG MARE FDI C_DISCARDS_AT_AGE template*

C_DISCARDS_AT_AGE
COUNTRY
YEAR
QUARTER
SUB_REGION
GEAR_TYPE
TARGET_ASSEMBLAGE
DOMAIN_DISCARDS
SPECIES
TOTWGHTLANDG
DISCARDS
NO_SAMPLES
NO_AGE_MEASUREMENTS
AGE_MEASUREMENTS_PROP
MIN_AGE
MAX_AGE
AGE
NO_AGE
MEAN_WEIGHT
MEAN_LENGTH

Processing tables

Using some data in the DG MARE Med&BS format :

```r
# Extraction of numbers, weights and lengths for DISCARDS
loca_A_DIS <-  loca_A[,c(1:24)]

# NUMBERS
Discard_nb_age =  loca_A_DIS
for (i in 1:20){
  Discard_nb_age = cbind(Discard_nb_age,loca_A[,colnames(loca_A)==paste("AGE_",i-1
,
                                                              "_NO_DISCA
RD",sep="")])
}
Discard_nb_age = cbind(Discard_nb_age,loca_A[,colnames(loca_A)==
                                      "AGE_20_PLUS_NO_DISCARD"])
colnames(Discard_nb_age)=c(colnames(loca_A[1:24]),
                           paste("AGE_",c(0:19),"_NO_DISCARD",sep=""),"AGE_20_PLUS
_NO_DISCARD")

Discard_nb_age <- Discard_nb_age[, !( colnames(Discard_nb_age) %in%
                                       c("NO_LENGTH_MEASUREMENTS_DISCARDS",  "NO_
SAMPLES_CATCH",
                                         "NO_LENGTH_MEASUREMENTS_CATCH", "NO_AGE_
MEASUREMENTS_CATCH",
                                         "NO_LENGTH_MEASUREMENTS_LANDINGS", "SPEC
ON", "ID",
                                         "NO_SAMPLES_LANDINGS", "NO_AGE_MEASUREME
NTS_LANDINGS",
                                         "LANDINGS") )]

DIS_NO <- melt(Discard_nb_age, id=c( "COUNTRY", "YEAR" ,
                                     "QUARTER" , "VESSEL_LENGTH" ,"GEAR"   ,"MESH_S
IZE_RANGE",
                                     "FISHERY" , "AREA"   , "SPECIES" , "DISCARDS",
                                     "NO_SAMPLES_DISCARDS", "NO_AGE_MEASUREMENTS_D
ISCARDS" ,
                                     "MIN_AGE", "MAX_AGE" ))
colnames(DIS_NO)[ncol(DIS_NO)] <- "number"

DIS_NO$variable <- as.character(DIS_NO$variable)
DIS_NO$variable <-   apply(DIS_NO, 1, function(x)
  ifelse(nchar(x[15]) == 16, substring(x[15], 5, 5) , substring(x[15], 5, 6)))

DIS_NO$variable <- as.numeric(as.character(DIS_NO$variable))
DIS_NO$number <- as.numeric(as.character(DIS_NO$number))


# INDIVIDUAL WEIGHTS
Discard_wei_age =  loca_A_DIS
for (i in 1:20){
  Discard_wei_age = cbind(Discard_wei_age,loca_A[,colnames(loca_A)==
                                      paste("AGE_",i-1,"_MEAN_WEIGHT_
```

```r
                          DISCARD",sep="")])
}
Discard_wei_age = cbind(Discard_wei_age,loca_A[,colnames(loca_A)==
                                              "AGE_20_PLUS_MEAN_WEIGHT_DISCARD"
])

colnames(Discard_wei_age)=c(colnames(loca_A[1:24]),
                            paste("AGE_",c(0:19),"_MEAN_WEIGHT_DISCARD",sep=""),
                            "AGE_20_PLUS_MEAN_WEIGHT_DISCARD")

Discard_wei_age <- Discard_wei_age[, !( colnames(Discard_wei_age) %in%
                                        c( "NO_SAMPLES_DISCARDS", "NO_SAMPLES_LA
NDINGS", "NO_SAMPLES_CATCH",
                                           "NO_LENGTH_MEASUREMENTS_DISCARDS", "N
O_LENGTH_MEASUREMENTS_LANDINGS",
                                           "NO_LENGTH_MEASUREMENTS_CATCH",
                                           "NO_AGE_MEASUREMENTS_DISCARDS","NO_AG
E_MEASUREMENTS_LANDINGS",
                                           "NO_AGE_MEASUREMENTS_CATCH",
                                           "SPECON", "ID", "LANDINGS","DISCARDS"
,"MIN_AGE", "MAX_AGE" ) )]

DIS_WEI <- melt(Discard_wei_age, id=c( "COUNTRY", "YEAR" , "QUARTER" ,
                                       "VESSEL_LENGTH" ,"GEAR"  ,"MESH_SIZE_RANGE"
,"FISHERY" , "AREA"  ,
                                       "SPECIES" ))
colnames(DIS_WEI)[ncol(DIS_WEI)] <- "ind_weight"

DIS_WEI$variable <- as.character(DIS_WEI$variable)

DIS_WEI$variable <-   apply(DIS_WEI, 1, function(x)
  ifelse(nchar(x[10]) == 25, substring(x[10], 5, 5) , substring(x[10], 5, 6)))

DIS_WEI$variable <- as.numeric(as.character(DIS_WEI$variable))
DIS_WEI$ind_weight <- as.numeric(as.character(DIS_WEI$ind_weight))

DIS_NO_WEI <- merge(DIS_NO, DIS_WEI,
                    by=colnames(DIS_WEI)[colnames(DIS_WEI) != "ind_weight"], all=T
)
DIS_NO_WEI$ind_weight[DIS_NO_WEI$ind_weight == -1] <- 0

# INDIVIDUAL LENGTHS
Discard_len_age =  loca_A_DIS
for (i in 1:20){
  Discard_len_age = cbind(Discard_len_age,loca_A[,colnames(loca_A)==
                                              paste("AGE_",i-1,"_MEAN_LENGTH_
DISCARD",sep="")])
}
Discard_len_age = cbind(Discard_len_age,loca_A[,colnames(loca_A)==
                                              "AGE_20_PLUS_MEAN_LENGTH_DISCARD"
```

```r
])

colnames(Discard_len_age)=c(colnames(loca_A[1:24]),
                            paste("AGE_",c(0:19),"_MEAN_LENGTH_DISCARD",sep=""),"A
GE_20_PLUS_MEAN_LENGTH_DISCARD")

Discard_len_age <- Discard_len_age[, !( colnames(Discard_len_age) %in%
                                        c("NO_SAMPLES_DISCARDS", "NO_SAMPLES_LAN
DINGS", "NO_SAMPLES_CATCH",
                                            "NO_LENGTH_MEASUREMENTS_DISCARDS", "NO
_LENGTH_MEASUREMENTS_LANDINGS",
                                            "NO_LENGTH_MEASUREMENTS_CATCH",
                                            "NO_AGE_MEASUREMENTS_DISCARDS","NO_AGE
_MEASUREMENTS_LANDINGS",
                                            "NO_AGE_MEASUREMENTS_CATCH",
                                            "SPECON", "ID", "LANDINGS","DISCARDS",
"MIN_AGE", "MAX_AGE" ) )]

DIS_LEN <- melt(Discard_len_age, id=c( "COUNTRY", "YEAR" , "QUARTER" ,
                                        "VESSEL_LENGTH" ,"GEAR"  ,"MESH_SIZE_RANGE"
,"FISHERY" , "AREA"  ,
                                        "SPECIES" ))
colnames(DIS_LEN)[ncol(DIS_LEN)] <- "ind_length"

DIS_LEN$variable <- as.character(DIS_LEN$variable)

DIS_LEN$variable <-   apply(DIS_LEN, 1, function(x)
  ifelse(nchar(x[10]) == 25, substring(x[10], 5, 5) , substring(x[10], 5, 6)))

DIS_LEN$variable <- as.numeric(as.character(DIS_LEN$variable))
DIS_LEN$ind_length <- as.numeric(as.character(DIS_LEN$ind_length))

DIS_NO_LEN <- merge(DIS_NO, DIS_LEN,
                    by=colnames(DIS_LEN)[colnames(DIS_LEN) != "ind_length"], all=T
)

DIS_NO_LEN$ind_length[DIS_NO_LEN$ind_length == -1] <- 0

DIS_NO_WEI_LEN <- merge(DIS_NO, merge(DIS_NO_LEN,
                                      DIS_NO_WEI, all=T), all=T)

DIS_NO_WEI_LEN <- DIS_NO_WEI_LEN[DIS_NO_WEI_LEN$number > 0, ]
DIS_NO_WEI_LEN$NO_AGE_MEASUREMENTS_DISCARDS[DIS_NO_WEI_LEN$NO_AGE_MEASUREMENTS_DIS
CARDS == -1] <- 0
DIS_NO_WEI_LEN$DISCARDS[DIS_NO_WEI_LEN$DISCARDS == -1] <- 0

kable(data.frame(DIS_Numbers_weights_lengths_from_A_Catch =colnames(DIS_NO_WEI_LEN
)))
```

DIS_Numbers_weights_lengths_from_A_Catch

COUNTRY

YEAR

QUARTER

VESSEL_LENGTH

GEAR

MESH_SIZE_RANGE

FISHERY

AREA

SPECIES

DISCARDS

NO_SAMPLES_DISCARDS

NO_AGE_MEASUREMENTS_DISCARDS

MIN_AGE

MAX_AGE

variable

number

ind_length

ind_weight

```r
DIS_NO_WEI_LEN$prod_len <- with(DIS_NO_WEI_LEN, number* ind_length)
DIS_NO_WEI_LEN$prod_wei <- with(DIS_NO_WEI_LEN, number* ind_weight)


colnames(DIS_NO_WEI_LEN)[10:12] <- c("UNWANTED_CATCH","NO_SAMPLES_UC",
                                     "NO_AGE_MEASUREMENTS_UC")


LAN_DIS <- data.frame(DIS_NO_WEI_LEN)

UNWANTED_unique <- group_by(LAN_DIS, COUNTRY, YEAR, QUARTER, VESSEL_LENGTH,
                            GEAR, MESH_SIZE_RANGE, FISHERY, AREA, SPECIES, UNWANTE
D_CATCH,
                            NO_SAMPLES_UC, NO_AGE_MEASUREMENTS_UC)

UNWANTED_unique <- data.frame(summarise(UNWANTED_unique,
                                        no_records = length(UNWANTED_CATCH) ))

unwanted_catches_sum <- group_by(UNWANTED_unique, COUNTRY, YEAR, QUARTER, VESSEL_L
ENGTH,
                                 GEAR, MESH_SIZE_RANGE, FISHERY, AREA, SPECIES)
unwanted_catches_sum <- data.frame(summarise(unwanted_catches_sum,
                                             total_unwanted_catch = sum(UNWANTED_C
ATCH) ,
                                             total_unwanted_samples = sum(NO_SAMPL
ES_UC),
```

```r
                                        total_unwanted_age_measurements = sum
(NO_AGE_MEASUREMENTS_UC) ))

unwanted_numbers_len_wei <-  group_by(LAN_DIS, COUNTRY, YEAR, QUARTER, VESSEL_LENG
TH,
                                      GEAR, MESH_SIZE_RANGE, FISHERY, AREA, SPECIE
S, variable )

unwanted_numbers_len_wei <- data.frame(summarise(unwanted_numbers_len_wei,
                                       NO_AGE_UC = sum(number), SUM_PROD
S_LEN = sum(prod_len),
                                       SUM_PRODS_WEI = sum(prod_wei)))

unwanted_numbers_len_wei$MEAN_WEIGHT_UC <- with(unwanted_numbers_len_wei,
                                       SUM_PRODS_WEI/NO_AGE_UC)
unwanted_numbers_len_wei$MEAN_LENGTH_UC <- with(unwanted_numbers_len_wei,
                                       SUM_PRODS_LEN/NO_AGE_UC)

C_unwanted_catch_min_max <-  group_by(unwanted_numbers_len_wei, COUNTRY, YEAR,
                                      QUARTER, VESSEL_LENGTH,
                                      GEAR,  MESH_SIZE_RANGE, FISHERY,  AREA,
                                      SPECIES)

C_UC_min_max <-  data.frame(summarise(C_unwanted_catch_min_max,
                                      MIN_AGE= min(variable),
                                      MAX_AGE= max(variable) ))

C_UC_min_max$MIN_AGE <- round(C_UC_min_max$MIN_AGE, 0)
C_UC_min_max$MAX_AGE <- round(C_UC_min_max$MAX_AGE, 0)

C_UC  <- merge(unwanted_numbers_len_wei, C_UC_min_max, by=c("FISHERY", "COUNTRY" ,
                                       "YEAR", "QUARTER", "VE
SSEL_LENGTH",
                                       "GEAR", "MESH_SIZE_RAN
GE",
                                       "AREA", "SPECIES") , a
ll=T)

C_UC_2  <- merge(C_UC, unwanted_catches_sum, by=c( "FISHERY", "COUNTRY" ,
                                       "YEAR", "QUARTER", "VESSEL_LENG
TH",
                                       "GEAR", "MESH_SIZE_RANGE",
                                       "AREA", "SPECIES") , all.x=T)

#merge with the communication table
colnames(lev5)[2] <- "FISHERY"
C_UC_2 <- merge(C_UC_2, lev5)

C_UC_2$AREA <-  as.numeric(substring(as.character(C_UC_2$AREA) , 4,nchar(as.charac
ter(C_UC_2$AREA))))
```

```r
C_UC_2$DOMAIN_DISCARDS <- paste(C_UC_2$COUNTRY, "_", sep="")
C_UC_2$DOMAIN_DISCARDS  <-  apply(C_UC_2, 1, function(x) ifelse(x[4] == -1, paste(
x[22],

"all_", sep=""), paste( x[22], as.numeric(as.character(x[4])),

"_" , sep="") ) )

C_UC_2$DOMAIN_DISCARDS <- with(C_UC_2, paste(DOMAIN_DISCARDS, "GSA",
                                             AREA, "_", GEAR, "_", JRC_FDI_codific
ation ,"_",
                                             MESH_SIZE_RANGE ,  "_NA_NA_" , sep=""
) )

C_UC_2$DOMAIN_DISCARDS  <-  apply(C_UC_2, 1, function(x)
  ifelse(x[5] == -1, paste(x[22], "all_", sep=""),
         paste( x[22], as.numeric(as.character(x[5])),"_" , sep="") ) )

C_UC_2$DOMAIN_DISCARDS <- with(C_UC_2, paste(DOMAIN_DISCARDS, "all_NK" ,
                                             sep="" )  )

LANDINGS_unique <- group_by(JRC_FDI_Table_E, COUNTRY, SUB_REGION, YEAR, QUARTER, G
EAR_TYPE, TARGET_ASSEMBLAGE, DOMAIN_LANDINGS, SPECIES,
                            TOTWGHTLANDG)
LANDINGS_unique <- data.frame(summarise(LANDINGS_unique,
                                        no_records = length(TOTWGHTLANDG) ))
#
colnames(LANDINGS_unique)[colnames(LANDINGS_unique)=="DOMAIN_LANDINGS"]<-"DOMAIN_D
ISCARDS"

C_UC_2[which(as.character(C_UC_2$QUARTER)=="-1"),]$QUARTER="ALL"

#C_UC_3 <- C_UC_2


C_UC_3 <- merge(C_UC_2, LANDINGS_unique)


final_C <- data.frame(COUNTRY  = C_UC_3$COUNTRY    ,
                      YEAR    = C_UC_3$YEAR    ,
                      QUARTER=C_UC_3$QUARTER,
                      SUB_REGION=C_UC_3$AREA,
                      GEAR_TYPE=C_UC_3$GEAR,
                      TARGET_ASSEMBLAGE=C_UC_3$JRC_FDI_codification,
                      DOMAIN_DISCARDS   = C_UC_3$DOMAIN_DISCARDS    ,
                      SPECIES       = C_UC_3$SPECIES    ,
                      TOTWGHTLANDG     = C_UC_3$TOTWGHTLANDG    ,
                      UNWANTED_CATCH    = C_UC_3$ total_unwanted_catch    ,
                      NO_SAMPLES_UC     = C_UC_3$total_unwanted_samples    ,
```

```r
                        NO_AGE_MEASUREMENTS    = C_UC_3$total_unwanted_age_measuremen
ts   ,

                        AGE_MEASUREMENTS_PROP  = 1   ,
                        MIN_AGE    = C_UC_3$MIN_AGE,
                        MAX_AGE    = C_UC_3$MAX_AGE,
                        AGE        = C_UC_3$variable,
                        NO_AGE     = C_UC_3$NO_AGE,
                        MEAN_WEIGHT    = C_UC_3$MEAN_WEIGHT_UC ,
                        MEAN_LENGTH    = C_UC_3$MEAN_LENGTH_UC
)


final_C$MEAN_WEIGHT <- round(as.numeric(as.character(final_C$MEAN_WEIGHT)) , 3)
final_C$NO_AGE <- round(as.numeric(as.character(final_C$NO_AGE)) , 3)

final_C$MEAN_LENGTH <- round(as.numeric(as.character(final_C$MEAN_LENGTH)) ,1)

final_C <- final_C[with(final_C, order(COUNTRY, YEAR,  SPECIES, DOMAIN_DISCARDS, A
GE)), ]
final_C$NO_AGE_MEASUREMENTS[is.na(final_C$NO_AGE_MEASUREMENTS)] <- 0

table_C_props <- final_C

table_C_props_min_max  <- group_by(final_C, DOMAIN_DISCARDS, SPECIES)
table_C_props_min_max <- data.frame(summarise(table_C_props_min_max, MIN_AGE= min(
AGE) ,
                                    MAX_AGE= max(AGE) ))

table_C_props_ages  <- group_by(table_C_props, SPECIES)
table_C_props_ages <- data.frame(summarise(table_C_props_ages, TOTAL_NO_AGE_MEASUR
EMENTS= sum(unique(NO_AGE_MEASUREMENTS))))

table_C_props <- table_C_props[, !(colnames(table_C_props) %in% c("MIN_AGE", "MAX_
AGE") ) ]

final_C <- merge(table_C_props, merge(table_C_props_ages, table_C_props_min_max) )

final_C$AGE_MEASUREMENTS_PROP <- with( final_C,
                                    NO_AGE_MEASUREMENTS/ TOTAL_NO_AGE_MEASUREME
NTS )

final_C$NO_AGE_MEASUREMENTS[final_C$NO_AGE_MEASUREMENTS_UC == 0 ] <- -1
final_C$AGE_MEASUREMENTS_PROP[final_C$TOTAL_NO_AGE_MEASUREMENTS== 0] <- "NK"

final_C$NO_AGE_MEASUREMENTS <-  final_C$TOTAL_NO_AGE_MEASUREMENTS
final_C$UNWANTED_CATCH <- round(final_C$UNWANTED_CATCH,3)

final_C_2 <- data.frame(COUNTRY = final_C$COUNTRY ,
                        YEAR = final_C$ YEAR,
                        QUARTER=final_C$QUARTER,
```

```
                        SUB_REGION=final_C$SUB_REGION,
                        GEAR_TYPE=final_C$GEAR_TYPE,
                        TARGET_ASSEMBLAGE=as.character(final_C$TARGET_ASSEMBLAGE),
                        DOMAIN_DISCARDS = final_C$DOMAIN_DISCARDS ,
                        SPECIES   = final_C$SPECIES,
                        TOTWGHTLANDG  = final_C$TOTWGHTLANDG ,
                        UNWANTED_CATCH   = final_C$UNWANTED_CATCH   ,
                        NO_SAMPLES   = final_C$NO_SAMPLES_UC ,
                        NO_AGE_MEASUREMENTS     = final_C$NO_AGE_MEASUREMENTS,
                        AGE_MEASUREMENTS_PROP = final_C$AGE_MEASUREMENTS_PROP,
                        MIN_AGE      = final_C$MIN_AGE ,
                        MAX_AGE    = final_C$MAX_AGE ,
                        AGE  = final_C$AGE ,
                        NO_AGE    = final_C$NO_AGE ,
                        MEAN_WEIGHT  = final_C$MEAN_WEIGHT,
                        MEAN_LENGTH  = final_C$MEAN_LENGTH )
```

Output

Table continues below

COUNTRY	YEAR	QUARTER	SUB_REGION	GEAR_TYPE
COUNTRY1	9999	ALL	GSA99	OTB
COUNTRY1	9999	ALL	GSA99	OTB
COUNTRY1	9999	ALL	GSA99	OTB
COUNTRY1	9999	ALL	GSA99	OTB
COUNTRY1	9999	ALL	GSA99	OTB
COUNTRY1	9999	ALL	GSA99	OTB

Table continues below

TARGET_ASSEMBLAGE
DEF
DEF
DEF
DEF
DEF
DEF

Table continues below

DOMAIN_DISCARDS
COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK

COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
COUNTRY1_all_GSA99_OTB_DEF_50D100_NA_NA_all_all_NK
Table continues below

SPECIES	TOTWGHTLANDG	DISCARDS	NO_SAMPLES
ANK	233,2	1,273	22
ANK	233,2	1,273	22
BOG	125,1	149,4	22
BOG	125,1	149,4	22
BOG	125,1	149,4	22
BOG	125,1	149,4	22

Table continues below

NO_AGE_MEASUREMENTS	AGE_MEASUREMENTS_PROP	MIN_AGE
0	NK	0
0	NK	0
0	NK	0
0	NK	0
0	NK	0
0	NK	0

MAX_AGE	AGE	NO_AGE	MEAN_WEIGHT	MEAN_LENGTH
1	0	59,92	0,013	9,1
1	1	8,386	0,05	15
4	0	665,5	0,012	10,5
4	1	4134	0,025	13,3
4	2	617,5	0,042	16
4	3	24,42	0,064	18,5