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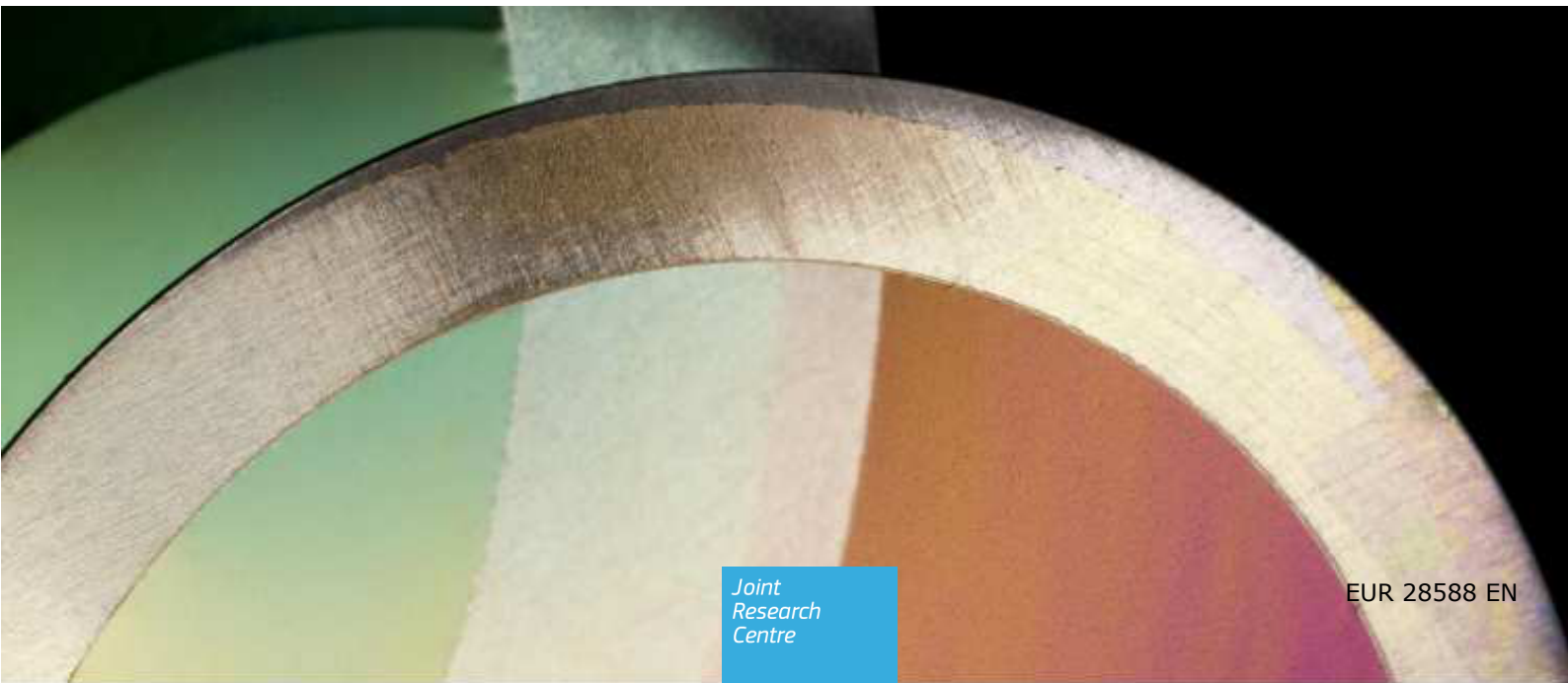
Compilation and quality check of the ICES stock assessment data

Paris Vasilakopoulos, Ernesto Jardim



Joint Research Centre

EUR 28588 EN

Contact Information
Name: Paris Vasilakopoulos
Address: Joint Research Centre, Via Enrico Fermi 2749, TP 051, 21027 Ispra (VA), Italy
E-mail: paris.vasilakopoulos@ec.europa.eu
Tel.: +39 033278 5714

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Compilation and quality check of the ICES stock assessment data

Abstract
This document describes the compilation and quality checks of the ICES dataset to be used in the CFP indicators report.

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Paris Vasilakopoulos, Ernesto Jardim

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Contents

Abstract

For the analysis of the CFP indicators for NE Atlantic stocks, stock assessment data had to be obtained from ICES. These data included time-series of stock size, fishing pressure and reference points for each stock. This document describes the compilation process of this dataset, including the data quality checks and corrections that were carried out.Embedded R code is executed to generate the polished ICES dataset used in the analysis for the CFP indicators report.

1. Introduction

ICES stock assessment data are available from three different sources. The first one is an online database available as an XML file at `http://standardgraphs.ices.dk/StandardGraphsWebServices.asmx/getListStocks?year=0`, hereafter referred to as "online database". The second one is the stock assessment graphs dataset available as an excel table for each assessment year at `http://standardgraphs.ices.dk/stockList.aspx`, hereafter referred to as "graphs dataset". The third source is the stock summary sheets available as pdf files at `http://www.ices.dk/community/advisory-process/Pages/Latest-advice.aspx`, hereafter referred to as "summary sheets". For the compilation of the ICES dataset to be analysed in the CFP indicators report, data from all three sources were investigated.

2. Dataset compilation using the online database

Initially, ICES stock assessment data were extracted from the online database and converted into a table. For this, the functions doit and doitAreas were created and stored within a funs.R script.

```
doit <- function(x){
        cat(".")
        url <- paste("http://standardgraphs.ices.dk/
             StandardGraphsWebServices.asmx/getSummaryTable?key=",
              x$key[1], sep="")
        obj <- getURL(url)
        obj <- xmlToList(xmlTreeParse(obj)$doc$children[[1]])
        df0 <- as.data.frame(apply(obj$lines, 1, as.numeric))
        names(df0) <- unlist(lapply(strsplit(names(df0), "\\."), "[", 1))
        #removes potential space after variable name
        # META INFO IS NOT ALWAYS THE SAME, SHOULD BE AVOIDED, BREAKS DATA STRUCTURE
        df0 <- cbind(df0, do.call("cbind", obj[names(obj)[!names(obj) == "lines"]]))
        url <-  paste("http://standardgraphs.ices.dk/StandardGraphsWebServices.asmx/
      getFishStockReferencePoints?key=",
      x$key, sep="")
        obj <- getURL(url)
        df0 <- cbind(df0, xmlToDataFrame(obj))
        df0 <- melt(df0, id.vars="Year")
        df0 <- cbind(df0, x)
        return(df0)
}

doitAreas <- function(x){
        cat(".")
        url <-
        paste("http://vocab.ices.dk/services/pox/GetCodeDetail/ices_stockcode/",
              x$Key[1], sep="")
        ox0 <- getURL(url)
        ox0 <- xmlTreeParse(ox0)
        ox0 <- xmlToList(ox0$doc$children$GetCodeDetailResponse$children$CodeDetail)
        s0 <- data.frame(t(unlist(ox0[1:5])))
        a0 <- do.call("rbind", lapply(lapply(ox0[7:length(ox0)],
                                             "[", "Code"), unlist))
        a1 <- do.call("rbind", lapply(lapply(ox0[7:length(ox0)],
                                             "[", "CodeType"), unlist))
        a0 <- a0[a1[,"CodeType.Key"]=="ICES_Area",]
        p0 <- data.frame(t(unlist(ox0[[6]]$Code)))
        s0 <- data.frame(s0, p0)
        if(is.null(nrow(a0))){
                ox <- data.frame(s0, t(a0))
        } else {
                s0 <- s0[rep(1, nrow(a0)),]
                ox <- cbind(s0, a0)
```

```
        }
        ox <- ox[,c("Key", "Description", "Description.1", "Code.Key",
                    "Code.Description")]
        names(ox) <- c("stock", "stockDescription", "species", "area",
                       "areaDescription")
        return(ox)
}
```

Using the functions doit and doitAreas, a dataset was created containg the most recent stock assessment data for each unique stock code.

```
library(XML)
library(RCurl)
library(reshape)
library(reshape2)
source("funs.R")
yr <- 2016

#================================================================================
# Stock assessment information
#================================================================================

#--------------------------------------------------------------------------------
# get stocks list
#--------------------------------------------------------------------------------
stks <- getURL("http://standardgraphs.ices.dk/
               StandardGraphsWebServices.asmx/getListStocks?year=0")
stks <- xmlToDataFrame(stks)
# remove unpublished and "Psetta maxima (historic name) North Sea"
stks <- subset(stks, Status!="Not Published")
stks <- subset(stks, SpeciesName!="Psetta maxima (historic name)")
# get most recent assessment
stks <- lapply(split(stks, as.character(stks$FishStockName)), function(x)
  subset(x, x$AssessmentYear==max(as.numeric(as.character(x$AssessmentYear)))))
# checks (both evaluate to TRUE when is ok)
sum(unlist(lapply(stks, nrow)))==length(stks)
sum(apply(table(do.call("rbind", stks)[,c("key","AssessmentYear")]), 1, sum)>1)==0

#--------------------------------------------------------------------------------
# get summary and RP with doit
#--------------------------------------------------------------------------------
stks <- lapply(stks, function(x) try(doit(x)))
stks <- do.call("rbind", stks[!unlist(lapply(stks, is , "try-error"))])
# cast for report
        # vars for report
vars <- c("SSB", "landings", "F", "catches", "discards")
cond <- c("Fage", "FLim", "Fpa", "Bpa", "Blim", "FMSY", "MSYBtrigger", "units",
          "stockSizeDescription", "stockSizeUnits", "fishingPressureDescription",
          "fishingPressureUnits", "MSYBescapement", "Fmanagement", "Bmanagement")
        # if no assessment use NA
foo <- function(x){
        if(length(x)==0) x <- NA
        if(length(x)>1) x <- x[1]
        x <- as.character(x)
        return(x)
}
stks4report <- dcast(subset(stks, variable %in% c(vars, cond)), ... ~variable, fun=foo)
save(stks4report, file="stks4report.Rdata")
```

3. First data quality check

The generated dataset was examined for possible duplications, stock name changes, or stock merges. Accordingly, the following stocks were removed:

- bss-47 assessed in 2014, because it was also assessed in 2016 as Bss-47.
- had-34 and had-scow assessed in 2013, because they were assessed as a single stock in 2016 (had-346a).
- her-irlw and her-vian assessed in 2014, because they were assessed as a single stock in 2016 (her-67bc).
- Nop-34-june assessed in 2014, because it was also assessed in 2016 as nop-34-oct.
- her-31 assessed in 2015, because it was also assessed in 2016 as Her-31.

```
load("stks4report.Rdata")
#Removal of non-relevant stocks
#(all 2013 and 2014 assesment year stocks are dropped - except "smn-arct"
#due to duplications, splits, merges)
stks4report<-stks4report[stks4report$AssessmentYear=="2016"|
                           stks4report$AssessmentYear=="2015"|
                           stks4report$FishStockName=="smn-arct",]
#remove duplicate her-31 entry
stks4report<-stks4report[stks4report$FishStockName!="her-31",]
```

ICES has identified 6 categories of data-limited stocks ranging from analytically assessed data-rich stocks (Category 1) to negligible landings stocks (Category 6). For the CFP indicators report, only stocks from Categories 1-3 had to be considered. Therefore, ICES was asked to provide us with a list with the Category of each stock. Based on that list, stocks of Categories 4-6 were removed from the dataset.

```
#Remove stocks of categories 4+ (Identified by ICES)
stks4report<-stks4report[!stks4report$FishStockName%in% c("alf-comb","bli-oth",
"hom-nsea","nep-10","nep-34","rjh-7afg","bss-8c9a","bss-wosi","Nep-32","nep-33",
"nep-5","nep-oth-6a","nep-oth-7", "ory-comb","pan-flad","ple-7b-c","ple-89a",
"pol-89a","pol-nsea","raj-89a","raj-celt","rhg-nea","rjb-34","rjb-89a",
"rjc-echw","rje-ech","rjf-celt","rjh-4aVI","rjh-4c7d","rjh-7e","rji-celt",
"rng-1012","rng-kask","rng-oth","san-ns5","san-ns6","san-ns7","sbr-678","sbr-x",
"sol-7b-c","spr-celt","usk-mar","usk-rock","whg-89a"),]
stks4report$FishStockName<-droplevels(stks4report$FishStockName)
nlevels(stks4report$FishStockName)

## [1] 176

# final number of stocks retained
# stocks retained were 176 on 03/03/2017 when the dataset was last updated
```

The final dataset was compared with the graphs dataset and the summary sheets to investigate data consistency, and a number of issues emerged:

- For some stocks, data relevant to the analysis, such as stock size, fishing pressure and reference points appeared in custom columns within the graphs dataset, while their dedicated columns were empty. These custom column values could not be extracted from the online database.
- In the online database, some stock size values were excessively rounded to single digits with no decimals, hence they were not nformative. The graphs dataset and summary sheets contained unrounded values.
- For quite a few stocks, especially Category 3 stocks, stock size description, fishing pressure description, and their respective units were wrong in both the online database and the graphs dataset.

- Some discrepancies in the reported values between the different datasets were identified, as well as discrepancies in the naming of some stocks.
- When the dataset was first compiled (18/01/2017) 33 stocks with available summary sheets were absent from both the online database and the graphs dataset.

All these issues were brought to the attention of ICES on 18/01/2017 and their assistance was seeked. By 02/02/2017, 26 of the 33 missing stocks had been added to both the online database and the graphs dataset. The 7 stocks that remained missing were all Category 3 stocks, namely: ang-ivvi; arg-123a4; arg-5b6a; fle-nsea; mur-347d; sar-78 and whg-iris. These 7 stocks were expected to be added by the end of March, and they were not included in the analysed dataset. Taking into consideration the issues mentioned above, it was decided to use the graphs dataset instead of the online database, in order to tackle the issues with excessive rounding and data available in custom columns.

4. Dataset compilation using the graphs dataset

The excel tables containing stock assessment data for 2014, 2015 and 2016 were downloaded from `http://standardgraphs.ices.dk/stockList.aspx`. The 2016 dataset was used as a starting point. Stocks assessed in 2014-2015 that had been identified as relevant during the previous data compilation process from the online database were then added manually. Also, Category and Ecoregion were added for each stock.

```
#loading the adjusted graphs dataset
stks<-read.csv('../../2017/ICES_stks_fromGraphs_17.02.csv', header=TRUE)
#remove - again - stocks of category 4+ (relevant to 2016 stocks)
stks<-stks[!stks$FishStock%in% c("alf-comb","bli-oth","hom-nsea",
"nep-10","nep-34","rjh-7afg","bss-8c9a","bss-wosi","Nep-32","nep-33","nep-5",
"nep-oth-6a","nep-oth-7","ory-comb","pan-flad","ple-7b-c","ple-89a","pol-89a",
"pol-nsea","raj-89a","raj-celt","rhg-nea","rjb-34","rjb-89a","rjc-echw",
"rje-ech","rjf-celt","rjh-4aVI","rjh-4c7d","rjh-7e","rji-celt","rng-1012",
"rng-kask","rng-oth","san-ns5","san-ns6","san-ns7","sbr-678","sbr-x",
"sol-7b-c","spr-celt","usk-mar","usk-rock","whg-89a"),]
stks$FishStock<-droplevels(stks$FishStock)
nlevels(stks$FishStock)#176 stocks retained - same with online database

## [1] 176

#A file containing only FishStock, Category (1-3) and Ecoregion information
#was merged with the graphs dataset
stks2<-read.csv('../../2017/ICES_Cat&Eco.csv', header=TRUE)
stks3<-merge(stks,stks2,by="FishStock")
```

The final ICES dataset to be analysed contained 147 stocks assessed in 2016, 28 stocks assessed in 2015, and 1 stock assessed in 2014. The dataset included 91 Category 1 stocks, 2 Category 2 stocks, and 83 Category 3 stocks.

```
stks16<-stks[stks$AssessmentYear == "2016",]
stks16$FishStock<-droplevels(stks16$FishStock)
nlevels(stks16$FishStock)

## [1] 147

stks15<-stks[stks$AssessmentYear == "2015",]
stks15$FishStock<-droplevels(stks15$FishStock)
nlevels(stks15$FishStock)

## [1] 28

stks14<-stks[stks$AssessmentYear == "2014",]
stks14$FishStock<-droplevels(stks14$FishStock)
nlevels(stks14$FishStock)
```

```
## [1] 1

stksc1<-stks3[stks3$Category == "1",]
stksc1$FishStock<-droplevels(stksc1$FishStock)
nlevels(stksc1$FishStock)

## [1] 91

stksc2<-stks3[stks3$Category == "2",]
stksc2$FishStock<-droplevels(stksc2$FishStock)
nlevels(stksc2$FishStock)

## [1] 2

stksc3<-stks3[stks3$Category == "3",]
stksc3$FishStock<-droplevels(stksc3$FishStock)
nlevels(stksc3$FishStock)

## [1] 83

#write.csv(stks3, "ICESstks_polished_v2.csv")
```

5. Second data quality check

Using the graphs dataset instead of the online database to extract ICES stock assessment data solved some of the issues identified during the first data quality check: there were no overly rounded values, and values contained in custom columns became available. However, data relevant to the analysis which were available in custom columns still had to be moved to the right columns manually. Also, manual corrections of stock size description, fishing pressure description, and of their respective units had to be made for several stocks. All issues and manual corrections carried out on the dataset prior to the analysis are summarised in Table 1.

Table 1: The main issues identified during the compilation of the ICES dataset and the actions taken to correct them. HR: harvest rate; BI: Biomass index; AI: Abundance index

Stock	Category	Issues	Actions
ane-bisc	1	Wrong fishing pressure description	Fishing pressure description corrected (HR)
arg-icel	3	Fproxy and Fmsyproxy in custom columns	Fproxy and Fmsyproxy added to fishing pressure and Fmsy columns respectively
arg-rest	3	Wrong stock size description	Stock size description corrected (BI in kg/h)
bli-5a14	3	Fproxy and Fmsyproxy available in custom columns	Fproxy and Fmsyproxy added to fishing pressure and Fmsy columns respectively
bll-nsea	3	Wrong stock size description	Stock size description corrected (BI in kg/day)
boc-nea	3	Stock size in Tbiomass column. Stock size description wrongly worded	Stock size added to the correct column. Stock size description corrected (Relative TSB)
bsf-nea	3	Wrong stock size description. No url link to the report included in the graphs dataset	Stock size description corrected (AI in millions). Url link added
Bss-8ab	3	Wrong stock size description	Stock size description corrected (BI in kg/day)
cap-bars	1	Stock size in custom column	Stock size added and units corrected (million t)

Continued on next page

Table 1: The main issues identified during the compilation of the ICES dataset and the actions taken to correct them. HR: harvest rate; BI: Biomass index; AI: Abundance index

Stock	Category	Issues	Actions
cod-2532	3	Stock size in custom column. Stock size and fishing pressure description wrongly worded	Stock size added.Stock size and fishing pressure descriptions corrected (BI in kg/h; Relative HR)
cod-coas	3	Fmanagement and Bmnagement absent (available in summary sheet)	Fmanagement and Bmnagement added
cod-farb	3	Stock size and HR in custom columns. Wrong stock size and fishing pressure description	Stock size and HR added. Stock size and fishing pressure descriptions corrected (BI in kg/h; HR)
cod-iceg	1	HR and HRmsy in custom columns. Stock size and fishing pressure description wrong	HR and HRmsy added to fishing pressure and Fmsy columns respectively. Stock size and fishing pressure descriptions corrected (SSB; HR)
cod-ingr	3	Stock size description wrongly worded	Stock size description corrected (BI in kg/100h)
cod-kat	3	Wrong stock size and fishing pressure description	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
cod-scow	1	Data available from a 2016 assessment that was not officially approved by ICES	Data from the 2015 assessment used instead
cod-segr	3	Stock size description wrongly worded. Fmanagement in custom column	Stock size description corrected (BI in t). Fmanagement added
cod-wgr	3	Stock size description wrongly worded	Stock size description corrected (BI in t)
dab-nsea	3	Wrong stock size description	Stock size description corrected (BI in kg/h)
dgs-nea	1	HRmsy in custom column. Stock size and fishing pressure descriptions wrongly worded	HRmsy added to the Fmsy column. Stock size and fishing pressure descriptions corrected (TSB and HR)
gfb-comb	3	Wrong stock size description	Stock size description corrected (Relative BI)
gug-347d	3	Stock size description wrongly worded	Stock size description corrected (BI in kg/h)
had-iceg	1	HR and HR ref points in custom columns	HR, Hrmsy and HRmgt added to fishing pressure, FMSY and Fmanagement columns respectively. Fishing pressure description corrected (HR)
had-iris	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
Her-31	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
her-47d3	1	Fishing pressure description wrongly worded	Fishing pressure description corrected (F)
her-noss	1	Fmanagement missing	Fmanagement added
jaa-10	3	Stock size description wrongly worded	Stock size description corrected (BI in kg/day)

Continued on next page

Table 1: The main issues identified during the compilation of the ICES dataset and the actions taken to correct them. HR: harvest rate; BI: Biomass index; AI: Abundance index

Stock	Category	Issues	Actions
lem-nsea	3	Wrong stock size description	Stock size description corrected (BI in kg/day)
lin-arct	3	Wrong stock size description	Stock size description corrected (BI in kg/1000hooks)
lin-faro	3	Wrong stock size description	Stock size description corrected (BI in kg/h)
lin-oth	3	Wrong stock size description	Stock size description corrected (BI in kg/1000hooks)
mac-nea	1	No url link to the report included in the graphs dataset	Url link added
meg-rock	3	HR in custom column. Wrong stock size and fishing pressure descriptions	HR added to fishing pressure column. Stock size and fishing pressure descriptions corrected (BI in t; HR)
nep-11	1	Wrong fishing pressure description	Fishing pressure description corrected (HR)
nep-12	1	Wrong fishing pressure description	Fishing pressure description corrected (HR)
nep-13	1	Wrong fishing pressure description	Fishing pressure description corrected (HR)
nep-15	1	Wrong stock size and fishing pressure descriptions	Stock size and fishing pressure descriptions corrected (abundance in millions; HR)
nep-16	1	Wrong stock size and fishing pressure descriptions	Stock size and fishing pressure descriptions corrected (abundance in millions; HR)
nep-17	1	Wrong stock size and fishing pressure descriptions	Stock size and fishing pressure descriptions corrected (abundance in millions; HR)
nep-19	1	Fishing pressure description wrongly worded	Fishing pressure description corrected (HR)
nep-2021	1	Fishing pressure description wrongly worded	Fishing pressure description corrected (HR)
nep-22	1	Fishing pressure description wrongly worded	Fishing pressure description corrected (HR)
nep-2324	1	Stock size and fishing pressure description wrongly worded. Wrong stock size units	Stock size and fishing pressure descriptions corrected (abundance in millions; HR)
nep-2829	3	Stock size description wrongly worded	Stock size description corrected (BI in kg/h)
nep-3-4	1	Stock size description wrongly worded	Stock size description corrected (abundance in millions)
nep-6	1	Wrong stock size and fishing pressure descriptions	Stock size and fishing pressure descriptions corrected (abundance in millions; HR)
nep-7	1	Wrong stock size and fishing pressure descriptions. No HR ref points	Stock size and fishing pressure descriptions corrected (abundance in millions; HR). HR and HRmsy added to fishing pressure and Fmsy columns respectively
nep-8	1	Wrong stock size and fishing pressure descriptions	Stock size and fishing pressure descriptions corrected (abundance in millions; HR)

Continued on next page

Table 1: The main issues identified during the compilation of the ICES dataset and the actions taken to correct them. HR: harvest rate; BI: Biomass index; AI: Abundance index

Stock	Category	Issues	Actions
nep-9	1	Stock size description wrongly worded. Wrong fishing pressure units	Stock size description and fishing pressure units corrected (abundance in millions; HR)
pan-barn	1	Found as 'pand-brn' in summary sheets. B/Bmsy rather than absolute values of SSB in summary sheets, but not in the graphs dataset	
pan-sknd	1	Found as 'pand-skdn' in summary sheets	
ple-2432	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
ple-7h-k	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
ple-celt	3	Stock size in custom column	Stock size added Stock size description added (Relative BI)
ple-echw	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
ple-iris	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
raj-mar	3	Wrong stock size description	Stock size description corrected (Relative AI)
rjc-347d	3	Wrong stock size description	Stock size description corrected (Relative AI)
rjc-7afg	3	Wrong stock size description	Stock size description corrected (AI in n/h)
rjc-bisc	3	Wrong stock size description	Stock size description corrected (Relative BI)
rjc-pore	3	Wrong stock size description	Stock size description corrected (Relative BI)
rjc-VI	3	Wrong stock size description	Stock size description corrected (AI in n/km2)
rje-7fg	3	Wrong stock size description	Stock size description corrected (AI in n/h)
rjh-pore	3	Wrong stock size description	Stock size description corrected (Relative BI)
rjm-347d	3	Wrong stock size description	Stock size description corrected (Relative BI)
rjm-67bj	3	Wrong stock size description	Stock size description corrected (AI in n/km2)
rjm-7aeh	3	Wrong stock size description	Stock size description corrected (AI in n/h)
rjm-bisc	3	Wrong stock size description	Stock size description corrected (BI in kg/haul)
rjm-pore	3	Wrong stock size description	Stock size description corrected (Relative BI)
rjn-34	3	Wrong stock size description	Stock size description corrected (Relative AI)
rjn-678abd	3	Wrong stock size description	Stock size description corrected (Relative BI)
rjn-8c	3	Wrong stock size description	Stock size description corrected (BI in kg/h)

Continued on next page

Table 1: The main issues identified during the compilation of the ICES dataset and the actions taken to correct them. HR: harvest rate; BI: Biomass index; AI: Abundance index

Stock	Category	Issues	Actions
rjn-pore	3	Wrong stock size description	Stock size description corrected (Relative BI)
rjr-234	3	Wrong stock size description	Stock size description corrected (Relative AI)
rju-ech	3	Wrong stock size description	Stock size description corrected (BI in t)
rng-5b67	1	Stock size and fishing pressure description wrongly worded	Stock size and fishing pressure descriptions corrected (TB/Bmsy; HR/HRmsy)
sai-arct	1	Fmanagement missing	Fmanagement added
sai-icel	1	HR and HRmsy in custom columns. Wrong stock size and fishing pressure descriptions	HR and HRmsy added to fishing pressure and Fmsy columns respectively. Stock size and fishing pressure descriptions corrected (SSB; HR)
san-ns4	3	Wrong stock size description	Stock size description corrected (Relative AI)
sar-soth	1	MGT Btrig in custom column	MGT Btrig added in Bmanagement
smn-dp	2	Wrong stock size and fishing pressure description	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
sol-7h-k	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
syc-347d	3	Wrong stock size description	Stock size description corrected (Relative AI)
syc-8c9a	3	Wrong stock size description	Stock size description corrected (Relative AI)
syc-bisc	3	Wrong stock size description	Stock size description corrected (Relative BI)
syc-celt	3	Wrong stock size description	Stock size description corrected (Relative AI)
syt-celt	3	Wrong stock size description	Stock size description corrected (AI in n/h)
trk-nea	3	Wrong stock size description	Stock size description corrected (Relative AI)
tur-kask	3	Wrong stock size description	Stock size description corrected (Relative AI)
tur-nsea	3	Stock size and fishing pressure descriptions wrongly worded	Stock size and fishing pressure descriptions corrected (Relative SSB; Relative F)
usk-arct	3	Wrong stock size description	Stock size description corrected (BI in kg/1000hooks)
usk-oth	3	Wrong stock size description	Stock size description corrected (BI in kg/1000hooks)
wit-nsea	3	Wrong stock size description	Stock size description corrected (BI in kg/h)

The different stock size and fishing pressure descriptions used in the final dataset are presented in Tables 2 and 3 respectively.

Table 2: Explanation of the different stock size descriptions used in the ICES dataset

Stock size description	Details	Typical units	Typical stock category
Abundance	Estimated number of individuals	millions; billions	1 (Nephrops stocks)
SSB	Spawning stock biomass	tonnes	1
TSB	Total stock biomass	tonnes	1
Maturing Stock Biomass	Maturing stock estimated in October	tonnes	1 (cap-bars)
B/Bmsy	SSB divided by Bmsy		1
TSB/Bmsy	TSB divided by Bmsy		1 (rng-5b67)
Abundance Index	Number-based CPUE	millions; n/h; n/km2	3
Biomass Index	Weight-based CPUE	tonnes; kg/time; kg/haul and others	3
Relative AI	Abundance index relative to the mean of the time-series		3
Relative AI (comb)	Mean of multiple relative abundance indices		3
Relative BI	Biomass index relative to the mean of the time-series		3
Relative BI (comb)	Mean of multiple relative biomass indices		3
Relative SSB	SSB relative to the mean of the time-series		2; 3
Relative TSB	TSB relative to the mean of the time-series		3 (boc-nea)

Table 3: Explanation of the different fishing pressure descriptions used in the ICES dataset

Fishing pressure description	Details	Typical stock category
F	Fishing mortality (mean over main exploited age-classes)	1
F/Fmsy	F divided by Fmsy	1
Fproxy	A proxy of F (catch divided by survey index)	3
Harvest Rate	Catch divided by biomass or biomass index	1; 3
Harvest Rate/Fmsy	Harvest rate divided by Fmsy	1 (rng-5b67)
Relative F	F relative to the mean of the time-series	2; 3
weighted F	F divided by population numbers	1 (her-noss)

6. Conclusions

This document has described the compilation and quality checks of the ICES stock assessment dataset. This dataset was used in other analysis for the CFP indicators report.

List of abbreviations and definitions

CFP Common Fisheries Policy

ICES International Council for the Exploration of the Sea

List of tables

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