Notes for work done August 3rd - December 2nd 2015

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Notes on use of STECF data

Data should be obtained using the dataGrabber, which will download, unzip and write data directly from the STECF data repositiories to csv-files, which are easily loaded into **R**.

Another option is to download data manually from the STECF online data dissemination website. However, this is a cumbersome method, and data will be split in data annexes, which are not necessarily equivalent to ecoregions.

Notes for lists & keys

About keys & lists

A number of csv-files which can serve as lookup tables when assigning guilds, grouping gears, or translating FAO species codes to scientific- and common species names.

(Re)assignment of guilds, gear- and area codes

Guilds are assigned the each species using an external file (*"guilds.list"*), which serves as a lookup table. The list contains species names (common & scientific), feeding guild and size guild. Feeding guilds have been assigned to each species based on the work done by Greenstreet et al. (1996). Naturally, not all species present in fisheries data are included in that particualar piece of work, as it concentrates on the North Sea, and have been added later using data from Fishbase.

Asterixes indicate that a guild has been added to the list of feeding guilds in the North Sea (Greenstreet et al. 1996).

- ***** indicates a guild represented in the unedited guild list, but with an outdated or synomymous species name. These can easily be added to the list.

- ****** indicates a guild *not* represented in the unedited guild list, added using data from Fishbase.

Size guilds are based on Fishbase data, using the size-guilds suggested by *Kristin Kleisner* (which are also used by Fishbase), and choosing max adult length as the determining factor for size guild.

Feeding (trophic) guilds are based on Fishbase data, by combining info from the *Environment-* and *Biology*-sections. When feeding behaviour change during the life histroy, feeding guilds are designated by the adult behaviour.

Gear lists

Multiple lists of gears exist int he *keys-lists*-folder:

- *stecf-gear.list* is based on the STECF Landings data, and can be used as a lookup table for renaming and grouping gears by type, as discussed later.

- *stecf-geartech.list* is a collated list of information about gears, their code, class (e.g. "Dredges"), description (e.g."Boat dredges"), fishing technology-code (e.g. "DRB"), type (e.g. "Dredges"), vessel description (e.g. "Dredgers") and whether the gear is towed or static.

It is difficult to produce *one* complete gear list, as gear designations change between the Landings dataset and the Economic and Transversal dataset. Some gears are missing the "tech"-designation which has not been provided by the STECF.

Gear renaming

In the STECF Landings data, gears needs to be grouped by actual gear names, without restriction tags ("R-*"), and without overwriting the original data. This is largely fixed by using the gear list (*gear.list*); it can be used to remove "restricted"-tags and grouping similar gears, with different names in different areas. However, if new gears are only present in the dataset, they will not be renamed properly, and most likely left out.

Also, gears are named differently in the Economic & Transversal dataset, in which gears are grouped by function, more than gear type, e.g. "bottom scraping" rather than "dredge".

Area key

Ecoregion designations are based on FAO-area designations found on the FAO webpage (Food & Agriculture Organization of the United Nations 2015). A list of C-squares in each ecoregion exists, but is hardly human-readable.

Fleet characterisations

These notes cover working with the *STECF Landings by ICES Rectangle*-dataset

- Vessel length groups are not the same in the Baltic Sea as in other areas. Especially 13-18 m. group is problematic, as it is not compatible with the >10, 10-15, 15<-convention, however only constitutes 7 % of effort 2003-2013.

- Gear designations vary. Categories 3A-C are problematic, cat. 3A covers several gears

- Data about gear use in the North Sea are lacking, as no info is provided for 14 % of effort (2003-2014)

- Vessel length data is missing for 54 % of vessels in Bay of Biscay-data (Annex IIB). However, BOB/IIB is not used in the preliminary characterisation, as it contains data for Iberian peninsula only

- Data is not divided into ICES rectangles and ecoregions, which makes proper characterisation of each region difficult, e.g. area VIIe which contains data from Celtic Seas and NS.

- Fleet **capacity** is reported only for some countries, and in *Gross Tonnage (GT)*, as opposed to kilowatts (kW). **Effort** is reported in *kilowattdays (kWd)*.

- Catches needs to be summed by **year**, and grouped with **gears** and **species**, in their respective **ecoregions**, and **sub-regions**. It would be nice to be able to produce all the output based on the ecoregions listed in the dataset.

- Actual vessel numbers are difficult if not impossible to determine, as data only contains summarised vessel data. "Vessel numbers" are actually a measure of how many vessels have been part of a certain activity, i.e. fishing with pelagic trawls in an area for a given year. This means that vessel numbers are grossly overestimated, and "vessel numbers" is more than anything a measure of vessel visitations to a given area.

- There are too many gear types, and some of the categories are overlapping. It may be advisable to summarise some of the categories. As such information about restricted gears are not of immediate interest, so they have been removed in the output so far. The type of restricted gear is, however, and usually the general type of gear (e.g. "otter trawl") is present in the datasets in much greater proportions, thus specific and restricted gear designations can easily be included in more general categories without skewing the data too much. However, consolidating the gear types may give a clearer picture of the composition of the fleets.

- There are too many species names to produce anything that is general for each region, while still being descriptive. Grouping species by feeding or size guilds, will simplify graphical and generalised data products. There may be a challenge in automating this. A key for assigning guilds to species, by species name, have been produced. (`/keys-lists/guild.list`).

Table 1: *Suggested division of sq. VIIe to Bay of Biscay and Celtic Seas ecoregions.*

Code	Country	Ecoregion in sq. VIIe
ENG	England	Celtic Seas
IOM	Isle of Man	Celtic Seas
IRL	Ireland	Celtic Seas
NIR	Northern Ireland	Celtic Seas
SCO	Scotland	Celtic Seas
BEL	Belgium	North Sea
DEN	Denmark	North Sea
ESP	Spain	North Sea
FRA	France	North Sea
GBG	Guernsey	North Sea
GBJ	Jersey	North Sea
GER	Germany	North Sea
LIT	Lithuania	North Sea
NED	Netherlands	North Sea

Missing data

- Parts of the *STECF Fleet Level Economic* dataset are missing. Specifically proper sub-region designations are missing for some data points, and have been left out of analysis. 53660 of 548578 data points with the supra region designation **"AREA27"** have been left out due to missing (*"NA"*), improper (*"0"*) or incorrect (e.g. *"21.1.c"*) subregion designations (21.1.1c is an area in FAO area 21).

References

Food & Agriculture Organization of the United Nations. 2015. "FAO Major Fishing Areas Northeast Atlantic (Major Fishing Area 27)." *Fisheries & Aquaculture Department.* http://www.fao.org/fishery/area/Area27/en.

Greenstreet, Simon P. R., Andrew D. Bryant, Niall Broekhuizen, Stephen J. Hall, and Mike R. Heath. 1996. "Seasonal Variation in the Consumption of Food by Fish in the North Sea and Implications for Food Web Dynamics." *ICES Journal of Marine Science* 54 (2). Nature Publishing Group: 243–66. doi:10.1006/jmsc.1996.0183.