FACTSHEET: Sampling demersal active fisheries through self-sampling (DEMACT2)

Version: [v1, 21/02/2023]

Sampling protocol: DEMACT2

Sampling objective(s): data collection of discards for active demersal fleet

Start of sampling: 2009

Sampling ongoing: yes

Data use

From 2009 onwards – data collected, i.e. length frequency and biological data, on request available for relevant end-users such as ICES and STECF.

Sampling design and method

A reference fleet, consisting of 15-25 vessels of the demersal active fisheries with protocol-instructed fishers collect discard sampled according to a predefined schedule during their regular commercial operations. The participants in the reference fleet are recruited by actively approaching vessels and through the fisher's organisations while taking the composition of the entire Dutch demersal active fleet, based on gear, mesh size and landing harbour, into account. Prior to sampling, fishers are provided with all necessary equipment (labels, plastic sampling bags, sealing cable ties, markers, and sampling sheets) and written instructions. Additionally, staff of Wageningen Marine Research (WMR) visit the crew in port regularly to evaluate and, when necessary, to reinstruct the sampling protocol. The fishermen receive a fixed compensation for each trip they have sampled.

The reference fleet collects discards samples (self-sampling) following a pre-defined annual sampling schedule that is produced at the beginning of the year through a random selection of 160 vessel*week combinations. According to this schedule a selected vessel takes a representative discard sample, including BMS, for two hauls, during the selected week. The collected discard samples are landed by the vessel at port where they are collected by WMR and returned to the laboratory for analysis. Next to the collected discards samples fishermen record operational- and catch data (i.e. vessel position (at start and end); haul duration; depth; weather conditions; volume of catches and landings) each time the fishing gear is deployed (each 'haul') during the selected week.

The vessel crew conducts this self-sampling after a training by WMR. To check for sampling bias, the self-sampling programme is validated by a separate discard programme by scientific observers at sea (see also factsheet DEMACT1). This programme is limited to 10 trips per year on board vessels of the reference fleet.

No length measurements of landings are collected during the observer trips as this fraction is sufficiently covered by the on-shore sampling programme (see also factsheet AUCTION_DEM).

Sampling protocol and data capture

In the field

Operational- and catch data are collected each time the fishing gear is deployed (each 'haul') during a fishing trip, regardless of it being sampled for discards. With each haul the following information is registered: vessel position (at start and end); haul duration; depth; weather conditions; and the volumes of catches and landings. Within a trip a sample consisting of two boxes of discards (one box equals approx. 40 kg), is taken by the crew from two separate hauls. This results in a total of approx. 160 kg discards per trip. These boxes are filled by scooping discards at regular intervals from the end of the processing conveyer belt. The discard samples are stored in large plastic bags, which are sealed off using a cable tie, labelled and cool-stored until the vessel returns to the part. Back at port, the discard samples are collected by WMR staff and taken to the laboratory for further processing.

In the lab
Numbers at length ('to the cm below') are recorded for all fish species, Norway lobster (*Nephrops norvegicus*) and edible crab (*Cancer pagurus*) in the discards sample. Numbers without length measurements are recorded for all remaining (benthos) species. Data is written down on specific measurements lists.

Age samples, max. 5 individuals per length class, for five species (i.e. plaice, sole, dab, turbot and brill) are taken from a selected number of trips. From these samples individual length measurements 'to the mm below' are taken using an analogue measuring board. Individual wet weights are taken to the gram using electronic scales. The otoliths are collected, and sex and -if relevant- maturity is determined by opening the body cavity. Measurements are written down on specific measurement lists. The otoliths are embedded in resin and sliced. Images are taken from the otolith coupes. Age reading takes place from those images using the institute's (in-house further developed) version of SmartDots.

All data collected on board and in the lab is inserted in Billie Turf, the standard in-house data management software. The standard collected haul information (i.e. date, haul position, gear etc.) is also entered in excel. The information collected for age reading is automatically added to the Billie file belonging to the concerning haul.

Data quality
Quality assurance procedure
Measurement lists of collected data are archived at WMR and inputted data are stored as plain text files at a centralised location for which daily back-up routine is in place. Checks of a sampled trips take place on a quarterly basis. The checks are conducted using standardised scripts (R, SAS) and involve outlier checks for numerical values, consistency checks for text variables, relational checks such as length-weight, length-age relationships, and maps with the sampling positions.

Data storage
National database: After file corrections, the data are stored in one of the centralised databases, FRISBE. The relevant aspects of this database are described in Proc_databases.

International database: ICES RDB(ES) https://www.ices.dk/data/data-portals/Pages/RDB-FishFrame.aspx

Data availability
Institutional availability: data is available to people with access rights to the shared location. Read and write rights can be assigned separately.

Public availability: data is available anonymously on aggregated level.

Reference to full documentation:
National manual: Bangma, T., A.S. Couperus, M. Dammers, A.T.M. van Helmond, P. Molenaar, H.M.J. van Overzee, 2022. CVO Handboek Discardsbemonstering en bijvangstregistratie. Versie 4.0, november 2022. CVO rapport 22.026

Review frequency full documentation: national manual is annually reviewed.

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