

Sampling plan description for biological data

Mainland At Sea NAFO

MS: PRT
Region: NAFO (FAO area 21) - 3LMNO
Sampling scheme name: Trawlers for demersal fish: At-sea
Sampling scheme type: At sea
Time period of validity: 2021-2024
Short description: Sampling scheme aiming at sampling catch (discards + landings) composition, volume, length of selected species and biological variables (age, weight, sex, maturity of selected species) captured by Portuguese vessels operating in NAFO subarea 3. Sampling includes species listed in Table 1 of the EU MAP Delegated Decision annex. Observation of PETS (Protected Endangered and Threatened Species) is also covered within the sampling scheme (along with quantification of PETS observation effort).
Description of the population
Population targeted: Population and population targeted: lengths of selected species and biological variables (age, weight, sex, maturity of selected species) captured by Portuguese vessels operating in NAFO subarea 3. Population studied: lengths of selected species and biological variables (age, weight, sex, maturity of selected species) captured by a subset of Portuguese vessels operating in NAFO subarea 3 from a fleet segment (~metier), based on a combination of gear licenses and the main species landed in previous year. Primary Sampling Unit (PSU): fishing trip Population sampled: Population sampled / not sampled per metier and sampling scheme: -Metier OTB_DEF: Population sampled: All vessels Sampling frame identifier: PTS30 - OTB_DEF _ NAFO _ in sampling frame Stratification: Stratification is used to improve spatial sampling coverage (by NAFO Division).
Sampling design and protocols
Sampling design description: At sea sampling schemes sample Catches (All fractions).

a) The Portuguese fleet is stratified by fleet (~metier), area and quarter. One trawl metier operates in NAFO subarea 3: OTB_DEF. Annual sampling effort (number of planned PSUs = fishing trips) is fixed.

b) Vessel is selected by SRSWR and fishing trip (= PSU) is selected by SRSWOR.

c) Haul selection is random. For each haul selected for sampling, and before the catch is sorted by the crew, the scientific observer randomly selects a sample of two selected species, usually one target species and one bycatch species. Each sample is weighed and individuals are sampled for length, and sub sample is selected for sampling of other biological variables (age, weight, sex, maturity) of selected species.

d) Observation of PETS (Protected Endangered and Threatened Species) is also covered within the sampling scheme (along with quantification of PETS observation effort).

PETS observation effort is the same as for other species - i.e. it is done in samples of the catch taken following the protocol described in topics a-c; and additionally in the opening of the net.

Is the sampling design compliant with the 4S principle?: Y.

Regional coordination: N.

Link to sampling design documentation:

<https://www.nafo.int/Fisheries/MCS/ObserverScheme>

Compliance with international recommendations: Y. Sampling design in line with international recommendations (e.g. NAFO)

Link to sampling protocol documentation:

<https://www.nafo.int/Fisheries/MCS/ObserverScheme>

https://www.nafo.int/Portals/0/EXCEL/Fisheries/AnnexIIM_ObserverReportForm.xlsx

Sampling implementation

Recording of refusal rate: N. Recording of refusal rates will be developed in 2022-2024.

Monitoring of sampling progress within the sampling year: NA. One fishing trip is sampled per year.

Data capture

Means of data capture: Biological data is collected with measuring board/tape (variable length) and scale (variable weight).

Data capture documentation: Documentation on data capture is disclosed to all scientific observers and under constant improvement (e.g. species identification guides, age reading protocols, maturity stage guides, biological sampling protocols).

Specificities for NAFO data capture can be found in:

https://www.nafo.int/Portals/0/EXCEL/Fisheries/AnnexIIM_ObserverReportForm.xlsx

Quality checks documentation: Quality of data capture is checked yearly before response to data calls (e.g. unexpected species in a given metier/area, unexpected age for a given species length, unexpected maturity stage for a given species length, unexpected biological variable for a given species). This includes automatic and semi-automatic data quality checks procedures, at different stages (during and after data entry in the national database).

Data storage

National database: <http://nautilus.ipma.pt/>

International database: NA.

Quality checks and data validation documentation: Quality of data storage is checked yearly before response to data calls (e.g. if all data captured is stored in the national database, including different levels of data such as level of fishing trip, haul, sample, individual, etc.). This includes automatic and semi-automatic data quality checks procedures, at different stages (during and after data entry in the national database).

Sample storage

Storage description:

Biological samples are stored at IPMA and a record of samples per species/stock by geographic sub-area is kept.

Hard tissues (otoliths and hard tissues for age reading) are stored until and after processing/analysis. Soft tissues (stomachs, gonads) are stored until processing/analysis.

Sample analysis:

Sample analysis follows national and international protocols (e.g. from WG and benchmark reports) for age reading, maturity stage, histology.

Data processing

Evaluation of data accuracy (bias and precision): Data accuracy is evaluated by experts / stock assessors during preparation and analysis of data for expert / assessment working groups.

Editing and imputation methods: Editing and imputation methods are developed by experts / stock assessors during preparation and analysis of data for expert / assessment working groups.

Quality document associated to a dataset: Quality of datasets is documented in upload logs of data submitted to data calls and in expert / assessment working groups / regional coordination groups reports.

Validation of the final dataset:

Data is submitted to quality check to meet NAFO requirements and is validated by NAFO.

Final datasets are validated by experts / stock assessors during expert / assessment working groups /

regional coordination groups.