

Sampling scheme identifier: **Madeira On Shore CECAF**

MS: PRT
Region: Other regions
Sampling scheme identifier: Madeira On Shore CECAF
Sampling scheme type: Commercial fishing trip
Observation type: SciObsOnShore
Time period of validity: 2025-2027
Short description (max 100 words): The objective of this sampling scheme (Work Plan – Table 2.5) is to collect length-frequency distributions of commercial fish species landed at auctions by Madeiran vessels operating in FAO 34.1.2 (RFMO/RFO/IO CECAF), for species listed in Table 1 of the EU MAP Delegated Decision annex (2021/1167/EU). Occurrence of incidental bycatch of PETS (Protected Endangered and Threatened Species) is also recorded.
Description of the population
Population targeted: The primary sampling scheme design is set to measure the length of fish species (listed in the Work Plan – Table 2.2), landed at Madeira auctions (=ports) by Madeiran active vessels (licenced to operate in FAO 34.1.2 (RFMO/RFO/IO CECAF)). The sampled population includes fish lengths collected per trip by vessels operating mid-water drifting longlines targeting deep sea species like <i>Aphanopus carbo</i> and <i>A. intermedius</i> (sampling frame identifier DWF1_M1). Regarding purse seine boats targeting small pelagic fish (sampling frame identifier SPF1_M2), catches are composed of mixed species. The main species (<i>Scomber colias</i> and <i>Trachurus</i> spp) are randomly sampled upon landing according to protocol. Around 10% of the total annual fishing trips are predicted to be sampled. Primary Sampling Unit (PSU): vessel*trip. Population sampled: Lengths of species landed at port by the Madeiran active vessels operating in FAO 34.1.2. and considered based on the main species landed from previous reference years. Population sampled / not sampled per metier and sampling scheme: -Metier LLD_DWF: - Population sampled: - Main Madeiran ports of this metier (FUNCHAL, CANIÇAL and PORTO MONIZ) - Sampling frame identifier: DWF1_M1 - Population not sampled: - Minor Madeiran ports of this metier - Sampling frame identifier: DWF3_M1_out of frame -Metier PS_SPF: - Population sampled: - Main Madeiran port of this metier (FUNCHAL) - Sampling frame identifier: SPF1_M2 - Population not sampled: - Minor Madeiran ports of this metier - Sampling frame identifier: SPF3_M2_out of frame Stratification:

Stratification is used to improve sampling coverage through the year (by month) and along the Madeira Island (by port).

Sampling design and protocols

Sampling design description:

The sampling design is a stratified multistage scheme, with vessel x trip as the Primary Sampling Unit (PSU):

- a) The Madeiran fleet is stratified by segment and métier, and by trip and month. According to EU Map requirements [EU Commission Delegated Decision (2021/1167/EU)]. Annual sampling effort (number of planned PSUs = vessel * trip = onshore events) is fixed per selected species (of the Work Plan - Table 2.2).
- b) Sampling effort (number of vessel * trip = onshore events = PSUs) is allocated to vessel and months based on landings from previous reference years.
- c) In every vessel * trip, for every selected species the observers attempt to sample every commercial size category, by randomly selecting 1 box from each commercial size category.
- d) Within each commercial category samplers randomly select boxes to be sampled for lengths aiming for a minimum number of 100 fishes. Nonetheless, sometimes there are less than 100 individuals from a certain commercial species in 1 box, therefore observers sample several different boxes in order to reach the minimum sampling size required.
- e) Regarding the sampling frame identifier DWF1_M1, different species may be present in the same box. Considering that *Aphanopus carbo* and *A. intermedius* are two sympatric and morphologically not easily distinguished, observers sample all individuals in the same box without distinction.
- f) All ports in which limpets are landed in Madeira Island are considered for the above-mentioned sampling design, and around 10% of the total annual fishing trips are predicted to be sampled.
- g) Occurrence of incidental bycatch of PETS (Protected Endangered and Threatened Species) is also recorded.

References:

Delgado J, Reis S, González JA, Isidro E, Biscoito M, Freitas M, Tuset VM (2013). Reproduction and growth of *Aphanopus carbo* and *A. intermedius* (Teleostei: Trichiuridae) in the northeastern Atlantic. *Journal of Applied Ichthyology* 29, 1008-1014.

Nakamura I, Parin NV (1993). Snake mackerels and cutlassfishes of the world (Families Gempylidae and Trichiuridae). An Annotated and Illustrated Catalogue of the Snake Mackerels, Snoeks, Escolars, Gemfishes, Sackfishes, Domine, Oilfish, Cutlassfishes, Scabbardfishes, Hairtails, and Frostfishes Known to Date. FAO, Rome

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

Y.

Regional coordination:

N.

Link to sampling design documentation:

<https://marmadeira.com/publicacoes/>

Design follows international recommendations:

Y.

Link to sampling protocol documentation:

<https://marmadeira.com/publicacoes/>

Protocol follows international recommendations:

Y.

Sampling implementation
Recording of refusal rate: Y.
Monitoring of sampling progress within the sampling year: Sampling design is monitored and adjusted throughout the year in order to reach the minimum number of samples required.
Data capture
Means of data capture: Commercial species length data is obtained through measurements, using a measuring board. Observations are noted down on appropriate sampling sheets. Sampling is executed by two observers, one of which is responsible for measuring and the other for taking note of data.
Data capture documentation: https://marmadeira.com/publicacoes/
Quality checks documentation: Y. Quality checks and validation procedures are implemented: 1. All samples are checked by the coordinator before the data is inputted into the local database; 2. After all data is introduced into the local database it is subsequently checked for errors and outliers; 3. A random check of 10% of the data is executed by inspecting the registered data for logical errors; 4. Length distribution and effort information is then connected with vessel logbooks for future cross examinations.
Data storage
National database: Local Database.
International database: RDBES.
Quality checks and data validation documentation: The obtained data is used for the elaboration of peer-reviewed scientific publications with an impact factor, and hence data quality is assured by journal editorial boards and reviewers.
Sample storage
Storage description: NA.
Sample analysis: NA.
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:

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