

Sampling scheme identifier: **AZ_OFF_EM_Touristic_ICCAT**

MS: PRT
Region: North-East Atlantic
Sampling scheme identifier: AZ_OFF_EM_Touristic_ICCAT
Sampling scheme type: Recreational (off site surveys)
Observation type: EMOnShore
Time period of validity: 2025-2027
Short description (max 100 words): AZ_OFF_EM_Touristic aiming to collect catch data from touristic fishing (charter boats companies) for species (highly migratory ICCAT species) as indicated in Table 4 of the EU MAP Delegated Decision annex.
Description of the population
Population targeted: The target population is touristic fishing (charter boats). The off-site methodology presents a direct frame with direct access to the individual elements of the target population. Each sampling unit within the frame corresponds to each respective license holder. Population sampled: The touristic fishing companies are the population aim to sample. Stratification: For touristic fishing (charter boats; AZ_OFF_EM_Touristic_ICCAT) it is implemented as census.
Sampling design and protocols
Sampling design description: In the Azores, the recreational fishing multispecies survey will focus on the catch estimation for the species (highly migratory ICCAT species) in Table 4 of the EU MAP Delegated Decision annex performed by the touristic fishing (charter companies). The methodology will be based on an off-site survey. The AZ_OFF_EM_Touristic_ICCAT survey component it is headed for recreational boat charters for big game fishing and bottom fishing. The new Pescador system (web and IOS/Android APP) were implemented as mandatory. Even though, the new “Pescador” system will be target of continuous development during 2025 - 2027, integrating new functionalities and tools (e.g., catch photos upload, complete trips validation tool). The old system e-form SRAF will work temporarily until all users start using the new Pescador system. Finally, enterprises will be contacted to confirm that they are reporting the data (retained catch and released per fishing trip). In cases of no-reporting, a 12-month recall phone survey will be applied. The AZ_OFF_EM_Touristic_ICCAT survey is planned to be a census. Is the sampling design compliant with the 4S principle?: Y. Regional coordination: N.

Link to sampling design documentation:

https://www.dgrm.mm.gov.pt/documents/20143/124668/17_Azores_ICES_RecreationalSamp.pdf/7863f6bf-23ee-e6de-0425-d68403671742

Design follows international recommendations:

Y.

Link to sampling protocol documentation:

https://www.dgrm.mm.gov.pt/documents/20143/124668/17_Azores_ICES_RecreationalSamp.pdf/7863f6bf-23ee-e6de-0425-d68403671742

Protocol follows international recommendations:

Y.

Sampling implementation**Recording of refusal rate:**

Y.

Monitoring of sampling progress within the sampling year:

Follow-up mechanisms by e-mail and phone are established quarter basis in AZ_OFF_EM_Touristic_ICCAT. The monitoring system drive to detection of inactivity, no engagement in the survey by some companies, and informatics problems (e.g., APP) which trigger processes to analyse and find resolutions.

Data capture**Means of data capture:**

Dedicated new software Pescador was design to collect data, in particular, App (iOS & Android) and web-based logbook for tourist fishing (charter boats). Some companies are still using the old system (E-form SRAF) but this system will be disable.

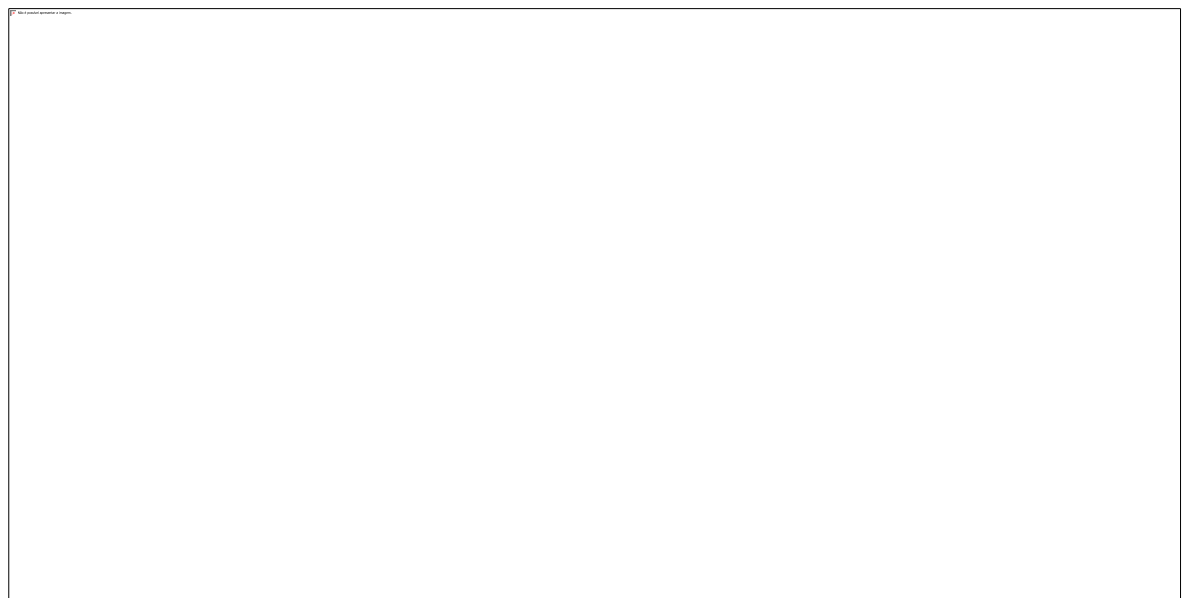


Figure 1. Web and APP Pescador system catch and effort data collection for touristic fishing (charter boats) (in Portuguese, Spanish and English language).

Data capture documentation:

https://www.dgrm.mm.gov.pt/documents/20143/124668/17_Azores_ICES_RecreationalSamp.pdf/7863f6bf-23ee-e6de-0425-d68403671742

<https://pescas.azores.gov.pt/pescaludica> (The survey is available in Portuguese, English and Spanish language, and a print screen is available in Figure 1).

Guidance Documentation of the new Pescador system (in Portuguese language):

<https://drive.google.com/file/d/1PbPQT2YKb81fyQ2FSgwW8FDL8Zc02SKR/view?usp=sharing>

Quality checks documentation:

N.

Quality checks procedures can be found in STECF report (pilot studies), however new and updated documentation will be available in 2025 - 2027.

https://www.dgrm.mm.gov.pt/documents/20143/124668/17_Azores_ICES_RecreationalSamp.pdf/7863f6bf-23ee-e6de-0425-d68403671742

Data storage

National database:

NA.

International database:

NA.

Quality checks and data validation documentation:

Recreational Fishing database will be transferred from Excel files into a database to be constructed during the sampling period covered. This is expected to contain internal routines for both basic errors detection (e.g., errors in dates) as well as implementation of checking of errors. Quality checks and validation procedures are implemented: (1) All samples are checked by a coordinator before the input of data; (2) All data introduced in database is checked for syntax errors; (3) A random check of 10% of the data is executed by inspecting the registered data for logical errors.

Sample storage

Storage description:

NA.

Sample analysis:

NA.

Data processing

Evaluation of data accuracy (bias and precision):

N.

The AZ_OFF_EM_Touristic_ICCAT is evaluated with complementary methods (phone recall survey) to identify missing trips or no engagement cases in the mandatory survey.

Editing and imputation methods:

N.

This sampling scheme is a census and no imputation method is being used.

Quality document associated to a dataset:

Documentation will be developed in 2025 - 2027.

Validation of the final dataset:

Recreational Fishing database will be transferred from Excel files into a database to be constructed during the sampling period covered. This is expected to contain internal routines for both basic errors detection (e.g., errors in dates, species codes) as well as implementation of checking of errors. Quality checks and validation procedures are implemented: (1) All samples are checked by a coordinator before

the input of data; (2) All data introduced in database is checked for syntax errors; (3) A random check of 10% of the data is executed by inspecting the registered data for logical errors.

Related to Table 2.5 [and Text Box 2.5] - Sampling plan description for biological data

Sampling scheme identifier: Mainland At Sea ICES

MS: PRT
Region: North-East Atlantic
Sampling scheme identifier: Mainland At Sea ICES
Sampling scheme type: Commercial fishing trip
Observation type: SciObsAtSea
Time period of validity: 2025-2027
Short description (max 100 words): Sampling schemes (Work Plan - Table 2.5) aiming at sampling catch (discards + landings) composition, volume, length of species and biological variables (age, weight, sex, maturity of selected species in Work Plan - Table 2.2) captured by Portuguese vessels operating in ICES 27.9.a and 27.8.c. All species sampled are 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: lengths of species and biological variables (age, weight, sex, maturity of selected species in Work Plan – Table 2.2) captured by Portuguese vessels operating in ICES 27.9.a and 27.8.c. Population targeted: lengths of species and biological variables (age, weight, sex, maturity of selected species in Work Plan – Table 2.2) captured by Portuguese vessels with length overall >12m operating in ICES 27.9.a and 27.8.c. Population studied: lengths of species and biological variables (age, weight, sex, maturity of selected species in Work Plan - Table 2.2) captured by a subset of Portuguese vessels with length overall >18m operating in ICES 27.9.a and 27.8.c from a fleet segment (~metier), based on a combination of gear licences 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 GNS_GTR: Population sampled: Vessels >12m Sampling frame identifier: PTAS23 - GNS_GTR_DEF _ ICES 27.9.a _ in sampling frame Population not sampled: Vessels <12m Sampling frame identifier: PTAS24 - GNS_GTR_DEF ICES 27.9.a out of sampling frame

-Metier LLS_DWS:

Population sampled:

Vessels >12m

Sampling frame identifier: PTAS25 - LLS_DWS _ ICES 27.9.a _ in sampling frame

Population not sampled:

Vessels <12m

Sampling frame identifier: PTAS26 - LLS_DWS _ ICES 27.9.a _ out of sampling frame

-Metier OTB_DEF:

Population sampled:

Vessels >24m

Sampling frame identifier: PTAS27 - OTB_DEF _ ICES 27.9.a _ in sampling frame

Sampling frame identifier: PTAS45 - OTB_DEF _ ICES 27.8.c _ in sampling frame

Population not sampled:

Vessels <24m

Sampling frame identifier: PTAS28 - OTB_DEF _ ICES 27.9.a _ out of sampling frame

Sampling frame identifier: PTAS46 - OTB_DEF _ ICES 27.8.c _ out of sampling frame

-Metier OTB_CRU:

Population sampled:

Vessels >12m

Sampling frame identifier: PTAS29 - OTB_CRU _ ICES FU 28-29 _ in sampling frame

Population not sampled:

Vessels <12m

Sampling frame identifier: PTAS30 - OTB_CRU _ ICES FU 28-29 _ out of sampling frame

-Metier PS_SPF:

Population sampled:

Vessels >12m

Sampling frame identifier: PTAS31 - PS_SPF _ ICES 27.9.a _ in sampling frame

Population not sampled:

Vessels <12m

Sampling frame identifier: PTAS32 - PS_SPF _ ICES 27.9.a _ out of sampling frame

-Metier TBB_CRU:

Population sampled:

All vessels

Sampling frame identifier: PTAS33 - TBB_MCD _ ICES 27.9.a _ in sampling frame

Population not sampled:

Sampling frame identifier: PTAS34 - TBB_MCD _ ICES 27.9.a _ out of sampling frame

Essay:

In 2025-2027, an essay will be performed to improve quality of data collected from métier GNS_GTR. The essay will include sampling of trips performed by polyvalent vessels, namely using trammel nets (GTR) and directed at three species groups: rays, soles or anglerfishes. For this purpose, reference fleets have been identified for each species group (rays, soles and anglerfishes) and a planned minimum number of trips has been defined for two possible scenarios of implementation:

- i) each reference fleet sampled in each year (with 16, 12 and 8 trips per year for rays, soles and anglerfishes, respectively);
- ii) or each reference fleet sampled every three years, with each year including one of the three reference fleets in a rotating manner (with 32, 24 and 32 trips per year for rays, soles and anglerfishes, respectively).

The essay will also include sampling of trips performed by polyvalent vessels, namely using gill nets (GNS - 12 trips per year) and pots and traps (FPO - 10 trips per year). Since polyvalent vessels, by definition and typically, use more than one gear type, two possible scenarios of implementation are considered:

- i) sampling in trips of the three reference fleets referred above (i.e. directed at rays, soles and anglerfishes);

ii) or sampling in trips of vessels of the sampling frame of the métier GNS_GTR and if needed in trips of vessels of a sampling frame to be defined for the métier FPO.

Stratification: Y.

Stratification is used to improve sampling coverage through the year (by quarter) and along the Portuguese coast (by area).

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. Following the DCF requirements, less significant fleets (~metiers) are not sampled (e.g. dredges, beach-seines). Annual sampling effort (number of planned PSUs = fishing trips) is fixed and is allocated to the different fleets (~metiers) based on a Neyman allocation (metiers OTB_DEF and OTB_CRU), monthly frequency (metiers LLS_DWS, TBB_CRU) or quarterly frequency (metiers GNS_GTR, PS_SPF).

b) For each fleet (~metier), sampling effort (number of fishing trips) is allocated to areas and quarters based on effort and/or landings from previous reference years. For each fleet (~metier), each temporal event (week) is selected by SRSWR, vessel is selected by SRSWR and fishing trip (= PSU) is selected by SRSWOR.

c) Scientific observers sort the sample into catch fractions according to the crew's criteria in the sampled haul. The onboard sampling procedure differs between active (OTB, TBB and PS) and fixed metiers/gears (GNS, GTR, LLS_DWS) (Prista *et al.*, 2012; Jardim *et al.* 2012, Feijó *et al.*, 2012).

Briefly, in active metiers/gears (OTB_DEF, OTB_CRU, TBB_CRU) haul selection is systematic (odd or even) after a random choice of the starting haul between first or second. In PS_SPF all hauls are selected. For each haul selected for sampling, and before the catch is sorted by the crew, the scientific observer randomly selects a sample. Each sample is sorted and weighed by species and catch fraction. In the sample, individuals are sampled for length, and a sub sample is selected for sampling (in situ or in laboratory) of other biological variables (age, weight, sex, maturity) of selected species (Work Plan – Table 2.2). Landed volume is estimated by the skipper. Catch volume is estimated independently from skipper's opinion, based on the relative proportion between discard and landing fractions in the sample taken from the catch and raised by total landings.

Briefly, in passive metiers (GNS_GTR, LLS_DWS) all hauls are sampled, sampling is done per gear segment during hauling of the gear, and species number and length are collected but not weights.

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

Within a sampled commercial fishing trip operating active metiers/gears (OTB_DEF, OTB_CRU, TBB_CRU, PS_SPF), 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 (OTB_DEF, OTB_CRU, TBB_CRU, PS_SPF) and in the hauling of the net (PS_SPF).

Within a sampled commercial fishing trip operating passive metiers/gears (GNS, GTR, LLS_DWS), PETS observation effort is the same as for other species - i.e. it is done during hauling of the gear following the protocol described in topics a-c.

References:

Prista, N.; Jardim, E.; Fernandes, A.C.; Silva, D.; Ferreira, A. L.; Abreu, P.; Fernandes, P., 2012. Manual de procedimentos a bordo: artes fundeadas. *Relat. Cient. Téc. Inst. Invest. Pescas Mar*, nº 56, 23 p. + Anexos.

Jardim, E.; Prista, N.; Fernandes, A.C.; Silva, D.; Ferreira, A. L.; Abreu, P.; Fernandes, P., 2012. Manual de procedimentos a bordo: arrasto de fundo com portas. *Relat. Cient. Téc. Inst. Invest. Pescas Mar*, nº 55, 20 p. + Anexos

Feijó, D.; Marçalo, A.; Wise, L.; Silva, A., 2012. Protocolo de Amostragem a Bordo da Pescado Cerco. *Relat. Cient. Téc. IPIMAR, Série digital*, nº 57, 11 p + X Anexos.

Is the sampling design compliant with the 4S principle?: Y. Regional coordination: N. Link to sampling design documentation: Fernandes, A. C.; Prista N.; Azevedo. M. (2017). Discards from the Portuguese bottom otter trawl operating in ICES Division 27.9.a (2004-2015). Relat.Cient.Tec. do IPMA (http://ipma.pt) nº18. 18p + Anexos Design follows international recommendations: Y. Sampling design in line with international recommendations, e.g. from ICES WGCATCH (Working Group on Commercial Catches). Link to sampling protocol documentation: https://www.ipma.pt/pt/publicacoes/pescas/index.jsp?page=rel.cientificos.12.xml (reports 55, 56 and 57) Protocol follows international recommendations: Y. Sampling protocol in line with international recommendations, e.g. from ICES WGCATCH (Working Group on Commercial Catches).
Sampling implementation
Recording of refusal rate: Y. Monitoring of sampling progress within the sampling year: Y. The number of PSU per trimester per sampling scheme executed versus planned is monitored monthly. When necessary and possible, the number of PSU planned but not executed (due to operational/logistical constraints) is rescheduled.
Data capture
Means of data capture: Biological data is collected with measuring board/tape/calliper (variable length) and scale (variable weight). Data capture documentation: Documentation on quality of 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). 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: RDBES. 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):

Bottom trawl fleet segments: Fernandes, A. C.; Prista N.; Azevedo. M. (2017). Discards from the Portuguese bottom otter trawl operating in ICES Division 27.9.a (2004-2015). Relat.Cient.Tec. do IPMA (<http://ipma.pt>) nº18. 18p + Anexos

Other fleet segments: Documentation will be developed in 2025-2027.

Editing and imputation methods:

Bottom trawl fleet segments: Fernandes, A. C.; Prista N.; Azevedo. M. (2017). Discards from the Portuguese bottom otter trawl operating in ICES Division 27.9.a (2004-2015). Relat.Cient.Tec. do IPMA (<http://ipma.pt>) nº18. 18p + Anexos

Other fleet segments: Documentation will be developed in 2025-2027.

Quality document associated to a dataset:

Bottom trawl fleet segments: Fernandes, A. C.; Prista N.; Azevedo. M. (2017). Discards from the Portuguese bottom otter trawl operating in ICES Division 27.9.a (2004-2015). Relat.Cient.Tec. do IPMA (<http://ipma.pt>) nº18. 18p + Anexos

Other fleet segments: Documentation will be developed in 2025-2027.

Validation of the final dataset:

Data quality checks are carried out for trawl fleets (~metiers): a semi-automated quality assurance procedure was designed in R to detect errors and is run yearly before response to data calls and data analysis.