

Sampling scheme identifier: **Sardine DEPM (triennial) - SDPEM**

MS: PRT
Region: North-East Atlantic
Sampling scheme identifier: SDEPM
Sampling scheme type: Research survey at sea
Observation type: SciObsAtSea
Time period of validity: 2026
Short description (max 100 words): The Sardine DEPM (triennial) survey (SDPEM) aims to estimate the spawning stock biomass (SSB) of Atlanto-Iberian sardine (<i>Sardina pilchardus</i>) stock (ICES 27.9.a and 27.8.c-Spain), using the Daily Egg Production Method (DEPM). The survey involves ichthyoplankton sampling at a grid of fixed stations (CalVET+CTD) and underway at the surface (CUFES), and fishing hauls conducted by pelagic or bottom trawling. The samples and data obtained are used for estimating eggs and adult parameters that will allow the calculation of SSB. RWP (Regional Work Plan) of the RCG (Regional Coordination Group) of the NANSEA (North-East Atlantic, North Sea and Eastern Arctic) - implementation year 2026
Description of the population
Population targeted: Target species: Sardine (<i>Sardina pilchardus</i>) - PIL. Main survey area: Portuguese coast and Spanish Cadiz waters (ICES 9aW and S). Population sampled: Sardine population within the main spawning area covered by the survey, over the continental shelf. Stratification: No stratification is carried out during survey sampling, it is done only at the level of the analyses, upon estimation of DEPM parameters, 3 strata of the Atlantic Iberian stock being commonly considered for the estimation purposes (ICES 8c+9aN, 9aW, 9aS, 9aN).
Sampling design and protocols
Sampling design description: See Text Box 2.6 and Table 2.6. See description in: Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. https://doi.org/10.17895/ices.pub.4599 . Lasker, R. (1985). An Egg Production Method for Estimating Spawning Biomass of Pelagic Fish: Application to the Northern Anchovy, <i>Engraulis mordax</i> , NOAA Technical Report NMFS, US Department of Commerce, Springfield, VA, USA, 99 pp.

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

NA - Research survey at sea.

Regional coordination:

Coordinated internationally by ICES WGACEGG.

<http://www.ices.dk/community/groups/Pages/WGACEGG.aspx>

Link to sampling design documentation:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Design follows international recommendations:

Y. Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Link to sampling protocol documentation:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Protocol follows international recommendations:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Sampling implementation**Recording of refusal rate:**

NA - Scientific surveys at sea.

Monitoring of sampling progress within the sampling year:

NA - Scientific surveys at sea.

Data capture**Means of data capture:**

Ichthyoplankton, fish and environmental data are collected, using different samplers/equipment.

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Data capture documentation:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Quality checks documentation:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Data storage**National database:**

National database.

International database:

NA.

Quality checks and data validation documentation:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Sample storage

Storage description:

Samples of zooplankton and sardine fish ovaries and otoliths are stored at IPMA. Details on these samples are included in the references above.

Sample analysis:

See "Storage description".

Data processing

Evaluation of data accuracy (bias and precision):

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Editing and imputation methods:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Quality document associated to a dataset:

Massé, J., Uriarte, A., Angélico, M. M., and Carrera, P. (Eds.) 2018. Pelagic survey series for sardine and anchovy in ICES subareas 8 and 9 – Towards an ecosystem approach. ICES Cooperative Research Report No. 332. 268 pp. <https://doi.org/10.17895/ices.pub.4599>.

Validation of the final dataset:

Quality checks are carried out annually in ICES WGACEGG.