

Sampling scheme identifier: **International Mackerel and Horse Mackerel Egg Survey (triennial) - MEGS**

MS: PRT
Region: North-East Atlantic
Sampling scheme identifier: MEGS
Sampling scheme type: Research survey at sea
Observation type: SciObsAtSea
Time period of validity: 2025
Short description (max 100 words): The International Mackerel and Horse Mackerel Egg Survey (triennial) (MEGS) aims to: estimate spawning stock biomass (SSB) of the southern stock horse mackerel <i>Trachurus trachurus</i> (ICES 27.9.a), using the Daily Egg Production Method (DEPM); and provide data and samples of Atlantic mackerel <i>Scomber scombrus</i> for analysis by MEGS partners. RWP (Regional Work Plan) of the RCG (Regional Coordination Group) of the NANSEA (North-East Atlantic, North Sea and Eastern Arctic) - 2025 implementation year
Description of the population
Population targeted: Target species: Horse mackerel (<i>Trachurus trachurus</i>) - HOM, Atlantic mackerel (<i>Scomber scombrus</i>) - MAC. Main survey area: Portuguese coast and Spanish Cadiz and Galician waters, corresponding to horse mackerel southern stock (ICES 9aN, W and S). Population sampled: Target population: horse mackerel population within the species main spawning area covered by the survey, over the continental and break shelf, and also corresponding to the whole area of horse mackerel southern stock. Stratification: No stratification is carried out during survey sampling, it is done only at the level of the analyses, upon estimation of MEGS parameters.
Sampling design and protocols
Sampling design description: See Text Box 2.6 and Table 2.6. See description in: ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. http://doi.org/10.17895/ices.pub.5140 ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. http://doi.org/10.17895/ices.pub.5139

Lasker, R. (1985). An Egg Production Method for Estimating Spawning Biomass of Pelagic Fish: Application to the Northern Anchovy, *Engraulis mordax*, 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:

Y.

Coordinated internationally by ICES WGMEGS.

<https://www.ices.dk/community/groups/Pages/WGMEGS.aspx>

Link to sampling design documentation:

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Design follows international recommendations:

Y.

Coordinated internationally by ICES WGMEGS.

<https://www.ices.dk/community/groups/Pages/WGMEGS.aspx>

Link to sampling protocol documentation:

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Protocol follows international recommendations:

Y.

Coordinated internationally by ICES WGMEGS.

<https://www.ices.dk/community/groups/Pages/WGMEGS.aspx>

Sampling implementation

Recording of refusal rate:

NA - Research survey at sea.

Monitoring of sampling progress within the sampling year:

NA - Research survey at sea.

Data capture

Means of data capture:

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

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Data capture documentation:

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Quality checks documentation:

Y. Quality checks are carried out annually in ICES WGMEGS.

Data storage

National database:

National database.

International database:

Eggs and Larval ICES Database, for ichthyoplankton sampling data only.

<https://www.ices.dk/data/data-portals/Pages/Eggs-and-larvae.aspx>

Quality checks and data validation documentation:

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Sample storage

Storage description:

Samples of zooplankton, and horse mackerel fish ovaries and otoliths are stored at IPMA. Mackerel fish ovaries are shipped for laboratory processing and analysis by WGMEGS partners. Details on these samples are included in the references above.

Sample analysis:

Data processing

Evaluation of data accuracy (bias and precision):

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Editing and imputation methods:

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Quality document associated to a dataset:

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. <http://doi.org/10.17895/ices.pub.5140>

ICES. 2019. Manual for the AEPM and DEPM estimation of fecundity in mackerel and horse mackerel. Series of ICES Survey Protocols SISP 5. 89 pp. <http://doi.org/10.17895/ices.pub.5139>

Validation of the final dataset:

Quality checks are carried out annually in ICES WGMEGS.