

ICES COOPERATIVE RESEARCH REPORT

RAPPORT DES RECHERCHES COLLECTIVES

No. 296

JULY 2009

Definition of Standard Data-Exchange Format

Updated version

Effort Data

of Fisheries

Editor

Teunis Jansen

Authors

Teunis Jansen • Henrik Degel

Joel Vigneau • Ernesto Jardim



ICES

International Council for
the Exploration of the Sea

CIEM

Conseil International pour
l'Exploration de la Mer

International Council for the Exploration of the Sea Conseil International pour l'Exploration de la Mer

H. C. Andersens Boulevard 44–46
DK-1553 Copenhagen V
Denmark
Telephone (+45) 33 38 67 00
Telefax (+45) 33 93 42 15
www.ices.dk
info@ices.dk

Recommended format for purposes of citation:

Jansen, T. (Ed). 2009. Definition of Standard Data-Exchange Format for Sampling, Landings, and Effort Data from Commercial Fisheries. ICES Cooperative Research Report No. 296. 43 pp.

For permission to reproduce material from this publication, please apply to the General Secretary.

This document is a report of an Expert Group under the auspices of the International Council for the Exploration of the Sea and does not necessarily represent the view of the Council.

ISBN 978–87–7482–061–1

ISSN 1017–6195

© 2009 International Council for the Exploration of the Sea

Contents

| | | |
|----------------|---|-----------|
| 1 | Introduction | 2 |
| 1.1 | Background..... | 2 |
| 1.2 | Scope and principles | 3 |
| 1.2.1 | Choice of file formats | 3 |
| 1.2.2 | CSV format considerations..... | 4 |
| 1.2.3 | XML format considerations..... | 4 |
| 1.3 | Versioning..... | 4 |
| 2 | Exchange format definition | 5 |
| 2.1 | Data types and record types..... | 5 |
| 2.1.1 | Record-type order..... | 7 |
| 2.1.2 | Field definitions | 7 |
| 2.2 | File formats..... | 8 |
| 2.3 | Record type and CSV file format definitions..... | 8 |
| 2.3.1 | Trip record (TR) in commercial fisheries sampling data (CS) | 8 |
| 2.3.2 | Fishing station record (HH) in commercial fisheries sampling data (CS)..... | 10 |
| 2.3.3 | Species list record (SL) in commercial fisheries sampling data (CS)..... | 12 |
| 2.3.4 | Length record (HL) in commercial fisheries sampling data (CS)..... | 13 |
| 2.3.5 | Sex-Maturity-Age-Weight-Length record (CA) in commercial fisheries sampling data (CS) | 14 |
| 2.3.6 | Commercial fisheries landings statistics record (CL) | 16 |
| 2.3.7 | Commercial fisheries effort statistics record (CE)..... | 18 |
| 2.4 | XML file format definitions..... | 19 |
| 2.4.1 | Commercial fisheries sampling data (CS) | 19 |
| 2.4.2 | Commercial fisheries landings data (CL)..... | 23 |
| 2.4.3 | Commercial fisheries effort data (CE)..... | 24 |
| 3 | References | 26 |
| Annex 1 | CSV example files | 27 |
| Annex 2 | XML example files..... | 28 |
| Annex 3 | Header rows..... | 30 |
| Annex 4 | Code lists..... | 32 |
| | Author contact information..... | 43 |

Executive summary

A data format for sampling, landings, and effort data from commercial fisheries is defined and suggested as a standard for the exchange of data between partners in the community of fishery research, advice, and management of the Northeast Atlantic, including the Mediterranean and Black Seas.

The format is defined for comma-separated value (CSV) and extensible markup language (XML) files. Code lists and a range of data-checking criteria are part of the format.

The data aggregation level is as low as possible while still respecting data confidentiality issues. The format fulfils all the requirements given in the new Data Collection Regulation (EC, 2008a, 2008b) for these data types.

The history, background, and scope are presented, together with the principles adopted during development.

A data format for sampling, landings, and effort data from commercial fisheries is defined and suggested as a standard for the exchange of data between partners in the community of fishery research, advice, and management of the Northeast Atlantic, including the Mediterranean and Black seas.

The format is defined for comma-separated value (CSV) and extensible markup language (XML) files. Code lists and a range of data-checking criteria are part of the format.

The data aggregation level is as low as possible while still respecting data confidentiality issues. The format fulfils all the requirements given in the new Data Collection Regulation (EC, 2008a, 2008b) for these data types. The history, background, and scope are presented, together with the principles adopted during development.

1 Introduction

The great thing about standards is that there are so many of them.

Standardization of data-exchange formats is a natural and necessary development of the increasing need for cooperation and integration of fisheries data between institutes. However, the existence of several standards to report the same data is time consuming, threatens the quality of the information, and is frustrating for those in charge of reporting the data. In spite of such problems, data-exchange formats have proliferated in recent decades, driven by the need to fulfil specific tasks associated with research projects and/or expert groups.

The format described in this report became a de facto standard that emerged from a long development period and is now recognized informally by large parts of the fishery scientific community. On several occasions, it has proven to be efficient at addressing different usages, particularly automated data exchange in distributed systems and data warehousing.

This report will describe in detail the exchange format, providing information about its usage in distinct environments. Given the lack of formal methods for setting standards, publication by ICES in this series will make this available to the fishery community. In Section 1.2, we elaborate on the principles that were adopted to develop a format that would meet the needs and compromises in the best and most enduring way possible.

1.1 Background

The first version of this format was prepared in 1995 for the exchange of discard sampling data from the Baltic Sea. The format for survey data used in ICES served as a template. It was further developed during three consecutive EU studies (1994/058, 1996/02, 1998/024). All three projects were coordinated by DTU Aqua (the former Danish Institute for Fisheries Research (DIFRES)), and the format was used to exchange and store the data before processing in a file-based SAS program. After the EU study projects, the work continued, and new versions were released in parallel with the development of the web-based data warehouse FishFrame (FishFrame, 2008; Jansen *et al.*, 2008). Between versions 1.0 and 4.3, formats for landings and effort were added, the sampling format was normalized by adding two new record types (trip and species list), and the existing fields were reviewed. Many fields were added, deleted, or clarified to match the increasing size and complexity of the user base. The code lists were also subjected to major changes. The work was coordinated by the FishFrame authors from DTU Aqua, but the format is a condensation of all input from FishFrame users and ICES expert groups, mainly the Baltic Fisheries Assessment Working Group (WGBFAS) and the Planning Group for Herring Surveys (PGHERS). The latest versions were reviewed by users from a wider area through the EC project COST (Anon., 2008) and in light of the new Data Collection Regulation (DCR; EC, 2008a, 2008b) – important for the long-term stability and wide usage of the format. The data-exchange format used to calculate precision within COST is seen as the one requiring the most disaggregated information and making use of each of the variables. It is anticipated that this data-exchange format, serving the needs of such a project, would also meet the needs of most of the scientific groups. The version from June 2008, printed in Jansen *et al.* (2008), with the modifications agreed after the second COST meeting, has been implemented in FishFrame 5.0 and COST 1.0. The cur-

rent version of the format incorporates the experiences from these implementations, producing a stable format that is expected to evolve more slowly in future.

1.2 Scope and principles

The format can be used by all who are working with commercial fisheries data at any specified aggregation level, and also with software for parsing data internally and externally, e.g. in server-to-server automated data exchange.

Setting a standard involves many compromises between the special needs of various user groups, institutes, and countries. At the same time, it is important to keep the format as simple as possible. The more complex, inconsistent, and filled with exceptions a format is, the greater the risk of making mistakes that result in poorer data quality. Drawing the line between opposing interests was the main challenge during development of the format. On one hand, we strove to keep the level of aggregation as low as possible, giving all relevant details for later processing and aggregation. On the other hand, we tried to filter out nation-specific requirements and exotic special cases for the sake of simplicity.

Data confidentiality is also a major consideration; fortunately, the tendency is towards increasing levels of openness.

Data confidentiality is important when dealing with raw data, and this had a major impact on the development of the exchange format. The design presented allows the encryption of parts of the data, making it anonymous, namely references to individual vessels in the format for sampling. The aggregation level in landings and effort is also set to respect the identity of individual vessels. As long as the information regarding the sampling stratification is clear, it should not affect the outcome of the analysis. Fortunately, because levels of openness regarding data sharing are increasing, it is hoped that this will no longer be a problem in future.

The new DCR (EC, 2008a, 2008b) changed the data requirements for fisheries data, the list of variables, and their specification. This has also affected the format, because it was clear that the format should fulfil all of the requirements given in the new DCR.

1.2.1 Choice of file formats

Beginning with comma-separated value (CSV) language, the format moved in the direction of extensible markup language (XML; W3C, 2008) because, when it was introduced, this was the big, new format for data exchange. The advantage of XML is that it is self-explanatory because of the element naming. The structure also facilitates normalization, as in relational databases. However, experience has demonstrated that XML is not very practical when it comes to working with data and looking at data files; CSV is far better when data are presented in a spreadsheet. XML also inflates the data files so that the same amount of data requires 5–10 times as much space as CSV. On the other hand, XML provides a good interface for programming and, therefore, is a good choice for data parsing inside software and between systems. In order to improve the CSV format with some of the features from XML, namely being self-explanatory because of the element naming, we have made it possible to insert a header row. This makes it more user-friendly when handling data in spreadsheets and provides standard column-header names when reading the data into software.

Therefore, it has become clear that both formats are needed: CSV as the basic format and XML as a shadow format to be used inside and between software. Both formats should be standardized, matching, and treated in parallel.

1.2.2 CSV format considerations

All unique key fields are repeated for each record; this ensures that reordering the lines does not lead to information loss or error. The key fields, therefore, are inherited down through the data record types in the hierarchic data type for commercial fisheries sampling (CS). This facilitates sorting and selecting data in spreadsheets.

The order of the fields has been selected so that, after a two-letter record-type identifier (e.g. TR, HH, SL, etc.), all unique key fields (fields that uniquely identify the record, e.g. country, year, sampling type) come first, followed by metadata (describing the record, e.g. information on methodology). The specific information of the record (the values) is always placed at the end.

The format has been “normalized” as much as possible, especially with regard to the fields in each record. For example, duplication of information and summation fields for checking purposes have been removed, eliminating the possibility of internal inconsistency. Check sums can be made by any system or user and do not belong in the exchange formatted data. Repeating the full natural key.DOWN through the system may seem inefficient, and it could be avoided by introducing surrogate keys instead of the compound unique natural keys, as would be done when implementing the data structure in a relational database system. This, however, would compromise user-friendliness and readability of the data files. Linking between records from foreign key to primary key, therefore, is done via the compound unique keys.

1.2.3 XML format considerations

The philosophy behind the XML format is that the record types are *XML elements*; their defining unique properties (natural key) are *XML attributes* on the elements, whereas their values are *sub-elements*. Code lists are kept in separate enumeration-files.

1.3 Versioning

The requirements for fisheries data evolve over time, reflecting the new demands arising from data analysis, sampling practice, or changes in the fishery. The exchange format should evolve in order to reflect these changes and avoid becoming outdated. Although the current format and code lists have been widely reviewed and have matured, the exchange format is likely to continue to evolve, although concerns about stability will always be taken into account.

These updates are given subsequent version numbers. The first figure refers to major releases that will entail large changes or additions that will affect the core structure of the exchange format. The second figure refers to minor updates, including bug corrections or small changes that will not affect the core exchange format. All versions will be laid out on the ICES website next to the link to this report (<http://www.ices.dk/products/cooperative.asp>) with clear descriptions of the changes.

The reference to a particular version of this format would then appear as, e.g.:

Standard Data Exchange Format for Sampling, Landings, and Effort Data from Commercial Fisheries including update no. X (Jansen *et al.*, 2008).

2 Exchange format definition

The data formats are given for three data types, each consisting of one or more record types. The data formats are given for two different file formats.

2.1 Data types and record types

The following data types are defined:

- CS = Commercial fisheries sampling
- CL = Commercial fisheries landings statistics
- CE = Commercial fisheries effort statistics.

Each of these three data types consists of data of specific record types (see below).

| Data type | Record types |
|---|--|
| CS (Commercial fisheries sampling) | TR (trip) A commercial fishing trip that has been sampled on board or a sample from a fish market. |
| | HH (haul header) Detailed information about a fishing operation, e.g. a haul or a net set. |
| | SL (species list) The sorting strata defined by species, catch category, etc. |
| | HL (haul length) Length frequency in the subsample of the stratum. One record represents one length class. |
| | CA (catch aged) = SMAWL (Sex-Maturity-Age-Weight-Length) Sex-Maturity-Age-Weight distribution sampled representatively from the length groups. One record represents one fish. |
| CL (Commercial fisheries landings statistics) | CL (commercial fisheries landings statistics) Official landings statistics with some modifiers for misreporting. |
| CE (Commercial fisheries effort statistics) | CE (commercial fisheries effort statistics) Effort statistics from logbooks. |

The record types are given in a specific hierarchy (Figure 1) and order within the data file. Each data record consists of a range of data fields. The required order is given below.

The fields are defined in Sections 2.3 and 2.4. Keys to the table headers are given in Section 2.2.

For convenience when working with the data files, it is advisable to sort the records by all the key variable fields.

It is possible to add header rows with column-header names in the file.

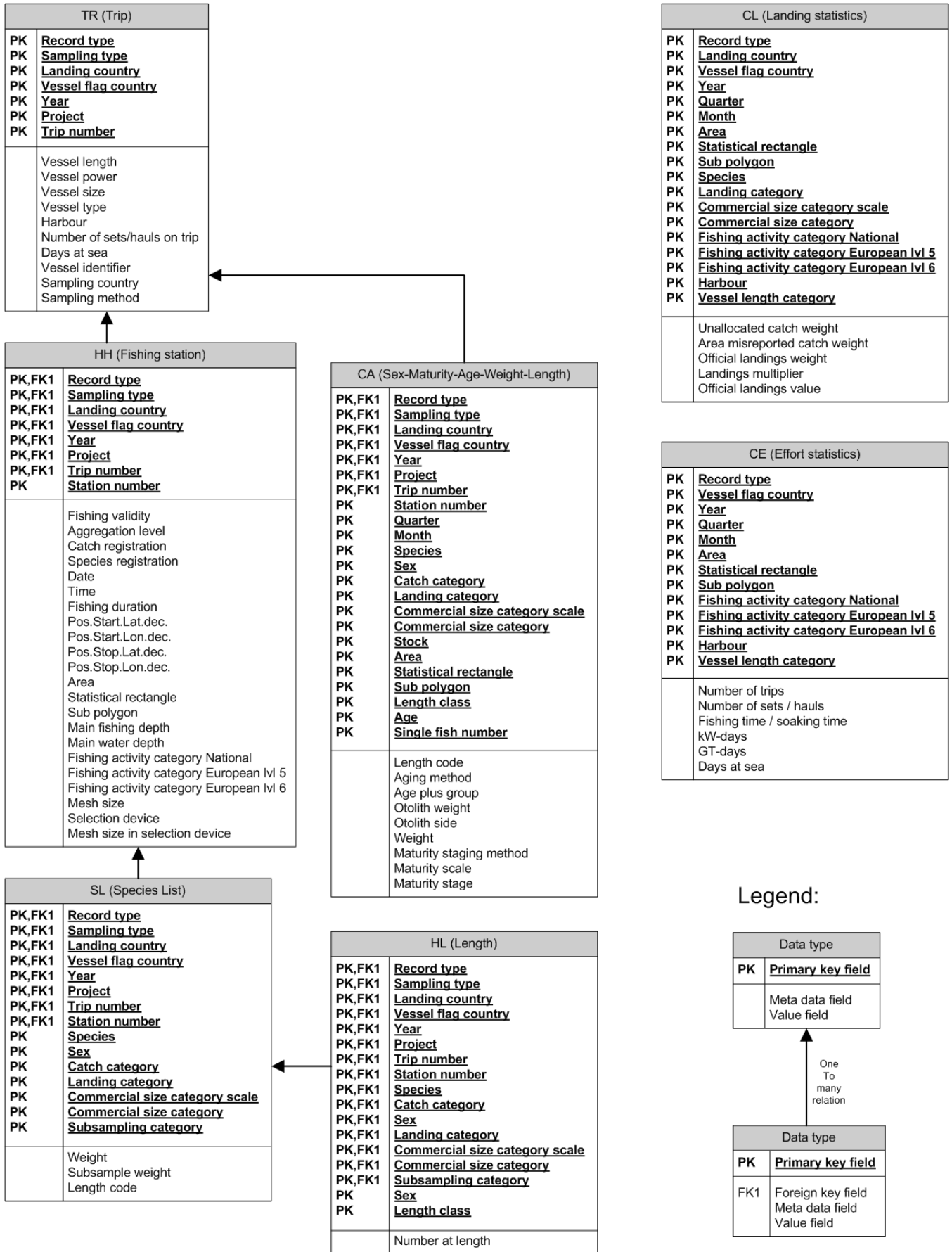


Figure 1. Data entity diagram of the data types.

2.1.1 Record-type order

2.1.1.1 Header rows

Header rows should always appear at the beginning of the file. Data records must not be mixed with the header rows. Only one header row per data type is needed or allowed. For CS files, these comprise up to five rows, and for CL and CE files, only one row.

The rows are found in Annex 3, from where they can be pasted into data files or data-extraction scripts.

2.1.1.2 Commercial fisheries sampling (CS)

The structure is nested. Special ordering is required.

The records must be given trip (TR) by trip, with each trip being followed by all the records belonging to that trip. Within each trip, each station (HH) must be followed by the corresponding species lists (SL). Each species list record must be followed by the corresponding length records (HL). The CA (SMAWL) records can be placed either after the corresponding set of lengths (HL) or at the end of a trip.

TR is a mandatory record type. It should be followed by at least one HH record.

2.1.1.3 Commercial fisheries landings statistics (CL)

The structure is simple. There is only one kind of record. No ordering is required.

2.1.1.4 Commercial fisheries effort statistics (CE)

The structure is simple. There is only one kind of record. No ordering is required.

2.1.2 Field definitions

The fields follow the definitions in the tables in Section 2.3. Each table contains the definitions, lists the basic data checks performed when uploading the data, and gives the field ordering information for CSV files. The XSD (XML Schema Definition) files in Section 2.4 contain complete definitions for the XML format, and examples of XML files are given to aid interpretation of the XSD.

The columns in the tables in Section 2.3.

| Column | Description |
|--------------|--|
| Order | The order in the CSV line. |
| Name | A descriptive name of the field. An asterisk "*" after the name indicates that the field is part of the key. |
| Type | The data type. Integer = whole number; String = text string; Dec = decimal. (The number after "Dec", e.g. "4" in "Dec(4)", describes the number of decimals.) |
| Req. | Required information: M = mandatory; O = optional. When information is missing in optional fields in CSV files, an empty zero-length string should be added between the commas/semicolons, e.g. the three items of missing information in: "54,,EXPO,,,". For example, the commas in "54,,EXPO,,," represent three missing values (items of information). When information is missing in optional fields in the XML file, either the corresponding attributes or element are left out. |
| Basic checks | The range or list of valid values. For code lists, please contact authors for valid codes (also available online as a report). |
| Comments | Additional comments and clarifications. |

2.2 File formats

The data can be exchanged in the following file formats.

- **CSV.** Unicode UTF-8 file with the values separated by either a semi-colon or a comma. The decimal separator should be a comma when the delimiter is a semi-colon, and a point when the delimiter is a comma. This format is preferred for human-to-server and human-to-human interaction (manual exchange).
- **XML.** XML file following the W3C standard for exchanging data over the Internet (W3C, 2008). This format is preferred for server-to-server interaction (automated upload).

The filename is required to indicate which data type the file contains. This is done by following the naming convention: the last two letters in the filename should be the data type, i.e. CS, CL, or CE. The extension of the file name indicates the format of the file. Notice that zip and rar files should also follow this naming convention.

It is recommended that the files follow a systematic naming convention, e.g.:

- The name of the data file should indicate the key variables, such as country, year, etc., as follows: e.g. the file name for “Sweden; 1997; Q1; commercial sampling” in a semi-colon-separated file should be given as “SWE_1997_Q1_Market_CS.csv”.
- The only required naming convention is the file extension and the last two letters that state the data type (e.g. the following file names would be accepted by the system, but might not be advisable for keeping track of one’s own national data files: “CS.csv” or “DataOKCL.zip”).

2.3 Record type and CSV file format definitions

2.3.1 Trip record (TR) in commercial fisheries sampling data (CS)

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|------------------------------|---------|----------------|------------------------|--|
| 1 | Record type* | String | M | | Fixed value TR. |
| 2 | Sampling type* | String | M | Code list ¹ | “S” = sea sampling, “M” = market sampling of known fishing trips, “D” = market sampling of mixed trips, “V” = vendor. ¹ |
| 3 | Landing country* | String | M | Code list | ISO 3166 - 1 alpha-3 codes: the country where the vessel is landing and selling the catch. ² |
| 4 | Vessel flag country* | String | M | Code list | ISO 3166 - 1 alpha-3 codes: the flag country of the vessel. This can be different from the landing country (see description of Landing country). ² |
| 5 | Year* | Integer | M | 1 900–3 000 | |
| 6 | Project* | String | M | Code list | National project name. Code list is editable. |
| 7 | Trip code* | String | M | String 50 | National coding system. ³ |
| 8 | Vessel length | Integer | 0 ⁴ | 3–160 | Over-all length in metres. |
| 9 | Vessel power | Integer | 0 ⁴ | 4–8 500 | Vessel power (kW). ⁵ |
| 10 | Vessel size | Integer | 0 ⁴ | 1–2 500 | Gross registered tonnes (GRT). |
| 11 | Vessel type | Integer | M ⁶ | Code list | 1 = stern trawler, 2 = side trawler, 3 = gillnetter, 4 = other boats. |
| 12 | Harbour | String | 0 | Code list | Landing harbour. |
| 13 | Number of sets/hauls on trip | Integer | 0 ⁶ | 1–300 ⁷ | Total number of hauls/sets taken during the trip. Both the stations where biological measures were taken and the stations that were not worked up should be counted here. ⁸ |
| 14 | Days at sea | Integer | 0 | 1–60 | In days. ⁹ |

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|-------------------------------|---------|------|--------------|---|
| 15 | Vessel identifier (encrypted) | Integer | 0 | 1-999 999 | Encrypted vessel identifier. Id encrypted so that no-one can map the Id to the real vessel. |
| 16 | Sampling country | String | M | Code list | ISO 3166-1 alpha-3 codes. The country that did the sampling. |
| 17 | Sampling method | String | M | Code list | "Observer" or "SelfSampling". |

* = key field

¹ Mandatory for sampling type = "M" and "S" (criteria to be checked).

² The values of the fields "LandingCountry" and "VesselFlagCountry" for the given catch should correspond to the CL (commercial landings) data. In the special case where a vessel lands the catch in country A, but the catch is transported directly to country B, it should be registered as being landed in country B, because the catch would add to the CL values for country B.

³ A trip (TR) is defined for:

- a) Sea sampling, as the period between when a vessel departs from a port (or factory ship) and arrives at a port (or factory ship) for discharge of its catch.
- b) Market sampling, as a sampling trip to a market. This would typically be just one day. If this grouping information is not available nationally, any other reasonable grouping of market samples can be used. The time-span of the trip has no implication for the raising of the market samples.

⁴ The sampling types are as follows:

- a) "M" = market sampling of known fishing trips. "M" should be used when it was impossible to obtain samples of the discard. Exact information on time and place of catch may not be available, and normally the landing cannot be split into hauls/sets but has to be worked up as pooled for all hauls/sets. Market sampling can be done by observers at fish markets.
- b) "D" = market sampling of mixed trips (day trips to market). "D" should be used when it was impossible to obtain samples of the discard. Exact information on time and place of catch may not be available, and normally the landing cannot be split into hauls/sets but has to be worked up as pooled for all hauls/sets/trips. Market sampling can be done by observers at fish markets.
- c) "S" = sea sampling. "S" should be used when exact information about time and place for the catch is available. Each haul/set can be worked up separately. Sea sampling can be done by observers or by self-sampling at sea or in the port.
- d) "V" = vendor. The sample has been bought from a fish vendor. The sample is accompanied with a very restricted set of information. Only TR and CA records are allowed for this type (criteria to be checked).

⁵ Conversion factor: horsepower (hp) to kW = $1/1.3596 = 0.7355$.

⁶ In order to raise sample level to total national level by using effort (e.g. number of trips), it is necessary to know the fraction of the total number of hauls/set performed during the trip.

⁷ Mandatory only for sea sampling data from 2009 onwards (criteria to be checked).

⁸ 2-99 if "Aggregation level" on child-HH record is set to "TR" (= trip; criteria to be checked).

⁹ A day at sea shall be measured as any continuous period of 24 hours (or part thereof) where a vessel is absent from port. The time from when the continuous period is measured is at the discretion of the Member State whose flag is flown by the vessel concerned.

2.3.2 Fishing station record (HH) in commercial fisheries sampling data (CS)

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|---------------------------------------|---------|-------------------|------------------------------|---|
| 1 | Record type * | String | M | | Fixed value HH. |
| 2 | Sampling type * | String | M | Code list | "S" = sea sampling; "M" = market sampling of known fishing trips; "D" = market sampling of mixed trips; "V" = vendor. |
| 3 | Landing country * | String | M | Code list | ISO 3166 - 1 alpha-3 codes |
| 4 | Vessel flag country * | String | M | Code list | ISO 3166 - 1 alpha-3 codes. The flag country of the vessel. This can be different from the landing country (see description of LandingCountry). |
| 5 | Year * | Integer | M | 1 900 - 3 000 | |
| 6 | Project * | String | M | Code list | National project name. Code list is editable. |
| 7 | Trip code * | String | M | String 50 | National coding system. ¹ |
| 8 | Station number* | Integer | M | 1-99999 ² | Sequential numbering by trip. ¹ |
| 9 | Fishing validity | String | 0 ^{3,4} | Code list | I = Invalid. V = Valid. |
| 10 | Aggregation level | String | 0 ^{3,5} | Code list | H = haul. T = trip. |
| 11 | Catch registration | String | M | Code list | The parts (landings/discards) of the catch, registered as "All", "Lan", "Dis", "Non". ⁶ |
| 12 | Species registration | String | M | Code list | The species in the catch, registered as "All", "Par", "Non". ⁷ |
| 13 | Date | String | M | "1900-01-01" to "2020-12-31" | "YYYY-MM-DD" (ISO 8601). ⁸ Fishing starting date. |
| 14 | Time | String | 0 | 00:00-23:59 | Starting time. "HH:MM"... in UTC. ⁹ |
| 15 | Fishing duration | Integer | 0 ³ | 5-99 999 | In minutes. ¹⁰ |
| 16 | Pos.Start.Lat.dec. | Dec(5) | 0 ³ | 20.00000-80.00000 | Shooting (start) position in decimal degrees of latitude. ¹¹ |
| 17 | Pos.Start.Lon.dec. | Dec(5) | 0 ³ | -31.00000-31.00000 | Shooting (start) position in decimal degrees of longitude. ¹¹ |
| 18 | Pos.Stop.Lat.dec. | Dec(5) | 0 | 20.00000-80.00000 | Hauling (stop) position in decimal degrees of latitude. ¹¹ |
| 19 | Pos.Stop.Lon.dec. | Dec(5) | 0 | -31.00000-31.00000 | Hauling (stop) position in decimal degrees of longitude. ¹¹ |
| 20 | Area | String | M | Code list | Area level 3 (level 4 for Baltic, Mediterranean, and Black Seas) in the Data Collection Regulation (EC, 2008a, 2008b). |
| 21 | Statistical rectangle | String | 0 ^{3,12} | Code list | Area level 5 in the Data Collection Regulation (EC, 2008a, 2008b). This is the ICES statistical rectangles (e.g. 41G9) except for the Mediterranean and Black Seas, where GFCM geographical subareas (GSAs) are used. ¹³ |
| 22 | Subpolygon | String | 0 | Code list | National level as defined by each country as child nodes (substratification) of the ICES rectangles. It is recommended that this is coordinated internationally, e.g. through the Regional Coordination Meetings (EC RCMs). |
| 23 | Main fishing depth | Integer | 0 | 1-999 | Depth from surface to groundrope in metres. ⁵ |
| 24 | Main water depth | Integer | 0 | 1-999 | Depth from surface in metres. ¹⁴ |
| 25 | Fishing activity category National | String | 0 | Code list | Country specific Fishing activity category (= métier). National level as defined by each country as child nodes (substratification) of the level-5 codes. |

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|---|---------|---------------------|--------------|--|
| 26 | Fishing activity category European lvl 5 | String | 0 ¹⁵ | Code list | Fishing activity category (= métier). Level 5 as defined in a hierarchic structure in the Data Collection Regulation (EC, 2008a, 2008b). |
| 27 | Fishing activity category European lvl 6 | String | 0 ^{15, 16} | Code list | Fishing activity category. Level 6 as defined in a hierarchic structure in the Data Collection Regulation (EC, 2008a, 2008b). Level 6 is further specified by the Regional Coordination Meetings (EC RCMs, Council Regulation [EC] No 1543/2000) or any later authorized revision. |
| 28 | Gear type | streng | M | Code list | |
| 29 | Mesh size | Integer | 0 ¹⁷ | 1-999 | Stretch measure. ¹⁸ |
| 30 | Selection device | Integer | 0 ³ | Code list | Not mounted = 0, Exit window / selection panel = 1, grid = 2. A selection device is defined as a square-meshed panel or window that is inserted into a towed net. |
| 31 | Mesh size in selection device | Integer | 0 | 18-200 | In mm. The mesh size of a square-meshed panel or window shall mean the largest determinable mesh size of such a panel or window. |

* = key field

¹ A trip is defined for:

- a) Sampling type "S" (sea sampling) and "M" (market sampling of known fishing trips) as the period between when a vessel departs from a port (or factory ship) and arrives at a port (or factory ship) for discharge of its catch.
- b) Sampling type "D" (market sampling of mixed trips) as a sampling trip to a market. This would typically be just one day. If this grouping information is not available nationally, any other reasonable grouping of market samples can be used. The time-span of the trip has no implication for the raising of the market samples. The samples can originate in a mix of trips, but all from the same fishing activity category (métier).

² If aggregation level is "T", the station no. = 999 (criteria to be checked).

³ Mandatory for sampling type = "S" (criteria to be checked).

⁴ When a haul is invalid, there is no need for species data. No SLs and HLs allowed (criteria to be checked).

⁵ If more than one station exist for the same trip, then all should be "H" (= haul).

⁶ This field describes the fraction of the catch that was registered. If the value "None" is used, SpeciesRegistration must also be assigned "None" (criteria to be checked).

- a) "All" = SL record is expected for both landings and discards fractions. If there is no SL record, it is a true measured 0-value.
- b) "Lan" = SL record is expected only for the landed fraction. For this fraction, if there is no SL record, it is a true measured 0-value. For the discards, no SL record is expected because it has not been registered.
- c) "Dis" = SL record is expected only for the discarded fraction. For this fraction, if there is no SL record, it is a true measured 0-value. For the landings, no SL record is expected because it has not been registered.
- d) "Non" = None. There are no SL records (criteria to be checked).

⁷ This field describes whether all species or only a subset has been registered. If the value "None" is used, CatchRegistration must also be assigned "None" (criteria to be checked).

- a) "All" = SL record is expected for all species in the given part of the catch. If there is no SL record, it is a true measured 0-value.
- b) "Par" = Partial. SL record is expected only for some of the caught species. If there is no SL record, it is not known if it is a true measured 0-value. Please refer to the sampling protocol for an exact list of species which can be provided by the institute in charge of the given sampling.
- c) "Non" = None. There are no SL records (criteria to be checked).

⁸ If aggregation level is "T", the day = day of first station no.

⁹ If aggregation level is "T", the time shoot = time shot of first station no.

¹⁰ If aggregation level is "T", the total fishing time is entered.

¹¹ If aggregation level is "T", the shooting position of the first station no. is entered.

¹² Mandatory if a value is given for the field "Subpolygon" (criteria to be checked).

¹³ If aggregation level is "T" and the fishing positions covers more than one rectangle, the rectangle with the most fishing is entered.

¹⁴ If aggregation level is "T", the estimated average depth is entered.

¹⁵ Either "Fishing activity category European lvl 5" or "Fishing activity category European lvl 6" should be provided, but not both. Preferably level 6 because this includes the level 5 information (criteria to be checked).

¹⁶ "Fishing activity category European lvl 6" is mandatory for data from 2009 onwards (criteria to be checked).

¹⁷ Mandatory if sampling type is "S" and gear is not one of the following: LLD, LLS, LHM, LHP, LL.

¹⁸ The mesh size is defined as the size in mm of a mesh stretched in the direction of the long diagonal of the meshes. The gauges to be used for determining mesh sizes shall be 2 mm thick, flat, of durable material, and capable of retaining their shape. The mesh size is measured in the codend if it is a trawl.

2.3.3 Species list record (SL) in commercial fisheries sampling data (CS)

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|----------------------------------|---------|----------------|-------------------|--|
| 1 | Record type * | String | M | | Fixed value SL. |
| 2 | Sampling type * | String | M | Code list | "S" = sea sampling, "M" = market sampling of known fishing trips, "D" = market sampling of mixed trips, V" = vendor. |
| 3 | Landing country * | String | M | Code list | ISO 3166 - 1 alpha-3 codes. |
| 4 | Vessel flag country * | String | M | Code list | ISO 3166 - 1 alpha-3 codes. The flag country of the vessel. This can be different from the landing country (see description of LandingCountry). |
| 5 | Year * | Integer | M | 1 900 - 3 000 | |
| 6 | Project * | String | M | Code list | National project name. Code list is editable. |
| 7 | Trip code * | String | M | String 50 | National coding system. |
| 8 | Station number * | Integer | M | 1 - 999 | Sequential numbering by trip. |
| 9 | Species * | String | M | Code list | Scientific name in Latin (<i>Genus species</i>). (A suffix to the latin name is used for species for which Stock cannot be defined by area) |
| 10 | Catch category * | String | M | Code list | The fate of the catch: "Dis" = discard, "Lan" = landing. |
| 11 | Landing category * | String | M | Code list | The intended usage at the time of landing. This should match the same field in CL record (whether or not the fish was actually used for this or another purpose): "IND" = industry or "HUC" = human consumption. |
| 12 | Commercial size category scale * | String | 0 | Code list | Commercial sorting scale code (optional for "Unsorted"). |
| 13 | Commercial size category * | Integer | 0 | Code list | Commercial sorting category in the given scale (optional for "Unsorted"). (EC, 2006) and later amendments when scale is "EU". |
| 14 | Subsampling category * | String | 0 | Code list | Used when different fractions of the same species are subsampled at different levels. Typically used when few large specimens are taken out from the total catch before the many small fish are subsampled. |
| 15 | Sex * | String | 0 | Code list | M = Male, F = Female, T = Transitional ² (optional for "Unsexed"). |
| 16 | Weight | Integer | M | 1 - 9 999 999 999 | Whole weight in grammes. Decimals not allowed. Weight of the corresponding stratum (Species - Catch category - size category - Sex). |
| 17 | Subsample weight | Integer | 0 ¹ | 1 - 9 999 999 999 | Whole weight in grammes. Decimals not allowed. For sea sampling: the live weight of the subsample of the corresponding stratum. For market sampling: the sample weight is the whole weight of the fish measured (e.g. the summed weight of the fish in one or more boxes). |
| 18 | Length code | String | 0 ¹ | Code list | Class: 1 mm = "mm", 0.5 cm = "scm"; 1 cm = "cm"; 2.5 cm = 25 mm", 5 cm = "5 cm". |

* = key field

¹ Mandatory if HL records are provided (criteria to be checked during upload).

¹ Only applicable for shrimps.

2.3.4 Length record (HL) in commercial fisheries sampling data (CS)

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|--|---------|----------------|-----------------|---|
| 1 | Record type* | String | M | | Fixed value HL. |
| 2 | Sampling type* | String | M | Code list | "S" = sea sampling, "M" = market sampling of known fishing trips, "D" = market sampling of mixed trips, "V" = vendor. |
| 3 | Landing country* | String | M | Code list | ISO 3166 - 1 alpha-3 codes. |
| 4 | Vessel flag country* | String | M | Code list | ISO 3166 - 1 alpha-3 codes. The flag country of the vessel. This may be different from the landing country (see description of LandingCountry). |
| 5 | Year* | Integer | M | 1 900 - 3 000 | |
| 6 | Project* | String | M | Code list | National project name. Code list is editable. |
| 7 | Trip code* | String | M | String 50 | National coding system. |
| 8 | Station number* | Integer | M | 1 - 999 | Sequential numbering by trip. |
| 9 | Species* | String | M | Code list | Scientific name in Latin (<i>Genus species</i>). A suffix to the latin name is used for species for which Stock cannot be defined by area) |
| 10 | Catch category* | String | M | Code list | The fate of the catch: Dis = discard, Lan = landing. |
| 11 | Landing category* | String | M | Code list | The intended usage at the time of landing. This should match the same field in the LS record (whether or not the fish was actually used for this or another purpose): IND = industry, HUC = human consumption. |
| 12 | Commercial size category scale* | String | 0 | Code list | Commercial sorting scale code (optional for "Unsorted"). |
| 13 | Commercial size category* | Integer | 0 | Code list | Commercial sorting category in the given scale (optional for "Unsorted"). See (EC, 2006) and later amendments when scale is "EU". |
| 14 | Subsampling category* | Integer | 0 | Code list | Used when different fractions of the same species are subsampled at different levels. Typically used when few large specimens are removed from the total catch before the many small fish are subsampled. |
| 15 | Sex* | String | 0 ¹ | Code list | M = Male, = , F = Female, T = Transitional = (optional for "Unsexed"). |
| 16 | Individual sex | String | M | Code list (sex) | If M = Male, = , F = Female, T = Transitional = (optional for "Unsexed"). Only different from "Sex" if individual length distribution is obtained on HL-level (and not on SL-level). |
| 17 | Length class* | Integer | M | 1-3 999 | In mm. Identifier: lower bound of size class, e.g. 650 for 65 - 66 cm. |
| 18 | Number at length (not raised to whole catch) | Integer | M | 1-999 | Length classes with zero should be excluded from the record. |

* = key field

¹ HL.Sex should always match SL.Sex (criteria to be checked).

2.3.5 Sex-Maturity-Age-Weight-Length record (CA) in commercial fisheries sampling data (CS)

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|---------------------------------|---------|----------------|--------------------|---|
| 1 | Record type* | String | M | | Fixed value CA. |
| 2 | Sampling type* | String | M | Code list | "S" = sea sampling, "M" = market sampling of known fishing trips, "D" = market sampling of mixed trips, "V" = vendor. |
| 3 | Landing country* | String | M | Code list | ISO 3166 - 1 alpha-3 codes. |
| 4 | Vessel flag country* | String | M | Code list | ISO 3166 - 1 alpha-3 codes. The flag country of the vessel. This may be different from the landing country (see description of LandingCountry). |
| 5 | Year* | Integer | M | Code list | 1 900-3 000. |
| 6 | Project* | String | M | Code list | National project name. Code list is editable. |
| 7 | Trip code* | String | M | String 50 | National coding system. ¹ |
| 8 | Station number* | Integer | 0 ² | 1-999 | Sequential numbering by trip. |
| 9 | Quarter* | Integer | M | Code list | 1-4. |
| 10 | Month* | Integer | 0 | Code list | 1-12. |
| 11 | Species* | String | M | Code list | Scientific name in Latin (<i>Genus species</i>). A suffix to the latin name is used for species for which Stock cannot be defined by area) |
| 12 | Sex* | String | 0 | Code list | M= Male = , F = Female, T = Transitional = (optional for "Unsexed"). |
| 13 | Catch category* | String | M | Code list | The fate of the catch: discard or landing. |
| 14 | Landing category* | String | M | Code list | The intended usage at the time of landing. This should match the same field in the LS record (whether or not the fish was actually used for this or another purpose): industry or human consumption. |
| 15 | Commercial size category scale* | String | 0 | Code list | Commercial sorting scale code (optional for "Unsorted"). |
| 16 | Commercial size category* | Integer | 0 | Code list | Commercial sorting category in the given scale. (optional for "Unsorted"). |
| 17 | Stock* | String | 0 | Code list | ³ |
| 18 | Area* | String | M | Code list | Area level 3 (level 4 for Baltic, Mediterranean, and Black Seas) in the Data Collection Regulation (EC, 2008a, 2008b). |
| 19 | Statistical rectangle* | String | 0 ⁴ | Code list | Area level 5 in the Data Collection Regulation (EC, 2008a, 2008b). This is the ICES statistical rectangles (e.g. 41G9) except for the Mediterranean and Black Seas where GFCM geographical subareas (GSAs) are used. |
| 20 | Subpolygon* | String | 0 | Code list | National level as defined by each country as child nodes (substratification) of the ICES rectangles. It is recommended that this is coordinated internationally, e.g. through the Regional Coordination Meetings (EC RCMs). |
| 21 | Length class* | Integer | M | 1-3 999 | In mm. Identifier: lower bound of size class, e.g. 650 for 65 -66 cm. |
| 22 | Age* | Integer | 0 | 0-99 | Estimated age. |
| 23 | Single fish number (id)* | Integer | M | 1-999 999 999 | National numbering system of the individual fish. Preferably unique within the given Station and Species, but necessarily unique for the given combination of key fields above. |
| 24 | Length code | Integer | M | Code list | Class: 1 mm = "mm", 0.5 cm = "scm"; 1 cm = "cm"; 2.5 cm = "25 mm", 5 cm = "5 cm". |
| 25 | Aging method | String | 0 ⁵ | Code list | Methodology for estimating the age. |
| 26 | Age-plus-group | String | M | Code list | + = Plus group, - = Not plus group. ⁶ |
| 27 | Otolith weight | Dec(5) | 0 | 0.000 00-99.999 99 | In grammes. |

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|-------------------------|--------|------|--------------|--|
| 28 | Otolith side | String | 0 | Code list | The side of the fish where the otolith was taken. R = right, L = left. |
| 29 | Weight | Dec(1) | 0 | 1.0–99 999.9 | In grammes. |
| 30 | Maturity staging method | String | 0 | Code list | Methodology for estimating the maturity stage. |
| 31 | Maturity scale | String | 0 | Code list | The maturity scale gives the range of the possible stages (values). |
| 32 | Maturity stage | String | 0 | Code list | The stage (value) in the given scale. |

* = key field

- A CA record represents only one fish.
- When all fish are aged and weighed, as in Danish market sampling from 2007, the system can detect whether an age–length key has been used. If this were not detected, or given in a separate field, the variance would be overestimated. The criterion is that the numbers-at-length should be a 100% match with those of HL and CA from a given trip.
- The Fishing Activity Categories are set to the same as given in the first matching HH record for the same trip. In the next version of the exchange format, the three FAC fields should be added to the CA record. All CA records should match at least one HH record on VesselFlagCountry, LandingCountry, Year, Quarter, Month, Area, and StatisticalRectangle (criteria to be checked).
- If “Station no” is missing, the first HH record for the same trip matching on VesselFlagCountry, LandingCountry, Year, Quarter, Month, Area, and StatisticalRectangle is assumed to be representative of the CA record (used to provide the FAC if needed). All CA records with sampling type different from “V” (vendor) should match at least one HH record on VesselFlagCountry, LandingCountry, Year, Quarter, Month, Area, and StatisticalRectangle (criteria to be checked; except for CAs from survey data).

¹ The stage (value) should be within the range given by the “Maturity scale” (criteria to be checked).

² Otolith samples may refer to either an individual haul or groups of hauls in the same rectangle or within one sampling area, depending on the on-board procedures. If detailed information is available, refer to the haul number and/or rectangle; these data are, therefore, optional rather than mandatory.

³ Only applicable for herring (*Clupea harengus*), salmon (*Salmo salar*), common whitefish (*Coregonus lavaretus*) and redfish (*Sebastes mentella* and *S. viviparus*).

⁴ Mandatory for sampling type = “S” (criteria to be checked).

⁵ Mandatory if a value is given in “Age” (criteria to be checked).

⁶ A plus-group refers to the age indicated and older, respectively, i.e. to a reading equal to or more than the specified number of rings. The use of a plus-group should be avoided when possible.

2.3.6 Commercial fisheries landings statistics record (CL)

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|---|---------|------------------|------------------------------------|--|
| 1 | Record type* | String | M | | Fixed value CL. |
| 2 | Landing country* | String | M | Code list | ISO 3166 – 1 alpha-3 codes. |
| 3 | Vessel flag country* | String | M | Code list | ISO 3166 – 1 alpha-3 codes. The flag country of the vessel. This may be different from the landing country (see description of LandingCountry). ¹ |
| 4 | Year* | Integer | M | Code list | 1 900–3 000. |
| 5 | Quarter* | Integer | M | Code list | 1–4. |
| 6 | Month* | Integer | 0 | Code list | 1–12. |
| 7 | Area* | String | M | Code list | Area level 3 (level 4 for Baltic, Mediterranean, and Black Seas) in the Data Collection Regulation (EC, 2008a, 2008b). |
| 8 | Statistical rectangle* | String | 0 | Code list | Area level 5 in the Data Collection Regulation (EC, 2008a, 2008b). This is the ICES statistical rectangles (e.g. 41G9) except for the Mediterranean and Black Seas where GFCM geographical subareas (GSAs) are used. |
| 9 | Subpolygon* | String | 0 | Code list | National level as defined by each country as child nodes (substratification) of the ICES rectangles. It is recommended that this is coordinated internationally, e.g. through the Regional Coordination Meetings (EC RCMs). |
| 10 | Species* | String | M | Code list | Scientific name in Latin (<i>Genus species</i>). A suffix to the latin name is used for species for which Stock cannot be defined by area) |
| 11 | Landing category* | String | M | Code list | The intended usage at the time of landing. This should match the comparable field in the LS record (whether or not the fish was actually used for this or another purpose). |
| 12 | Commercial size category scale* | String | 0 | Code list | Commercial sorting scale code (optional for “Unsorted”). |
| 13 | Commercial size category* | Integer | 0 | Code list | Commercial sorting category in the given scale (optional for “Unsorted”). See (EC, 2006) and later amendments when scale is “EU”. |
| 14 | Fishing activity category National* | String | 0 | Code list | Fishing activity category (= métier) – National level as defined by each country as child nodes (substratification) of the level-5 codes. |
| 15 | Fishing activity category European lvl 5* | String | 0 ² | Code list | Fishing activity category (= métier) – Level 5 as defined in a hierarchical structure in the Data Collection Regulation (EC 2008a, 2008b). |
| 16 | Fishing activity category European lvl 6* | String | 0 ^{2,3} | Code list | Fishing activity category (= métier) – Level 6 as defined in a hierarchical structure in the Data Collection Regulation (EC, 2008a, 2008b). Level 6 is further specified by the Regional Coordination Meetings (EC RCMs, Council Regulation [EC] No. 1543/2000). |
| 17 | Harbour* | String | 0 | Code list | Landing harbour. |
| 18 | Vessel length category* | String | M | Code list | Grouping of vessels into fleet segments according to the vessel length categories defined in the Data Collection Regulation (EC, 2008a, 2008b). |
| 19 | Unallocated catch weight | Integer | M | –2 000 000 000–2 000 000 000 | Whole weight in kg. |
| 20 | Area misreported catch weight | Integer | M | –2 000 000 000 – 2 000 000 000 | Whole weight in kg. |
| 21 | Official landings weight | Integer | M | 0–2 000 000 000 (i.e. 2 million t) | Whole weight in kg. |
| 22 | Landings multiplier | Dec(3) | 0 | 0.500–2.000 | Multiplier to correct official landings for, e.g., overweight in fish boxes. ⁴ |
| 23 | Official landings value | Integer | 0 | 1–100 000 000 | In € ⁵ . Official sales value of the landings. |

* = key field

¹ In the special case where a vessel lands the catch in country A, but the catch is transported directly to country B, it should be registered as if it had been landed in country B.

² Either "Fishing activity category European lvl 5" or "Fishing activity category European lvl 6" should be provided, but not both. It is preferable to use level 6 because this includes the level 5 information (criteria to be checked).

³ "Fishing activity category European lvl 6" is mandatory for data from 2009 onwards (criteria to be checked).

⁴ Weight can be entered as fresh weight or as estimated weight based on a statement of the number of fish boxes sold to the first buyer. Optionally, a standard correction factor (landings multiplier) can be applied if it is assumed that the boxes, as a rule, contain a certain percentage of overweight.

⁵ Use exchange rate at the time of sale.

2.3.7 Commercial fisheries effort statistics record (CE)

| Order | Name | Type | Req. | Basic checks | Comments |
|-------|--|---------|------------------|--------------|--|
| 1 | Record type * | String | M | | Fixed value CE. |
| 2 | Vessel flag country * | String | M | Code list | ISO 31661 – alpha-3 codes. The flag country of the vessel. |
| 3 | Year * | Integer | M | Code list | 1 900 – 3 000. |
| 4 | Quarter * | Integer | M | Code list | 1–4. |
| 5 | Month * | Integer | 0 | Code list | 1–12. |
| 6 | Area * | String | M | Code list | Area level 3 (level 4 for Baltic, Mediterranean, and Black Seas) in the Data Collection Regulation (EC, 2008a, 2008b). |
| 7 | Statistical rectangle * | String | 0 | Code list | Area level 5 in the Data Collection Regulation (EC, 2008a, 2008b). This is the ICES statistical rectangles (e.g. 41G9), except for the Mediterranean and Black Seas, where GFCM geographical subareas (GSAs) are used. ¹ |
| 8 | Subpolygon * | String | 0 | Code list | National level as defined by each country as child nodes (substratification) of the ICES rectangles. It is recommended that this is coordinated internationally, e.g. through the Regional Coordination Meetings (EC RCMs). |
| 9 | Fishing activity category National * | String | 0 | Code list | Fishing activity category (= métier) – National level as defined by each country as child nodes (substratification) of the level-5 codes. |
| 10 | Fishing activity category European lvl 5 * | String | 0 ¹ | Code list | Fishing activity category (= métier) – Level 5 as defined in a hierarchical structure in the Data Collection Regulation (EC, 2008a, 2008b). |
| 11 | Fishing activity category European lvl 6 * | String | 0 ^{1,2} | Code list | Fishing activity category (= métier) – Level 6 as defined in a hierarchical structure in the Data Collection Regulation (EC, 2008a, 2008b). Level 6 is further specified by the Regional Coordination Meetings (EC RCMs, Council Regulation [EC] No. 1543/2000). |
| 12 | Harbour * | String | 0 | Code list | Landing harbour. |
| 13 | Vessel length category * | String | M | Code list | Grouping of vessels into fleet segments according to the vessel length categories defined in the Data Collection Regulation (EC, 2008a, 2008b). |
| 14 | Number of trips | Integer | M | 1–50 000 | ^{3,4} |
| 15 | Number of sets/hauls | Integer | 0 | 1–250 000 | |
| 16 | Fishing time/soaking time | Integer | 0 | 1–1 200 000 | In hours. |
| 17 | kW-days | Integer | 0 | 1–2 000 000 | In kW days. |
| 18 | GT-days | Integer | 0 | 1–750 000 | In GT (Gross Tonnage) days. |
| 19 | Days at sea | Integer | 0 | 1–25 000 | In days. ⁵ |

* = key field

¹ Either “Fishing activity category European lvl 5” or “Fishing activity category European lvl 6” should be provided, but not both. It is preferable to use level 6 because this includes the level 5 information (criteria to be checked).

² “Fishing activity category European lvl 6” is mandatory for data from 2009 onwards (criteria to be checked).

³ If a trip covers more than one rectangle/SubPolygon, the rectangle with the most fishing is used.

⁴ A trip is defined as the period between when a vessel departs from a port (or factory ship) and arrives at a port (or factory ship) for discharge of the catch.

⁵ A day at sea shall be measured as any continuous period of 24 hours (or part thereof) when a vessel is absent from port. The time from when the continuous period is measured is at the discretion of the Member State whose flag is flown by the vessel concerned.

2.4 XML file format definitions

The XML file structure is defined in schema files; the schema file type used is XSD, as recommended by W3C (Biron *et al.*, 2004; Fallside and Walmsley, 2004; Thompson *et al.*, 2004). The XSD schema files refer to XSD enumerator files containing the code lists; these files are not printed in the report because the codes are tabulated in Annex 4. The files can be obtained from the FishFrame support.

2.4.1 Commercial fisheries sampling data (CS)

```
<?xml version="1.0" encoding="UTF-8" ?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xsd:include schemaLocation="Enumerators\AgePlusGroup.xsd"/>
  <xsd:include schemaLocation="Enumerators\AgingMethod.xsd"/>
  <xsd:include schemaLocation="Enumerators\AggregationLevel.xsd"/>
  <xsd:include schemaLocation="Enumerators\Area.xsd"/>
  <xsd:include schemaLocation="Enumerators\CatchCategory.xsd"/>
  <xsd:include schemaLocation="Enumerators\CatchRegistration.xsd"/>
  <xsd:include schemaLocation="Enumerators\Country.xsd"/>
  <xsd:include schemaLocation="Enumerators\FishingActivityCategory_National2.xsd"/>
  <xsd:include schemaLocation="Enumerators\FishingActivityCategory_EU5.xsd"/>
  <xsd:include schemaLocation="Enumerators\FishingActivityCategory_EU6.xsd"/>
  <xsd:include schemaLocation="Enumerators\FishingValidity.xsd"/>
  <xsd:include schemaLocation="Enumerators\Gear.xsd"/>
  <xsd:include schemaLocation="Enumerators\Harbour.xsd"/>
  <xsd:include schemaLocation="Enumerators\LandingCategory.xsd"/>
  <xsd:include schemaLocation="Enumerators\LengthCode.xsd"/>
  <xsd:include schemaLocation="Enumerators\MaturityStagingMethod.xsd"/>
  <xsd:include schemaLocation="Enumerators\MaturityScale.xsd"/>
  <xsd:include schemaLocation="Enumerators\MaturityStage.xsd"/>
  <xsd:include schemaLocation="Enumerators\OtolithSide.xsd"/>
  <xsd:include schemaLocation="Enumerators\Project.xsd"/>
  <xsd:include schemaLocation="Enumerators\StatisticalRectangle.xsd"/>
  <xsd:include schemaLocation="Enumerators\SamplingMethod.xsd"/>
  <xsd:include schemaLocation="Enumerators\SamplingType.xsd"/>
  <xsd:include schemaLocation="Enumerators\SelectionDevice.xsd"/>
  <xsd:include schemaLocation="Enumerators\Sex.xsd"/>
  <xsd:include schemaLocation="Enumerators\SizeCategory.xsd"/>
  <xsd:include schemaLocation="Enumerators\SizeCategoryScale.xsd"/>
  <xsd:include schemaLocation="Enumerators\Species.xsd"/>
  <xsd:include schemaLocation="Enumerators\SpeciesRegistration.xsd"/>
  <xsd:include schemaLocation="Enumerators\Stock.xsd"/>
  <xsd:include schemaLocation="Enumerators\SubSamplingCategory.xsd"/>
  <xsd:include schemaLocation="Enumerators\SubPolygon.xsd"/>
  <xsd:include schemaLocation="Enumerators\VesselType.xsd"/>
  <xsd:include schemaLocation="Enumerators\Year.xsd"/>
  <xsd:element name="FishFrame" type="FishFrameType"/>
  <xsd:complexType name="FishFrameType">
    <xsd:sequence>
      <xsd:element name="CS" type="CSType"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CSType">
    <xsd:sequence>
      <xsd:element name="TR" type="TRType" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="TRType">
    <xsd:sequence>
      <xsd:element name="VesselLength" type="tVesselLength" minOccurs="0"/>
      <xsd:element name="VesselPower" type="tVesselPower" minOccurs="0"/>
      <xsd:element name="VesselSize" type="tVesselSize" minOccurs="0"/>
      <xsd:element name="VesselType" type="tVesselType"/>
      <xsd:element name="Harbour" type="tHarbour"/>
      <xsd:element name="NumberOfHauls" type="tNumberOfHauls" minOccurs="0"/>
      <xsd:element name="DaysAtSea" type="tDaysAtSea" minOccurs="0"/>
      <xsd:element name="VesselId" type="tVesselId" minOccurs="0"/>
      <xsd:element name="SamplingCountry" type="tCountry"/>
      <xsd:element name="SamplingMethod" type="tSamplingMethod"/>
      <xsd:element name="HH" type="HHType" maxOccurs="unbounded"/>
      <xsd:element name="CA" type="CAType" minOccurs="0" maxOccurs="unbounded"/>
    </xsd:sequence>
  <xsd:attribute name="ln" type="xsd:int"/>

```

```

<xsd:attribute name="SamplingType" type="tSamplingType" use="required"/>
<xsd:attribute name="LandingCountry" type="tCountry" use="required"/>
<xsd:attribute name="FlagCountry" type="tCountry" use="required"/>
<xsd:attribute name="Year" type="tYear" use="required"/>
<xsd:attribute name="Project" type="tProject" use="required"/>
<xsd:attribute name="Trip" type="tTrip" use="required"/>
</xsd:complexType>
<xsd:complexType name="HHType">
  <xsd:sequence>
    <xsd:element name="FishingValidity" type="tFishingValidity" minOccurs="0"/>
    <xsd:element name="AggregationLevel" type="tAggregationLevel" minOccurs="0"/>
    <xsd:element name="CatchRegistration" type="tCatchRegistration"/>
    <xsd:element name="SpeciesRegistration" type="tSpeciesRegistration"/>
    <xsd:element name="Date" type="tDate"/>
    <xsd:element name="TimeShot" type="tTimeShot" minOccurs="0"/>
    <xsd:element name="FishingDuration" type="tFishingDuration" minOccurs="0"/>
    <xsd:element name="LatDegreesStart" type="tLatDegrees" minOccurs="0"/>
    <xsd:element name="LonDegreesStart" type="tLonDegrees" minOccurs="0"/>
    <xsd:element name="LatDegreesStop" type="tLatDegrees" minOccurs="0"/>
    <xsd:element name="LonDegreesStop" type="tLonDegrees" minOccurs="0"/>
    <xsd:element name="Area" type="tArea"/>
    <xsd:element name="Rectangle" type="tStatisticalRectangle" minOccurs="0"/>
    <xsd:element name="SubPolygon" type="tSubPolygon" minOccurs="0"/>
    <xsd:element name="MainFishingDepth" type="tMainDepth" minOccurs="0"/>
    <xsd:element name="MainWaterDepth" type="tMainDepth" minOccurs="0"/>
    <xsd:element name="FishingActivityNational" type="tFishingActivityCategory_National2"
minOccurs="0"/>
    <xsd:element name="FishingActivityEULv15" type="tFishingActivityCategory_EU5" minOc-
curs="0"/>
    <xsd:element name="FishingActivityEULv16" type="tFishingActivityCategory_EU6" minOc-
curs="0"/>
    <xsd:element name="Gear" type="tGear" minOccurs="0"/>
    <xsd:element name="MeshSize" type="tMeshSize" minOccurs="0"/>
    <xsd:element name="SelectionDevice" type="tSelectionDevice" minOccurs="0"/>
    <xsd:element name="MeshSizeInSelectionDevice" type="tMeshSizeSelectionDevice" minOc-
curs="0"/>
    <xsd:element name="SL" type="SLType" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="ln" type="xsd:int"/>
  <xsd:attribute name="Station" type="tStationNo" use="required"/>
</xsd:complexType>
<xsd:complexType name="SLType">
  <xsd:sequence>
    <xsd:element name="Weight" type="tWeight"/>
    <xsd:element name="SubSampleWeight" type="tWeight" minOccurs="0"/>
    <xsd:element name="LengthCode" type="tLengthCode" minOccurs="0"/>
    <xsd:element name="HL" type="HLType" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="ln" type="xsd:int"/>
  <xsd:attribute name="Species" type="tSpecies" use="required"/>
  <xsd:attribute name="Sex" type="tSex"/>
  <xsd:attribute name="CatchCategory" type="tCatchCategory" use="required"/>
  <xsd:attribute name="LandingCategory" type="tLandingCategory" use="required"/>
  <xsd:attribute name="SizeCategoryScale" type="tSizeCategoryScale"/>
  <xsd:attribute name="SizeCategory" type="tSizeCategory"/>
  <xsd:attribute name="SubSamplingCategory" type="tSubSamplingCategory"/>
</xsd:complexType>
<xsd:complexType name="HLType">
  <xsd:sequence>
    <xsd:element name="NoAtLength" type="tNoAtLength"/>
  </xsd:sequence>
  <xsd:attribute name="ln" type="xsd:int"/>
  <xsd:attribute name="Sex" type="tSex"/>
  <xsd:attribute name="LengthClass" type="tLengthClass" use="required"/>
</xsd:complexType>
<xsd:complexType name="CAType">
  <xsd:sequence>
    <xsd:element name="LengthCode" type="tLengthCode"/>
    <xsd:element name="AgingMethod" type="tAgingMethod" minOccurs="0"/>
    <xsd:element name="AgePlusGroup" type="tAgePlusGroup"/>
    <xsd:element name="OtolithWeight" type="tOtolithweight" minOccurs="0"/>
    <xsd:element name="OtolithSide" type="tOtolithSide" minOccurs="0"/>
    <xsd:element name="Weight" type="tIndividualMeanWeight" minOccurs="0"/>
    <xsd:element name="MaturityStagingMethod" type="tMaturityStagingMethod" minOccurs="0"/>
    <xsd:element name="MaturityScale" type="tMaturityScale" minOccurs="0"/>
    <xsd:element name="MaturityStage" type="tMaturityStage" minOccurs="0"/>
  </xsd:sequence>

```



```

</xsd:sequence>
<xsd:attribute name="ln" type="xsd:int"/>
<xsd:attribute name="Station" type="tStationNo"/>
<xsd:attribute name="Quarter" type="tQuarter"/>
<xsd:attribute name="Month" type="tMonth"/>
<xsd:attribute name="Species" type="tSpecies" use="required"/>
<xsd:attribute name="Sex" type="tSex"/>
<xsd:attribute name="CatchCategory" type="tCatchCategory" use="required"/>
<xsd:attribute name="LandingCategory" type="tLandingCategory" use="required"/>
<xsd:attribute name="SizeCategoryScale" type="tSizeCategoryScale"/>
<xsd:attribute name="SizeCategory" type="tSizeCategory"/>
<xsd:attribute name="Stock" type="tStock"/>
<xsd:attribute name="Area" type="tArea" use="required"/>
<xsd:attribute name="StatisticalRectangle" type="tStatisticalRectangle"/>
<xsd:attribute name="SubPolygon" type="tSubPolygon" />
<xsd:attribute name="LengthClass" type="tLengthClass" use="required"/>
<xsd:attribute name="Age" type="tAge"/>
<xsd:attribute name="SingleFishId" type="tSingleFishId" use="required"/>
</xsd:complexType>
<xsd:simpleType name="tTrip">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="999999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tVesselLength">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="3"/>
    <xsd:maxInclusive value="160"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tVesselPower">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="4"/>
    <xsd:maxInclusive value="5500"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tVesselSize">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="1500"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tNumberOfHauls">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="99"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tDaysAtSea">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="60"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tVesselId">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="999999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tQuarter">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="4"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tMonth">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="12"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tStationNo">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="999"/>
  </xsd:restriction>

```

```

        </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tDate">
  <xsd:restriction base="xsd:string">
    <xsd:length value="10"/>
    <xsd:pattern value="\d{4}\-\d{2}\-\d{2}"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tFishingDuration">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="5"/>
    <xsd:maxInclusive value="99999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tTimeShot">
  <xsd:restriction base="xsd:string">
    <xsd:length value="5"/>
    <xsd:pattern value="\d{2}:\d{2}"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tLatDegrees">
  <xsd:restriction base="xsd:double">
    <xsd:minInclusive value="20.00000"/>
    <xsd:maxInclusive value="80.00000"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tLonDegrees">
  <xsd:restriction base="xsd:double">
    <xsd:minInclusive value="-31.00000"/>
    <xsd:maxInclusive value="31.00000"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tMainDepth">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tMeshSize">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tMeshSizeSelectionDevice">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="20"/>
    <xsd:maxInclusive value="200"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tWeight">
  <xsd:restriction base="xsd:long">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="9999999999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tLengthClass">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="3999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tNoAtLength">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="1"/>
    <xsd:maxInclusive value="999"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tAge">
  <xsd:restriction base="xsd:int">
    <xsd:minInclusive value="0"/>
    <xsd:maxInclusive value="99"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tSingleFishId">
  <xsd:restriction base="xsd:int">

```

```

                <xsd:minInclusive value="1"/>
                <xsd:maxInclusive value="99999999"/>
            </xsd:restriction>
        </xsd:simpleType>
        <xsd:simpleType name="tOtolithweight">
            <xsd:restriction base="xsd:double">
                <xsd:minInclusive value="0.00000"/>
                <xsd:maxInclusive value="99.99999"/>
            </xsd:restriction>
        </xsd:simpleType>
        <xsd:simpleType name="tIndividualMeanWeight">
            <xsd:restriction base="xsd:double">
                <xsd:minInclusive value="1.0"/>
                <xsd:maxInclusive value="99999.9"/>
            </xsd:restriction>
        </xsd:simpleType>
        <xsd:simpleType name="tNumber">
            <xsd:restriction base="xsd:int">
                <xsd:minInclusive value="1"/>
                <xsd:maxInclusive value="999"/>
            </xsd:restriction>
        </xsd:simpleType>
    </xsd:schema>

```

2.4.2 Commercial fisheries landings data (CL)

```

<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xsd:include schemaLocation="Enumerators\Area.xsd"/>
    <xsd:include schemaLocation="Enumerators\Country.xsd"/>
    <xsd:include schemaLocation="Enumerators\FishingActivityCategory_National2.xsd"/>
    <xsd:include schemaLocation="Enumerators\FishingActivityCategory_EU5.xsd"/>
    <xsd:include schemaLocation="Enumerators\FishingActivityCategory_EU6.xsd"/>
    <xsd:include schemaLocation="Enumerators\Harbour.xsd"/>
    <xsd:include schemaLocation="Enumerators\LandingCategory.xsd"/>
    <xsd:include schemaLocation="Enumerators\StatisticalRectangle.xsd"/>
    <xsd:include schemaLocation="Enumerators\SizeCategory.xsd"/>
    <xsd:include schemaLocation="Enumerators\SizeCategoryScale.xsd"/>
    <xsd:include schemaLocation="Enumerators\Species.xsd"/>
    <xsd:include schemaLocation="Enumerators\SubPolygon.xsd"/>
    <xsd:include schemaLocation="Enumerators\VesselLengthCategory.xsd"/>
    <xsd:include schemaLocation="Enumerators\Year.xsd"/>
    <xsd:element name="FishFrame" type="FishFrameType"/>
    <xsd:complexType name="FishFrameType">
        <xsd:sequence>
            <xsd:element name="CL" type="CLType"/>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CLType">
        <xsd:sequence>
            <xsd:element name="CL_Record" type="CL_RecordType" maxOccurs="unbounded"/>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CL_RecordType">
        <xsd:sequence>
            <xsd:element name="UnallocatedCatchWeight" type="tCatchWeight"/>
            <xsd:element name="AreaMisreportedCatchWeight" type="tCatchWeight"/>
            <xsd:element name="OfficialLandingWeight" type="tLandingWeight"/>
            <xsd:element name="LandingsMultiplier" type="tLandingMultiplier" minOccurs="0"/>
            <xsd:element name="OfficialLandingsValue" type="tLandingValue" minOccurs="0"/>
        </xsd:sequence>
        <xsd:attribute name="ln" type="xsd:int"/>
        <xsd:attribute name="LandingCountry" type="tCountry" use="required"/>
        <xsd:attribute name="FlagCountry" type="tCountry" use="required"/>
        <xsd:attribute name="Year" type="tYear" use="required"/>
        <xsd:attribute name="Quarter" type="tQuarter" use="required"/>
        <xsd:attribute name="Month" type="tMonth"/>
        <xsd:attribute name="Area" type="tArea" use="required"/>
        <xsd:attribute name="StatisticalRectangle" type="tStatisticalRectangle"/>
        <xsd:attribute name="SubPolygon" type="tSubPolygon"/>
        <xsd:attribute name="Species" type="tSpecies" use="required"/>
        <xsd:attribute name="LandingCategory" type="tLandingCategory" use="required"/>
        <xsd:attribute name="SizeCategoryScale" type="tSizeCategoryScale"/>
        <xsd:attribute name="SizeCategory" type="tSizeCategory"/>
        <xsd:attribute name="FishingActivityNational" type="tFishingActivityCategory_National2"/>
    </xsd:complexType>

```

```

        <xsd:attribute name="FishingActivityEULv15" type="tFishingActivityCategory_EU5"/>
        <xsd:attribute name="FishingActivityEULv16" type="tFishingActivityCategory_EU6"/>
        <xsd:attribute name="Harbour" type="tHarbour"/>
        <xsd:attribute name="VesselLengthCategory" type="tVesselLengthCategory" />
    </xsd:complexType>
    <xsd:simpleType name="tCatchWeight">
        <xsd:restriction base="xsd:long">
            <xsd:minInclusive value="-2000000000"/>
            <xsd:maxInclusive value="2000000000"/>
        </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="tLandingWeight">
        <xsd:restriction base="xsd:long">
            <xsd:minInclusive value="0"/>
            <xsd:maxInclusive value="2000000000"/>
        </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="tLandingMultiplier">
        <xsd:restriction base="xsd:double">
            <xsd:minInclusive value="0.5"/>
            <xsd:maxInclusive value="2.00"/>
        </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="tLandingValue">
        <xsd:restriction base="xsd:double">
            <xsd:minInclusive value="1"/>
            <xsd:maxInclusive value="100000000"/>
        </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="tQuarter">
        <xsd:restriction base="xsd:int">
            <xsd:minInclusive value="1"/>
            <xsd:maxInclusive value="4"/>
        </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="tMonth">
        <xsd:restriction base="xsd:int">
            <xsd:minInclusive value="1"/>
            <xsd:maxInclusive value="12"/>
        </xsd:restriction>
    </xsd:simpleType>
</xsd:schema>

```

2.4.3 Commercial fisheries effort data (CE)

```

<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified">
    <xsd:include schemaLocation="Enumerators\Area.xsd"/>
    <xsd:include schemaLocation="Enumerators\Country.xsd"/>
    <xsd:include schemaLocation="Enumerators\FishingActivityCategory_National2.xsd"/>
    <xsd:include schemaLocation="Enumerators\FishingActivityCategory_EU5.xsd"/>
    <xsd:include schemaLocation="Enumerators\FishingActivityCategory_EU6.xsd"/>
    <xsd:include schemaLocation="Enumerators\Harbour.xsd"/>
    <xsd:include schemaLocation="Enumerators\StatisticalRectangle.xsd"/>
    <xsd:include schemaLocation="Enumerators\SubPolygon.xsd"/>
    <xsd:include schemaLocation="Enumerators\VesselLengthCategory.xsd"/>
    <xsd:include schemaLocation="Enumerators\Year.xsd"/>
    <xsd:element name="FishFrame" type="FishFrameType"/>
    <xsd:complexType name="FishFrameType">
        <xsd:sequence>
            <xsd:element name="CE" type="CEType"/>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CEType">
        <xsd:sequence>
            <xsd:element name="CE_Record" type="CE_RecordType" maxOccurs="unbounded"/>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CE_RecordType">
        <xsd:sequence>
            <xsd:element name="VesselLengthCategory" type="tVesselLengthCategory"/>
            <xsd:element name="NumberOfTrips" type="tTrips"/>
            <xsd:element name="NumberOfHauls" type="tHauls" minOccurs="0"/>
            <xsd:element name="FishingTime" type="tFishingTime" minOccurs="0"/>
            <xsd:element name="KWDays" type="tKWDays" minOccurs="0"/>
        </xsd:sequence>
    </xsd:complexType>

```

```

        <xsd:element name="GTDays" type="tGTDays" minOccurs="0"/>
        <xsd:element name="DaysAtSea" type="tDaysAtSea" minOccurs="0"/>
    </xsd:sequence>
    <xsd:attribute name="ln" type="xsd:int"/>
    <xsd:attribute name="FlagCountry" type="tCountry" use="required"/>
    <xsd:attribute name="Year" type="tYear" use="required"/>
    <xsd:attribute name="Quarter" type="tQuarter" use="required"/>
    <xsd:attribute name="Month" type="tMonth"/>
    <xsd:attribute name="Area" type="tArea" use="required"/>
    <xsd:attribute name="StatisticalRectangle" type="tStatisticalRectangle"/>
    <xsd:attribute name="SubPolygon" type="tSubPolygon"/>
    <xsd:attribute name="FishingActivityNational" type="tFishingActivityCategory_National2"/>
    <xsd:attribute name="FishingActivityEULv15" type="tFishingActivityCategory_EU5"/>
    <xsd:attribute name="FishingActivityEULv16" type="tFishingActivityCategory_EU6"/>
    <xsd:attribute name="Harbour" type="tHarbour"/>
    <xsd:attribute name="VesselLengthCategory" type="tVesselLengthCategory"/>
</xsd:complexType>
<xsd:simpleType name="tTrips">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="50000"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tHauls">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="250000"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tFishingTime">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="1200000"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tKWDays">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="750000"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tGTDays">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="100000"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tDaysAtSea">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="1000"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tQuarter">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="4"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="tMonth">
    <xsd:restriction base="xsd:int">
        <xsd:minInclusive value="1"/>
        <xsd:maxInclusive value="12"/>
    </xsd:restriction>
</xsd:simpleType>
</xsd:schema>

```

3 References

- Anon. 2008. Common Open Source Tool for raising and estimating properties of statistical estimates derived from the Data Collection Regulation. European Commission service contract FISH/2006/15 lot 2. Interim report of the COST project.
- Biron, P. V., Permanente, K., and Malhotra, A. 2004. XML Schema Part 2: Datatypes Second Edition. W3C Recommendation 28 October 2004. <http://www.w3.org/TR/2004/REC-xmlschema-2-0041028/>.
- EC. 2006. Laying down common marketing standards for certain fishery products. Council Regulation (EC) No. 2406/1996.
- EC. 2008a. Concerning the establishment of a Community framework for the collection, management, and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy. Council Regulation (EC) No. 199/2008. 12 pp.
- EC. 2008b. Adopting a multi annual Community programme pursuant to Council Regulation (EC) No. 199/2008 establishing a Community framework for the collection, management, and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy. Council Regulation (EC) No. 949/2008. 52 pp.
- Fallside, D. C., and Walmsley, P. 2004. XML Schema Part 0: Primer Second Edition. W3C Recommendation 28 October 2004. <http://www.w3.org/TR/2004/REC-xmlschema-0-0041028/>.
- FishFrame 2008. FishFrame system version 5.0. World Wide Web electronic publication. <http://www.FishFrame.org>.
- Jansen, T., Degel, H., Håkansson, K., Egekvist, J., Dalskov, J., and Köster, F.W. 2008. FishFrame 5.0: A web-based data warehouse application for management, access, and integration of fisheries and stock assessment data. ICES Document CM 2008/R: 26. 138 pp.
- Thompson, H. S., Beech, D., Maloney, M., and Mendelsohn, N. 2004. XML Schema Part 1: Structures Second Edition. W3C Recommendation 28 October 2004. <http://www.w3.org/TR/2004/REC-xmlschema-1-0041028/>.
- W3C. 2008. Extensible Markup Language. <http://www.w3.org/XML/>.

Acknowledgements

The authors thank the FishFrame users and developers, members of the ICES expert groups, and the COST project group for contributing to the development of this format.

We give special thanks to the users from the Baltic Sea institutes, who have patiently revised their data-extraction scripts and re-uploaded their data to FishFrame each time we made a new version of the format.

Annex 1 CSV example files

The following are examples of CSV files.

Commercial fisheries sampling data (CS)

TR,M,DEN,DEN,2005,IN-CHAR,223,,,,4,1,,,,DEN,SelfSampling

HH,M,DEN,DEN,2005,IN-CHAR,223,1,V,H,Lan,Par,20060-81-4,,60,55.00000,17.00000,55.00000,17.00000,25,40G6,,,,Dem_trawl__o, ,OTB_DEF_901-19_0_0,90 ,0,

SL,M,DEN,DEN,2005,IN-CHAR,223,1,Gadus
Morhua,,LAN,HUC,EU,4,,25715,25715,cm

HL,M,DEN,DEN,2005,IN-CHAR,223,1,Gadus morhua,LAN,HUC,EU,4,,630,1

CA,M,DEN,DEN,2005,IN-CHAR,223,1,3,8,Gadus
morhua,F,LAN,HUC,EU,4,,25,40G6,,630,3,13,cm,OWR,-,,,2162,,,

Commercial fisheries landings data (CL)

CL,DEN,DEN,2005,1,1,25,39G5,,Gadus
morhua,HUC,EU,1,Garn_alm__o,,GNS_DEF_110-156_0_0,,12-
<18,5,10,68,1.0346634904,1062.8463104

CL,DEN,DEN,2005,1,1,25,39G5,,Gadus
morhua,HUC,EU,2,Garn_alm__o,,GNS_DEF_110-156_0_0,,12-<18,5,10,
3793,1.0477585496,49973.534186

Commercial fisheries effort data (CE)

CE,DEN,2005,1,1,25,39G5,,Garn_alm__o,,GNS_DEF_110-
156_0_0,,366,3384,3591,37823,11482,187

CE,DEN,2005,1,1,25,40G6,,Dem_trawl__o,,OTB_DEF_>=105_1_>=110,,568,694,10680,1
42393,78848,352

Annex 2 XML example files

The following are examples of XML files.

Commercial fisheries sampling data (CS)

```
<?xml version="1.0" encoding="utf-8"?>
<FishFrame>
  <CS>
    <TR ln="1" SamplingType="M" LandingCountry="TS1" FlagCountry="TS1" Year="2005"
Project="IN-CHAR" Trip="223">
      <VesselType>4</VesselType>
      <NumberOfHauls>1</NumberOfHauls>
      <SamplingCountry>TS1</SamplingCountry>
      <SamplingMethod>SelfSampling</SamplingMethod>
      <HH ln="2" Station="1">
        <FishingValidity>V</FishingValidity>
        <AggregationLevel>H</AggregationLevel>
        <CatchRegistration>Lan</CatchRegistration>
        <SpeciesRegistration>Par</SpeciesRegistration>
        <Date>2006-08-14</Date>
        <FishingDuration>60</FishingDuration>
        <LatDegreesStart>55.00000</LatDegreesStart>
        <LonDegreesStart>17.00000</LonDegreesStart>
        <LatDegreesStop>55.00000</LatDegreesStop>
        <LonDegreesStop>17.00000</LonDegreesStop>
        <Area>25</Area>
        <Rectangle>40G6</Rectangle>
        <FishingActivityNational>Dem_trawl__o</FishingActivityNational>
        <FishingActivityEULv16>OTB_DEF_90-119_0_0</FishingActivityEULv16>
        <MeshSize>70</MeshSize>
        <SelectionDevice>0</SelectionDevice>
        <SL ln="3" Species="Gadus morhua" CatchCategory="LAN" LandingCatego-
ry="HUC" SizeCategoryScale="EU" SizeCategory="4">
          <Weight>25715</Weight>
          <SubSampleWeight>25715</SubSampleWeight>
          <LengthCode>cm</LengthCode>
          <HL ln="4" LengthClass="630">
            <NoAtLength>1</NoAtLength>
          </HL>
        </SL>
      </HH>
      <CA ln="5" Station="1" Quarter="3" Month="8" Species="Gadus morhua" Sex="F"
CatchCategory="LAN" LandingCategory="HUC" SizeCategoryScale="EU" SizeCategory="4" Area="25"
StatisticalRectangle="40G6" LengthClass="630" Age="3" SingleFishId="13">
        <LengthCode>cm</LengthCode>
        <AgePlusGroup>-</AgePlusGroup>
        <Weight>2162</Weight>
      </CA>
    </TR>
  </CS>
</FishFrame>
```

Commercial fisheries landings data (CL)

```
<?xml version="1.0" encoding="utf-8"?>
<FishFrame>
  <CL>
    <CL_Record ln="1" LandingCountry="TS1" FlagCountry="TS1" Year="2005" Quarter="1"
Month="1" Area="25" StatisticalRectangle="39G5" Species="Gadus morhua" LandingCategory="HUC"
SizeCategoryScale="EU" SizeCategory="1" FishingActivityNational="Garn_alm__o"
FishingActivityEULv16="GNS_DEF_110-156_0_0" VesselLengthCategory="12-<18">
      <UnallocatedCatchWeight>5</UnallocatedCatchWeight>
      <AreaMisreportedCatchWeight>10</AreaMisreportedCatchWeight>
      <OfficialLandingWeight>68</OfficialLandingWeight>
      <LandingsMultiplier>1.0346634904</LandingsMultiplier>
      <OfficialLandingsValue>1062.8463104</OfficialLandingsValue>
    </CL_Record>
    <CL_Record ln="2" LandingCountry="TS1" FlagCountry="TS1" Year="2005" Quarter="1"
Month="1" Area="25" StatisticalRectangle="39G5" Species="Gadus morhua" LandingCategory="HUC"
```



```
SizeCategoryScale="EU" SizeCategory="2" FishingActivityNational="Garn_alm_o"
FishingActivityEULv16="GNS_DEF_110-156_0_0" VesselLengthCategory="12-18">
  <UnallocatedCatchWeight>5</UnallocatedCatchWeight>
  <AreaMisreportedCatchWeight>10</AreaMisreportedCatchWeight>
  <OfficialLandingWeight>3793</OfficialLandingWeight>
  <LandingsMultiplier>1.0477585496</LandingsMultiplier>
  <OfficialLandingsValue>49973.534186</OfficialLandingsValue>
</CL_Record>
</CL>
```

Commercial fisheries effort data (CE)

```
<?xml version="1.0" encoding="utf-8"?>
<FishFrame>
  <CE>
    <CE_Record ln="1" FlagCountry="TS1" Year="2005" Quarter="1" Month="1" Area="25"
    StatisticalRectangle="39G5" FishingActivityNational="Garn_alm_o" FishingActivityEULv16="GNS_DEF_110-
    156_0_0" VesselLengthCategory="12-18">
      <NumberOfTrips>366</NumberOfTrips>
      <NumberOfHauls>3384</NumberOfHauls>
      <FishingTime>3591</FishingTime>
      <KWDays>37823</KWDays>
      <GTDays>11482</GTDays>
      <DaysAtSea>187</DaysAtSea>
    </CE_Record>
    <CE_Record ln="2" FlagCountry="TS1" Year="2005" Quarter="1" Month="1" Area="25"
    StatisticalRectangle="40G6" FishingActivityNational="Dem_trawl_o"
    FishingActivityEULv16="OTB_DEF_&gt;=105_1_&gt;=110" VesselLengthCategory="12-18">
      <NumberOfTrips>568</NumberOfTrips>
      <NumberOfHauls>694</NumberOfHauls>
      <FishingTime>10680</FishingTime>
      <KWDays>142393</KWDays>
      <GTDays>78848</GTDays>
      <DaysAtSea>352</DaysAtSea>
    </CE_Record>
  </CE>
</FishFrame>
```

Annex 3 Header rows

Commercial fisheries sampling (CS)

Comma-separated long header rows

TR, Sampling_type, Landing_country, Vessel_flag_country, Year, Project, Trip_number, Vessel_length, Vessel_power, Vessel_size, Vessel_type, Harbour, No_SetsHauls_on_trip, Days_at_sea, Vessel_identifier, Sampling_country, Sampling_method

HH, Sampling_type, Landing_country, Vessel_flag_country, Year, Project, Trip_number, Station_number, Fishing_validity, Aggregation_level, Catch_registration, Species_registration, Date, Time, Fishing_duration, Pos_Start_Lat_dec, Pos_Start_Lon_dec, Pos_Stop_Lat_dec, Pos_Stop_Lon_dec, Area, Statistical_rectangle, Sub_polygon, Main_fishing_depth, Main_water_depth, FAC_National, FAC_EC_lvl5, FAC_EC_lvl6, Mesh_size, Selection_device, Mesh_size_selection_device

SL, Sampling_type, Landing_country, Vessel_flag_country, Year, Project, Trip_number, Station_number, Species, Sex, Catch_category, Landing_category, Comm_size_cat_scale, Comm_size_cat, Subsampling_category, Weight, Subsample_weight, Length_code

HL, Sampling_type, Landing_country, Vessel_flag_country, Year, Project, Trip_number, Station_number, Species, Sex, Catch_category, Landing_category, Comm_size_cat_scale, Comm_size_cat, Subsampling_category, Sex, Length_class, Number_at_length

CA, Sampling_type, Landing_country, Vessel_flag_country, Year, Project, Trip_number, Station_number, Quarter, Month, Species, Sex, Catch_category, Landing_category, Comm_size_cat_scale, Comm_size_cat, Stock, Area, Statistical_rectangle, Sub_polygon, Length_class, Age, Single_fish_number, Length_code, Aging_method, Age_plus_group, Otolith_weight, Otolith_side, Weight, Maturity_staging_method, Maturity_scale, Maturity_stage

Comma-separated short header rows

TR, Smpl_type, Lan_c, V_f_c, Year, Prjt, Trip_no, V_lng, V_pow, V_size, V_type, Harbour, No_SH_trp, Days_sea, V_Id, Smpl_c, Smpl_meth

HH, Smpl_type, Lan_c, V_f_c, Year, Prjt, Trip_no, St_no, F_val, Aggr_lvl, Catch_reg, Sp_reg, Date, Time, F_dur, Pos_Strt_Lat, Pos_Strt_Lon, Pos_Stop_Lat, Pos_Stop_Lon, Area, Rect, S_poly, M_f_depth, M_w_depth, FAC_Nat, FAC_5, FAC_6, Mesh_s, Sel_dev, Mesh_s_sel_dev

SL, Smpl_type, Lan_c, V_f_c, Year, Prjt, Trip_no, St_no, Species, Sex, Catch_cat, Lan_cat, C_size_cat_sc, C_size_cat, Ssmpl_cat, Weight, Ssmple_w, L_code

HL, Smpl_type, Lan_c, V_f_c, Year, Prjt, Trip_no, St_no, Species, Sex, Catch_cat, Lan_cat, C_size_cat_sc, C_size_cat, Ssmpl_cat, Sex, L_class, No_length

CA, Smpl_type, Lan_c, V_f_c, Year, Prjt, Trip_no, St_no, Q, Month, Species, Sex, Catch_cat, Lan_cat, C_size_cat_sc, C_size_cat, Stock, Area, Rect, S_poly, L_class, Age, S_fish_no, L_code, Age_method, Age_pl_gr, Oto_w, Oto_side, Weight, Mat_s_method, Mat_scale, Mat_stage

Commercial fisheries landings statistics (CL)

Comma-separated full header rows

CL, Landing_country, Vessel_flag_country, Year, Quarter, Month, Area, Statistical_Rectangle, Sub_polygon, Species, Landing_category, Comm_size_cat_scale, Comm_size_cat, FAC_National, FAC_EC_lvl5, FAC_EC_lvl6, Harbour, Vessel_length_cat, Unallocated_catch_weigh, Area_misreported_Catch_weight, Official_Landings_weight, Landings_multiplier, Official_landings_value

Comma-separated short header rows

CL, Lan_c, V_f_c, Year, Q, Month, Area, Rect, S_poly, Species, Lan_cat, C_size_cat_sc, C_size_cat, FAC_Nat, FAC_5, FAC_6, Harbour, V_l_cat, Unalloc_c_w, Area_mis_C_w, Off_Lan_w, Lan_multi, Off_lan_val

Commercial fisheries effort statistics (CE)

Comma-separated full header rows

CE, Vessel_flag_country, Year, Quarter, Month, Area, Statistical_Rectangle, Sub_polygon, FAC_National, FAC_EC_lvl5, FAC_EC_lvl6, Harbour, Vessel_length_cat, Number_of_trips, Number_of_SetsHauls, FishingSoaking_time, kW_days, GT_days, Days_at_sea

Comma-separated short header rows

CE, V_f_c, Year, Q, Month, Area, Rect, S_poly, FAC_Nat, FAC_5, FAC_6, Harbour, V_l_cat, No_trp, No_SH, FS_time, kW_days, GT_days, Days_sea

Annex 4 Code lists

Codes are listed in the following tables. When using code lists, be sure to check for updates (see Section 1.3).

Some code lists are described as “open”, which means new codes will be added so frequently that it makes no sense to include them in this report. An example is “project”. These code lists are to be created and maintained within the applications that utilize this format. Some of the open lists might be added in later versions, e.g. “harbour”.

Age-plus-group

| Code | Description |
|------|-------------------------|
| - | Not an “age-plus-group” |
| + | An “age-plus-group” |

Aging method

| Code | Description |
|-------|------------------------|
| OWR | Otolith (winter rings) |
| Scale | Scale |

Aggregation level

| Code | Description |
|------|-------------|
| H | Haul |
| T | Trip |

Area and statistical rectangle

Areas and statistical rectangles are defined according to the levels in Appendix I of the DCR (EC, 2008b). These are given in the table below, which shows the geographic stratification by regional fisheries organizations.

Geographic stratification by regional fisheries organizations.

| | ICES | NAFO | ICCAT | GFCM | CCAMLR | IOTC | OTHER |
|---------|---------------------------------|-------------------------------|----------------------|--|---|----------------------|----------------------|
| Level 1 | Area | Area | FAO area | Area, e.g. 37 (Mediterranean and Black Seas) | Area, e.g. 48 | FAO area | FAO area |
| Level 2 | Subarea, e.g. 27.IV (North Sea) | Subarea, e.g. 21.2 (Labrador) | FAO subarea | Subarea, e.g. 37.1 (Western) | Subarea, e.g. 48.1 (Antarctic peninsula) | FAO subarea | FAO subarea |
| Level 3 | Division, e.g. 27.IV c | Division, e.g. 21.2 H | Division 5° × 5° | Division, e.g. 37.1.2 (Gulf of Lyons) | Division, e.g. 58.5.1 (Kerguelen Islands) | Division 5° × 5° | Division 5° × 5° |
| Level 4 | Subdivision, e.g. 27.III.c.22 | - | - | GSA, e.g. GSA 1 | - | - | - |
| Level 5 | Rectangle 30' × 1° | Rectangle | Rectangle 1° × 1° | - | Rectangle 30' × 1° | Rectangle 1° × 1° | Rectangle 1° × 1° |

The areas, except for statistical rectangles and geographical subareas (GSAs), are FAO areas (see <http://www.fao.org/fishery/area/search>). This website also links to definitions of all the areas (see http://datacollection.jrc.ec.europa.eu/c/document_library/get_file?folderId=2502&name=DLFE-261.xls).

For tables of the GFCM (General Fishery Commission of the Mediterranean) Geographical Sub-Areas (GSAs) used in the Mediterranean and Black Seas consult <ftp://ftp.fao.org/FI/DOCUMENT/gfcm/web/GSAsTable.pdf>.

The ICES statistical rectangles can be found in a shapefile at http://www.ices.dk/aboutus/icesareas/ICES_rectangles.zip.

Sampling type

| Code | Description |
|------|--|
| M | Market sampling of known fishing trips |
| S | Sea sampling |
| V | Vendor |
| D | Market sampling of mixed trips (Day trips to market) |

Catch category

| Code | Description |
|------|-------------|
| Dis | Discards |
| Lan | Landings |

Catch registration

| Code | Description |
|------|-------------|
| All | All |
| Lan | Landings |
| Dis | Discards |
| Non | None |

Country

Refer to the FAO reference list (see <http://www.fao.org/countryprofiles/iso3list.asp>).

Commercial size category scale

| Code | Description |
|-----------------|---------------------------------------|
| EU | Official EU size sorting |
| English | National English sorting scale |
| <i>Nephrops</i> | Sorting of <i>Nephrops norvegicus</i> |

Commercial size category

| Code | Commercial size category scale | Description |
|------|--------------------------------|-------------|
| 1 | EU | EU scale: 1 |
| 2 | EU | EU scale: 2 |
| 3 | EU | EU scale: 3 |
| 4 | EU | EU scale: 4 |
| 5 | EU | EU scale: 5 |
| 6 | EU | EU scale: 6 |
| 7 | EU | EU scale: 7 |
| 0 | <i>Nephrops</i> | Whole |
| 1 | <i>Nephrops</i> | Tails only |

Fishing activity category National

This is an open code list. The string should not exceed ten characters.

Fishing activity category European level 5

Any level-5 code is uniquely defined by the gear type (level 4) and target assemblage (level 5). When coding for level 4, follow the 2–3 letter abbreviation system of the FAO International Standard Statistical Classification of Fishing Gear (ISSCFG; see <ftp://ftp.fao.org/FI/DOCUMENT/cwp/handbook/annex/AnnexM1fishinggear.pdf>). For level 5, follow the three-letter coding system in the table below.

| Code | Description |
|------|---------------------------------------|
| ANA | Anadromous species |
| CAT | Catadromous species |
| CEP | Cephalopods |
| CRU | Crustaceans |
| DWS | Deep-water species |
| DEF | Demersal fish |
| DES | Demersal species |
| FIF | Finfish |
| FWS | Freshwater species |
| GEL | Glass eel |
| LPF | Large pelagic fish |
| MOD | Mixed cephalopods and demersal fish |
| MCD | Mixed crustaceans and demersal fish |
| MPD | Mixed pelagic and demersal fish |
| MDD | Mixed demersal and deep-water species |
| MOL | Molluscs |
| SPF | Small pelagic fish |
| SLP | Small and large pelagic fish |

The coding system for a level-5 fishing activity category is:

GearType_TargetAssemblage.

The code always consists of 6–7 characters. Examples:

- DRB_MOL (= dredging for molluscs from a boat)
- GNS_DEF (= set gillnet targeting demersal fish)

- OTB_DEF (= bottom trawl [otter] targeting demersal fish)
- OTT_CRU (= otter twin trawl [multi trawl] targeting crustaceans)
- PS_SPF (= purse seining for small pelagic fish)

Fishing activity category European level 6

Any level-6 code is uniquely defined by the gear type (level 4), the target assemblage (level 5), and the mesh size and other selective devices (level 6). For coding purposes for level 6, follow the pattern

MeshSize(Range)_SelectiveDevice_MeshSize(Range)InSelectiveDevice

where MeshSize(Range) and MeshSize(Range)InSelectiveDevice is coded as either a range ("9-9") or a border value (">= 105").

The coding for SelectiveDevice is given below.

For gear that does not have a mesh size or selection device, use "-". For fisheries where there is no regulation on mesh size or mesh size in selection device, use "0".

Examples:

- DRB_MOL_>= 80_0_0 (= dredging for molluscs from a boat, mesh size equal to or larger than 80 mm, no regulation on selection device)
- GNS_DEF_>= 220_0_0 (= set gillnet targeting demersal fish, mesh size equal to or larger than 220 mm, no regulation on selection device)
- OTB_DEF_90-119_0_0 (=bottom trawl [otter] targeting demersal fish, mesh size between 90 and 119 mm, no regulation on selection device)
- OTT_CRU_>= 70_2_>= 35 (= otter twin trawl [multi trawl] targeting crustaceans), mesh size equal to or larger than 70 mm, grid with a mesh size of minimum 55 mm)
- LLS_DEF_-_-_- (= longline fishery for demersal fish)

Fishing validity

| Code | Description |
|------|---------------------------|
| I | Invalid fishing operation |
| V | Valid fishing operation |

Gear type

Use the FAO International Standard Statistical Classification of Fishing Gear (ISSCFG; see <ftp://ftp.fao.org/FI/DOCUMENT/cwp/handbook/annex/AnnexM1fishinggear.pdf>), as given in the table below.

| Code | Description |
|------|---|
| PS | Purse seine. Surrounding net with purse lines. |
| LA | Lampara seine. Surrounding net without purse lines. |
| SB | Beach seines |
| SV | Boat or vessel seines |
| SDN | Danish seines |
| SSC | Scottish seines |
| SPR | Pair seines |
| SX | Seine nets (not specified) |
| TBB | Bottom beam trawls |

| | |
|-----|---|
| OTB | Bottom otter trawls ¹ |
| PTB | Bottom pair trawls |
| TBN | Bottom <i>Nephrops</i> trawls |
| TBS | Bottom shrimp trawls |
| TB | Bottom trawls (not specified) |
| OTM | Midwater otter trawls ¹ |
| PTM | Midwater pair trawls |
| TMS | Midwater shrimp trawls |
| TM | Midwater trawls (not specified) |
| OTT | Otter twin trawls |
| OT | Otter trawls (not specified) |
| PT | Pair trawls (not specified) |
| TX | Other trawls (not specified) |
| DRB | Boat dredge |
| DRH | Hand dredge |
| LNP | Portable lift nets |
| LNB | Boat-operated lift nets |
| LNS | Shore-operated stationary lift nets |
| LN | Lift nets (not specified) |
| FCN | Cast nets |
| FG | Falling gear (not specified) |
| GNS | Set gillnets (anchored) |
| GND | Driftnets |
| GNC | Encircling gillnets |
| GNF | Fixed gillnets (on stakes) |
| GTR | Trammel nets |
| GTN | Combined gillnets-trammelnets |
| GEN | Gillnets and entangling nets (not specified) |
| GN | Gillnets (not specified) |
| FPN | Stationary uncovered poundnets |
| FPO | Pots |
| FYK | Fyke nets |
| FSN | Stownets |
| FWR | Barriers, fences, weirs, etc. |
| FAR | Aerial traps |
| FIX | Traps (not specified) |
| LHP | Handlines and pole-lines (hand-operated) ² |
| LHM | Handlines and pole-lines (mechanized) ² |
| LLS | Set longlines |
| LLD | Drifting longlines |
| LL | Longlines (not specified) |
| LTL | Trolling lines |
| LX | Hooks and lines (not specified) ³ |
| HAR | Harpoons |
| HMP | Pumps |
| HMD | Mechanized dredges |
| HMX | Harvesting machines (not specified) |
| MIS | Miscellaneous gear ⁴ |
| RG | Recreational fishing gear |

¹Fisheries agencies may indicate side and stern bottom trawls as OTB-1 and OTB-2, and side and stern midwater trawls as OTM-1 and OTM-2.

²Including jigging lines.

³Code LDV for dory-operated line gears will be maintained for historical data purposes.

⁴Includes: hand and landing nets; drive-in nets; gathering by hand with simple hand implements, with or without diving equipment; poisons and explosives, trained animals; and electrical fishing.

Harbour

This is an open code list. The string should not exceed ten characters in length.

Landing category

| Code | Description |
|------|-------------------|
| HUC | Human consumption |
| IND | Industry |

Length code

| Code | Description |
|-------|---|
| scm | Semi-centimetre (5×10^{-3} m) |
| cm | Centimetre |
| mm | Millimetres |
| 25 mm | 2.5 centimetres (2.5×10^{-2} m) |
| 5 cm | 5 centimetres |

Maturity scale

| Code | Description |
|------|------------------|
| 1-4 | The 1-4 scale |
| 1-5 | The 1-5 scale |
| 1-8 | The 1-8 scale |
| Cru | Crustacean scale |

Maturity stage

| Code | Maturity scale | Description |
|------|----------------|-------------------------|
| 1 | 1-4 | - |
| 2 | 1-4 | - |
| 3 | 1-4 | - |
| 4 | 1-4 | - |
| 1 | 1-5 | - |
| 2 | 1-5 | - |
| 3 | 1-5 | - |
| 4 | 1-5 | - |
| 5 | 1-5 | - |
| 1 | 1-8 | - |
| 2 | 1-8 | - |
| 3 | 1-8 | - |
| 4 | 1-8 | - |
| 5 | 1-8 | - |
| 6 | 1-8 | - |
| 7 | 1-8 | - |
| 8 | 1-8 | - |
| 0 | Cru | Berried, i.e. with eggs |

| | | |
|---|-----|--------------------------------|
| 1 | Cru | Not berried, i.e. without eggs |
|---|-----|--------------------------------|

Maturity staging method

| Code | Description |
|--------|--------------|
| Visual | Visual |
| Hist | Histological |

Otolith side

| Code | Description |
|------|-------------|
| R | Right |
| L | Left |

Project

This is an open code list. The string should not exceed ten characters in length.

Sampling method

| Code | Description |
|--------------|----------------------|
| Observer | Sampling by observer |
| SelfSampling | Sampling by fishers |

Selection device

| Code | Description |
|------|----------------------|
| 1 | Exit window or panel |
| 2 | Grid |
| 0 | Not present |

Sex

| Code | Description |
|------|-------------------------------------|
| F | Female |
| M | Male |
| T | Transitional (during sex change) |

Species

Only the FAO reference is valid (see ftp://ftp.fao.org/FI/stat/data/ASFIS_sp.zip).

Few species have not defined the stock(s) based on area definitions recognized by FishFrame (e.g. Gulf of Riga Herring). In these cases, a suffix is added to the scientific species name. The following species have a suffix added:

| STOCK NAME | SPECIES NAME |
|----------------------|----------------------------|
| Gulf of Riga Herring | <i>Clupea harengus-gor</i> |

Species registration

| Code | Description |
|------|-------------|
| All | All |
| Par | Partial |
| Non | None |

Stock

Codes of stocks are adopted by RFMOs (Regional Fishstock Management Organizations) for assessment purposes. The codes for stocks assessed in ICES are listed below.

| Code | Description |
|--------------|--|
| anb-7b-k&a-b | Anglerfish (<i>Lophius budegassa</i>) in Divisions VIIb–k and VIIIa and b |
| anb-8c9a | Anglerfish (<i>Lophius budegassa</i>) in Divisions VIIIc and IXa |
| ane-bisc | Anchovy in Subarea VIII (Bay of Biscay) |
| ane-pore | Anchovy in Division IXa |
| ang-iwi | Anglerfish (<i>Lophius piscatorius</i>) in Division IIIA and Subareas IV (North Sea) and VI (west of Scotland and Rockall) |
| anp-7b-k&a-b | Anglerfish (<i>Lophius piscatorius</i>) in Divisions VIIb–k and VIIIa and b |
| anp-8c9a | Anglerfish (<i>Lophius piscatorius</i>) in Divisions VIIIc and IXa |
| bli-comb | Blue ling (<i>Molva dypterygia</i>) |
| bll-2232 | Brill in Subdivisions 22–32 |
| cap-bars | Barents Sea capelin (Subareas I and II, excluding Division IIa west of 5°W) |
| cap-icel | Capelin in Iceland–East Greenland–Jan Mayen Area Division IIa west of 5°W) |
| cod-2224 | Cod in Subdivisions 22–24 |
| cod-2532 | Cod in Subdivisions 25–32 |
| cod-3a47d | Cod in (Skagerrak), Subarea IV, and Division VIId. |
| cod-7bc | Cod in the West of Ireland (Divisions VIIb and c) |
| cod-7e-k | Cod in Divisions VIIe–k |
| cod-arct | North-East Arctic cod (Subareas I and II) |
| cod-coas | Norwegian coastal cod |
| cod-ech | Cod in the English Channel (Divisions VIIe–h) |
| cod-ewgr | Greenland cod (ICES Subarea XIV and NAFO Subarea 1) |
| cod-farb | Faroe Bank cod (Subdivision Vb2) |
| cod-farp | Faroe Plateau cod (Subdivision Vb1) |
| cod-iceg | Icelandic cod (Division Va) |
| cod-iris | Cod in Division VIIa (Irish Sea) |
| cod-kat | Cod in the Kattegat (part of Division IIIa) |
| cod-rock | Cod in Division VIb (Rockall) |
| cod-scow | Cod in Division VIa (West of Scotland) |
| dab-2232 | Dab in Subdivisions 22–32 |
| fle-2232 | Flounder in Subdivisions 22–32 |
| fle-2425 | Flounder in Subdivisions 24 and 25 |
| ghl-arct | Greenland Halibut (Subareas I and II) |
| ghl-gm | Greenland halibut in Subareas V and XIV |
| had-3a4 | Haddock in Division IIIa and Subarea IV (North Sea) |
| had-7b-k | Haddock in Divisions VIIb–k |
| had-arct | North-East Arctic haddock (Subareas I and II) |
| had-faro | Faroe haddock (Division Vb) |
| had-iceg | Icelandic haddock (Division Va) |
| had-iris | Haddock in Division VIIa (Irish Sea) |

| | |
|------------------------|---|
| had-rock | Haddock in Division VIb (Rockall) |
| had-scow | Haddock in Division VIa (West of Scotland) |
| her-25-2932 | Herring in Subdivisions 25-29 and 32 minus Gulf of Riga |
| her-30 | Herring in Subdivision 30 (Bothnian Sea) |
| her-31 | Herring in Subdivision 31 (Bothnian Bay) |
| 3a22-24 | Herring in Division IIIa and Subdivisions 22-24 (spring spawners) |
| her-43a7d | Herring in Divisions VIII and IIIa (autumn spawners) |
| her-clyd | Clyde herring (Division VIa) |
| her-cs | Herring South and SouthWest of Ireland (New) |
| her-irls | Celtic Sea and Division VIIj herring |
| her-irlw | Herring in Divisions VIa (South) and VIb and c |
| her-nirs | Irish Sea herring (Division VIIa) |
| her-noss | Norwegian spring-spawning herring |
| her-riga | Herring in the Gulf of Riga |
| her-vasu | Icelandic summer-spawning herring (Division Va) |
| her-vian | Herring in Division VIa (North) |
| hke-nrtn | Hake - northern stock (Division IIIa, Subareas IV, VI, and VII, and Divisions VIIIa and b) |
| hke-soth | Hake - southern stock (Divisions VIIIc and IXa) |
| hom-nrtn | North Sea horse mackerel (Divisions IIIa-e, IVb and c, and VIId) |
| hom-soth | Southern horse mackerel (Divisions VIIIc and IXa) |
| hom-west | Western horse mackerel (Divisions IIa, IVa, Vb, VIa, VIIa-c, e-k, and VIIIa, b, d, and e) |
| lin-comb | Ling (<i>Molva molva</i>) /?ADD- combined stock |
| mac-nea | Mackerel (combined Southern, Western and North Sea spawning component) /?ICES LIST GIVES: Mackerel (combined North-East Atlantic) |
| mac-nsea | Mackerel in the North Sea Area (Divisions IIa and IIIa, and Subarea IV) |
| mac-soth | Mackerel in the Southern Area (Divisions VIIIc and IXa) |
| meg-scrk | Megrim in Subarea VI (west of Scotland and Rockall) |
| mgb-8c9a | Megrim (<i>Lepidorhombus boschii</i>) in Divisions VIIIc and IXa |
| mgw-78 /?mgw-78abde | Megrim (<i>Lepidorhombus whiffiagonis</i>) in Subarea VII and Divisions VIIIa, b, d, and e |
| mgw-8c9a | Megrim (<i>Lepidorhombus whiffiagonis</i>) in Divisions VIIIc and IXa |
| nop-nsea | Norway pout in Subarea IV and Division IIIa |
| nop-scow | Norway pout in Division VIa (West of Scotland) |
| pan-arct | Northern prawn (<i>Pandalus borealis</i>) |
| pan-barn | <i>Pandalus borealis</i> in the Barents Sea (Subarea I) |
| pan-fam | <i>Pandalus borealis</i> in Division IVb (Farn Deep) |
| pan-flad | <i>Pandalus borealis</i> in Division IVa (Fladen Ground) |
| pan-sknd | <i>Pandalus borealis</i> in Divisions IIIa and IVa East (Skagerrak and Norwegian Deep) |
| ple-2232 | Plaice in Subdivisions 22-32 |
| ple-7bc | Plaice in the West of Ireland (Divisions VIIb and c) |
| ple-7hk | Plaice in the Southwest of Ireland (Divisions VIIh and k) |
| ple-celt | Celtic Sea plaice (Divisions VIIf and g) |
| ple-eche | Plaice in Division VIId (Eastern English Channel) |
| ple-echw | Plaice in Division VIIe (Western English Channel) |
| ple-iris | Plaice in Division VIIa (Irish Sea) |
| ple-kask | Plaice in Division IIIa (Kattegat-Skagerrak) |
| ple-kat | Plaice in the Kattegat (part of Division IIIa) |
| ple-nsea | Plaice in Subarea IV (North Sea) |
| sai-3a46 | Saithe in Division IIIa (Skagerrak) and Subareas IV and VI |
| sai-arct | North-East Arctic saithe (Subareas I and II) |
| sai-faro | Faroe saithe (Division Vb) |
| sai-icel | Icelandic saithe (Division Va) |

| | |
|------------|---|
| sal-2431 | Salmon in the Main Basin and Gulf of Bothnia (Subdivisions 24–3 1) |
| sal-32 | Salmon in the Gulf of Finland (Subdivision 32) |
| san-3a4 | Sandeel in Division IIIa and Subarea IV |
| san-kask | Sandeel in Division IIIa (Kattegat and Skagerrak) |
| san-nsea | Sandeel in Subarea IV |
| san-scow | Sandeel in Division VIa |
| san-shet | Sandeel in the Shetland Area |
| sar-soth | Sardine in Divisions VIIIc and IXa |
| smn-5614 | Deep-sea <i>Sebastes mentella</i> in Subareas V, VI, and XIV |
| smn-arct | <i>Sebastes mentella</i> in Subareas I and II |
| smn-ocn | Pelagic fishery for <i>Sebastes mentella</i> in the Irminger Sea |
| smr-561214 | <i>Sebastes marinus</i> in Subareas V, VI, XII, and XIV |
| smr-arct | <i>Sebastes marinus</i> in Subareas I and II |
| smr-gm | <i>Sebastes marinus</i> in Subareas V, VI, XII, and XIV |
| sol_7bc | Sole in the West of Ireland (Divisions VIIb and c) |
| sol-7hk | Sole in the Southwest of Ireland (Divisions VIIh and k) |
| sol-bisc | Sole in Divisions VIIIa and b (Bay of Biscay) |
| sol-eche | Sole in Division VIId (Eastern English Channel) |
| sol-echw | Sole in Division VIIe (Western English Channel) |
| sol-iris | Sole in Division VIIa (Irish Sea) |
| sol-kask | Sole in Division IIIa |
| sol-nsea | Sole in Subarea IV (North Sea) |
| spr-2232 | Sprat in Subdivisions 22–32 |
| spr-ech | Sprat in Divisions VIId and e |
| spr-kask | Sprat in Division IIIa |
| spr-nsea | Sprat in the North Sea (Subarea IV) |
| trt-bal | Sea trout in Subdivisions 22–32 |
| tur-2232 | Turbot in Subdivisions 22–32 |
| tus-comb | Tusk (<i>Brosme brosme</i>) |
| whb-comb | Blue whiting – combined stock (Subareas I–IX, XII, and XIV) |
| whg-47d | Whiting in Subarea IV (North Sea) and Division VIId (Eastern English Channel) |
| whg-7e-k | Whiting in Divisions VIIe–k |
| whg-iris | Whiting in Division VIIa (Irish Sea) |
| whg-kask | Whiting in Division IIIa (Kattegat-Skagerrak) |
| whg-rock | Whiting in Division VIb (Rockall) |
| whg-scow | Whiting in Division VIa (West of Scotland) |
| whi-river | Whitefish (river spawning) |
| whi-sea | Whitefish (sea spawning) |

Subpolygon

This is an open code list. The string should not exceed ten characters in length.

Subsampling category

| Code | Description |
|--------|-------------|
| Small | Small |
| Medium | Medium |
| Large | Large |

Vessel length category

The vessels are grouped by their LOA (length overall). The grouping follows EC (2008b). Note that, up to 12 m, there are two incompatible classifications: a 6 m separation, used in the Mediterranean and Black Seas, and a 10 m separation, used in other areas.

| Code | Description |
|--------|-----------------------|
| <10 | LOA: 0-10 m |
| 10-<12 | LOA: 10-12 m |
| <6 | LOA: 0-6 m |
| 6-<12 | LOA: 6-12 m |
| 12-<18 | LOA: 12-18 m |
| 18-<24 | LOA: 18-24 m |
| 24-<40 | LOA: 24-40 m |
| >40 | LOA: 40 m and greater |

Vessel type

| Code | Description |
|------|------------------|
| 1 | Stern trawler |
| 2 | Sea side trawler |
| 3 | Gill-netter |
| 4 | Other boats |

Author contact information

Teunis Jansen, Editor/Author

Section of Population and Ecosystem Dynamics
 DTU AQUA – National Institute of Aquatic Resources
 Technical University of Denmark
 Charlottenlund Castle
 DK 2920 Charlottenlund
 +45 30 66 78 40
 tej@aqua.dtu.dk

Henrik Degel, Author

Section for Monitoring
 DTU AQUA – National Institute of Aquatic Resources
 Technical University of Denmark
 Charlottenlund Castle
 DK 2920 Charlottenlund
 +45 30 66 78 40
 hd@aqua.dtu.dk

Joel Vigneau, Author

Laboratoire "Ressources Halieutiques"
 Ifremer
 14 520 Port-en-Bessin
 +332 31 51 56 41
 Joel.Vigneau@ifremer.fr

Ernesto Jardim, Author

Department of Marine Resources
 IPIMAR
 Instituto Nacional de Recursos Biológicos
 Av. Brasília
 1449-006 Lisboa
 +351 213 027 000
ernesto@ipimar.pt

Document log

| VERSION | DATE | INITIAL | DESCRIPTION |
|---------|------------|----------------|--|
| 1 | 2009 06 | TJ, HD, JV, EJ | Written the report |
| 2 | 2012 01 12 | HD | Updates |
| 3 | 2013 06 03 | HKN | Update; Trip code, Vessel length, Vessel power, Vessel size, Number of sets/hauls on trip, Mesh size |