

THE SECOND WORKSHOP ON LISTS OF COMMERCIAL FISH AND SHELLFISH SPECIES FOR REPORTING OF MSFD D3 (WKD3LISTS2)

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i Executive summary

WKD3Lists2 created lists of regionally relevant commercial fish and shellfish species (and higher order taxa) for the use of Article 8 reporting by EU member states under Descriptor 3 of the Marine Strategy Framework Directive (MSFD). The regional taxa lists were based on landings data from the Fisheries Dependent Information data base (FDI) provided by EU member states and compiled by the Joint Research Centre (JRC).

The taxonomy of landings data was consolidated by regional experts and the consolidated data were combined to obtain absolute and proportional landing weights and values for each (sub)region, which were used to apply dual (weight and value) selection thresholds to compile (sub)regional D3-taxa-lists.

Regional D3-taxa-lists were produced for two MSFD regions (Baltic Sea & Black Sea) and eight MSFD subregions: The Greater North Sea, Celtic Seas, the Bay of Biscay and Iberian Coast, Macaronesia, Western Mediterranean, the Ionian Sea & Central Mediterranean, the Adriatic Sea and the Aegean-Levantine Sea.

To exclude taxa with very low landing weights or value from the final lists, two types of thresholds (cumulative and minimum) with differing cut-off values were evaluated (90%, 95%, 98% and 99% for cumulative and 0.1% and 1% for minimum thresholds). Depending on the cut-off value, the number of taxa included varied substantially and in most (sub)regions the application of thresholds reduced the initial number of taxa by more than 50%.

WKD3Lists2 did not recommend any threshold type or cut-off value to be applied generically in all (sub)regions, but identified trade-offs between inclusiveness and parsimony of relevant content i.e. higher cut-off values will lead to longer lists including many taxa with relatively low landings weights/values. In some (sub)regions, thresholds with lower cut-off values (90% to 95%) were considered feasible by regional experts (Mediterranean subregions, Bay of Biscay and Iberian Coast, Macaronesia), whereas in other MSFD (sub)regions cut-off values in the range of 98-99% were considered as appropriate (Baltic Sea, Greater North Sea, Celtic Seas).

The regional D3-taxa lists by WKD3Lists2 were created without considering the availability of data or assessments i.e. many species are included, for which no assessment information is available. WKD3Lists2 decided on this approach because a representative selection of commercially targeted taxa was considered to indicate knowledge and data gaps in current data collection and assessment schemes.

Regional species lists shall be used by EU member states for the national reporting of D3. Stocks and species from the regional lists shall be considered by member states, and additional stocks/species can be added where appropriate (e.g. those stocks/species of national or local importance that do not appear on the regional lists). x

WKD3Lists2 discussed and compiled recommendations on how Member States can complement the regional lists of D3-taxa. A key recommendation is to maintain taxa reported in 2018 under D3, even if they are not part of the regional D3-taxa list for 2024. Wherever possible, Member States should report on stock level. WKD3Lists2 also discussed linkages between D1 and D3-reporting of commercial taxa.

ii Expert group information

Expert group name	The Second Workshop on Lists of Commercial Fish and Shellfish species for reporting of MSFD D3 (WKD3Lists2)
Expert group cycle	1/1
Year cycle started	2022
Reporting year in cycle	1/1
Chair	W. Nikolaus Probst, Germany
Meeting venue(s) and dates	30 May- 2 June 2022, Copenhagen, Denmark and online (32 participants)

1 Introduction

1.1 Background of the workshop

The goal of the EU Marine Strategy Framework Directive (MSFD) is to protect the marine ecosystems and biodiversity of EU waters. Member States are required to assess the environmental status of eleven qualitative descriptors to achieve a good environmental status (GES).

For Descriptor 3, commercially exploited fish and shellfish species, the Commission Decision EU/2017/848 states that “populations of all commercially-exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock”. To assess the progress towards this target, member states (MS) shall “establish a list of commercially-exploited species for application of the criteria in each assessment area (...) through regional or subregional cooperation” (EU, 2017).

ICES reviewed in a preceding workshop (WKD3Lists) the approaches that member states have taken in the national 2018 MSFD assessments (ICES 2021). The subsequent ICES advice (ICES 2020) identified four different possible approaches of how D3 species lists could be prepared (Table 1.1) and advised that one of these is should be selected by the EC to be used as a standard by all Member States in their 2024 reporting on D3 under Article 17 of the MSFD (see Table 1.1 and ICES, 2020). Furthermore, ICES advised that the selection of stocks and species to be reported should be done at a regional rather than at a national scale. The national reports by MS should therefore be based on a regional D3 stock/species list to which member states may add stocks or species of national relevance.

Furthermore, ICES advised that the regional D3 lists should represent a high percentage (>90%) of landings by weight and - if possible - by commercial value.

The ICES advice 2020 was adopted by the EU MSFD working group WGGES in 2021 and all EU Member States supported approach 1 of the 2020 ICES advice to become the standard for compiling D3 stocks/species lists. Subsequently, the EC (DGENV) requested ICES to establish regionally and sub-regionally-agreed lists of D3 species following approach 1 from the previous ICES advice. These lists will serve for the Member States to report on Descriptor 3 and for updating the ‘reference list D3’ maintained by the EEA.

ICES further advised that MS should be free to add further species and stocks to the (sub)regional D3 species lists as considered fit. However, clear guidance on the criteria by which species and stocks should be added was not provided.

As a result of the aforementioned processes, ICES WKD3Lists2 was tasked with compiling (sub)regional D3 species lists based on landings data and providing guidance on how member states should add further species and stocks to the regional lists.

In the following sections of this report the D3-stock/species lists will be referred to as ‘D3-taxa lists’, as species is the main but not the only taxonomical unit comprising these lists. For many species, several stocks exist within an MSFD (sub)region, and other taxa are only defined to the

genus level (e.g. *Loligo* spp.), hence the here applied terminology was considered as more adequate.

Table 1.1 General characteristics of the different possible approaches to species/stocks selection when reporting on MSFD D3. Characteristics, including coordination with existing Common Fisheries Policy (CFP) data flows and operation, are described on the basis that the same standard approach is used by all EU Member States in their 2024 Article 17 MSFD reporting (ICES 2020)

	Approach 1	Approach 2	Approach 3	Approach 4
Characteristics	MSs use all species/stocks referred to in <i>Specifications and standardised methods for monitoring and assessment</i> of Decision 2017/848 for the MSFD (sub)region within which the MRU* is located.	Same as Approach 1 , but include only species/stocks caught in the MS's MRU and landed by the reporting MS.	Same as Approach 1 , but include only species/stocks caught in the (sub)region and landed by the reporting MS.	Same as Approach 1 , but include only species/stocks caught in the MS's MRU and landed by any MS.
Availability of CFP-derived data to select stocks at the spatial scale and alignment of the selected approach.	Data available from the JRC/STECF FDI Database are at reasonable approximation for the Atlantic, and the Baltic and Mediterranean seas.	Catch and landings data are available nationally.	Data available from the JFC/STECF FDI Database are at reasonable approximation for the Atlantic, and the Baltic and Mediterranean seas.	Catch and landings data are only available nationally. Requires that extended reporting mechanisms between MSs are established.
Potential for commercial stocks to be omitted.	Low	High – all stocks caught in the reporting MSs MRU by other MSs will be omitted.	Low – all stocks caught by other MSs in a reporting MSs MRU will be reported by the catching MS.	Low – but sufficient data only available if an inter-MS reporting mechanism is established.
Facilitates EU- and/or MRU-wide coordination (Article 6), including the implementation of the Article 13 programme of measures using the Common Fisheries Policy.	High – Comprehensive and simple to implement.	Low – stocks caught by other MSs in the reporting MS's MRU will not be reported.	Medium – MSs will report only on stocks caught by themselves and will be responsible to report on stocks they catch in the MRUs of other MSs. Requires the reporting MS to be familiar with the MRUs of all other MSs.	Low – the reporting MS relies on other MSs to provide them with data on catches and landings consistent with the reporting MS's MRUs.

* Marine reporting units (MRUs) are defined by individual MSs and can be of varying sizes, including region, subregion, EEZ, etc.

2 Approach & work flow

2.1 Preparatory work

In advance of the workshop, initial landings lists for each of the ten MSFD (sub)regions were created using data from European Marine Observation and Data Network (EMODnet), the Food & Agriculture Organisation of the United Nations (FAO) and the Joint Research Centre (JRC) and the Scientific, Technical and Economic Committee for Fisheries (STECF) of the European Commission.

WKD3Lists 2 considered two MSFD regions i.e. the Baltic Sea and the Black Sea and eight MSFD sub-regions i.e. the Greater North Sea including the Kattegat and the English Channel, the Celtic Seas, the Bay of Biscay & the Iberian Coast, Macaronesia, the Western Mediterranean Sea, the Ionian Sea and the Central Mediterranean Sea, the Aegean-Levantine Sea, the Adriatic Sea (Figure 2.1).

In the following report, the text refers simultaneously to regions and subregions according to the MSFD by the term “(sub)region”.

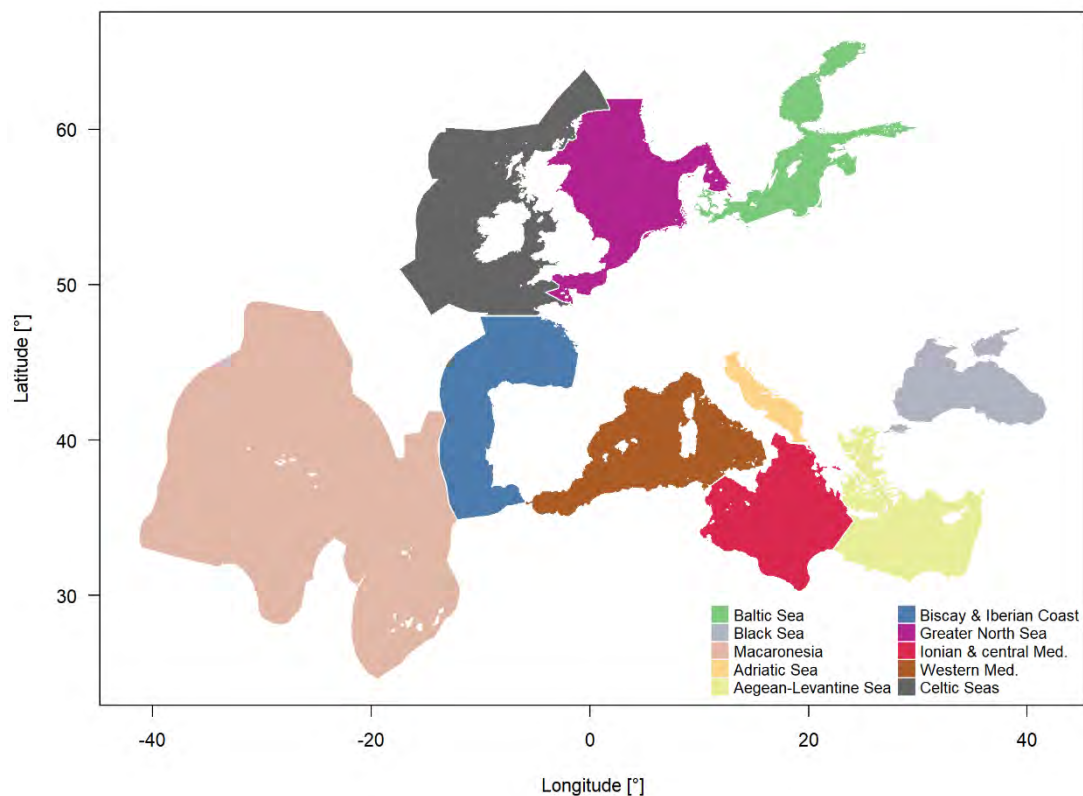


Figure 2.1. Overview over MSFD sub-regions (Greater North Sea, Celtic Seas, Bay of Biscay & Iberian Coast, Macaronesia, Western Mediterranean, Central Mediterranean, Ionian Sea and Central Mediterranean, Adriatic Sea & Aegean-Levantine Sea) and regions (Baltic Sea & Black Sea) addressed by WKD3Lists2.

2.1.1 Data sources

The D3-taxa lists by WKD3Lists2 are based on landings data from the STECF/JRC Fisheries Dependent Information data base (FDI). At the time of the workshop, this data base was considered as the most comprehensive dataset based on landings within the MSFD (sub)regions. The lists that are shown in this report are based solely on this landing information and do not consider any further legal requirements that may apply according to EU/2017/848.

Data from European fisheries landings were downloaded from the STECF – JRC data portal on 22.04.2022 (https://stecf.jrc.ec.europa.eu/documents/43805/1593959/2021_FDI_landings.zip/aadb093a-06be-4d62-97a2-ee4e208f898f).

Shapefiles of FAO areas were downloaded from the FAO website on 25.03.2022 (https://www.fao.org/fishery/geoserver/fifao/ows?service=WFS&request=GetFeature&version=1.0.0&typeName=fifao:FAO_AREAS_CWP&outputFormat=SHAPE-ZIP).

Shapefiles of geographical subareas of the Mediterranean Sea (GSA) were downloaded also from the FAO website on 23.05.2022 (https://www.fao.org/fileadmin/user_upload/faoweb/GFCM/Maps/GSAs_simplified.zip).

Shapefiles of MSFD (sub)regions were downloaded from EMODnet Human Activities data base on 09.03.2022 (<https://www.emodnet-humanactivities.eu/download-data.php>).

The list of FAO 3-letter alpha-codes was downloaded from the FAO website on 23.05.2022 (https://www.fao.org/fishery/static/ASFIS/ASFIS_sp.zip).

2.1.2 Data treatment

Initial landing lists were prepared in advance of the workshop according to the following protocol. The R-script that was used for this protocol can be found in Annex 3.

FAO subdivisions and GSA areas (henceforth referred to as 'FAO areas') were overlaid with MSFD (sub)regions to identify which FAO areas should be designated to which MSFD (sub)region. Because the overlap between FAO areas and MSFD (sub)regions is not always congruent, some FAO areas were designated to several MSFD (sub)regions. Further, if the overlap of FAO areas and MSFD (sub)region was small i.e. the MSFD (sub)region overlapped with less than ~ 10 % of the FAO area, the according FAO area was excluded. For example, in the Celtic Seas FAO division 27.2.a was not included, accordingly FAO subarea 34.1 was not included in the MSFD sub-region Bay of Biscay & Iberian Coast (see Annex 4).

The FDI data were provided by year and therefore were pooled for the years 2015 – 2020 to extract landing weights and values in each MSFD (sub)region. The extracted landings were summed across years to obtain the total landing weights and values by taxon in each MSFD (sub)region. Data was aggregated by taxon (including species, families and higher orders) because not all information in the FDI data was resolved to the species level.

In the case of Adriatic Sea, only data referred to 2019-2020 were considered, since the FDI dataset appeared to contain some inconsistencies in the unit of measure and it was considered more appropriate to focus on most recent (a reliable) data.

Proportional landings by weight and value were calculated in each MSFD (sub)region and rounded to the third decimal. To reduce the effort of taxonomic consolidation by regional experts during the course of the workshop, landings data which constituted zero weight and zero value

after rounding were removed from the initial list. Thereby taxa caught in very low quantities and with low value (less than 0.001 % of the total) were excluded from the initial FDI landings lists.

Unfortunately, landings data from 2021 were not yet available at the workshop (June 2022), so WKD3Lists2 agreed to use the most recent available landings data from 2015 – 2020. Further, data on full catches (landings and discards) were not fully accessible to WKD3Lists2 due to confidentiality issues, thus WKD3Lists2 was restricted to use landings data only provided by JRC under the aforementioned link.

2.2 Workshop approach

Each (sub)region group was provided with the processed FDI data for their (sub)region for 2015-2020, including species name, weight of landings, value of landings, proportion of landings by weight, and proportion of landings by value (see section 2.1.2).

(Sub)regional groups analysed the landings data and took various steps to clean the data for preparing initial lists. The steps were:

- Taxonomy – splitting generic taxa, grouping species, correction of species nomenclature, removal of non-indigenous species and algae, at least for the species retained at the 99% threshold of both landings weight and value;
- Recalculation of landings weights and values, and proportions;
- Preparation of species lists for various thresholds by weight and value;
- Evaluation of different thresholds and cut-off values

2.2.1 Taxonomic clean-ups

The FDI landings data codes species with a 3-letter alpha code. This code was transferred to Latin and common English species names using the FAO 3-letter alpha code list (downloaded on 23.05.2022, see section '2.1 Data sources'). However, the FDI landings data contained many taxa which were not resolved to species level, but included family, genus or higher-order taxa.

Further, family- and species taxa occurred in the data simultaneously, e.g. *Anarhichas spp.* and *Anarhichas lupus* or *Rajiformes* and *Raja clavata* and *Raja radiata* (correct species name is now *Amblyraja radiata*). Accordingly, landings data for higher-order taxa were either split according to the proportions of landings data species-level taxa or merged into higher-order taxa, if the resolution to species level was not considered as appropriate. Hence, in every MSFD (sub)region, landings data of several taxa were subject to different operations to be merged, split, removed, or ignored (Table 2.1). A description of which operation was done in which MSFD (sub)region is found in Annex 4.

The operation 'ignore' was chosen in several MSFD (sub)regions (e.g. Celtic Seas or Greater North Sea) in cases when the contribution of these taxa was deemed worth considering for the estimation of thresholds, but the taxon itself did not allow any further conclusions on which species were caught. This was the case, for example, for 'Osteichthyes' – marine fishes not elsewhere identified (nei) in the Celtic Seas and GNS. This operation was also used in some cases for unresolved taxa beyond the 99% threshold of both landings weight and value (e.g. in Aegean-Levantine Sea), since this fraction would not be considered anyway in the final species list.

The operation 'keep' was chosen if a taxon was resolved to species level, or if other taxa were merged with a taxon, e.g. *Anarhichas lupus* was kept when merged with *Anarhichas spp.* Also, taxa were kept when it was considered as essential to keep, e.g. if it was known that stock

assessments exist for this taxon (e.g. *Sepia officinalis* was kept, even though the taxon *Sepiidae*, *Sepiolida* was also included in the Celtic Sea and the Bay of Biscay & Iberian Coast).

Species with outdated taxonomy were renamed according to their correct current names (e.g. *Scomber japonicus* to *Scomber colias* and *Psetta maxima* to *Scophthalmus maximus*). In cases where both old and new nomenclature of taxa occurred in the landing data, landing values of both taxa were merged into the valid taxon.

Table 2.1. Overview on taxonomic clean-up operations applied to landings data, with examples from different MSFD sub/regions.

Operation	Description	Example		
		Input	Output	Rationale
Split	Split and assign input taxa according to weight value proportions of output taxa	<i>Trachurus spp.</i>	Taxon deleted	Resolve higher-order taxa to species level taxa according to proportions of landings in species taxon
		5,000 t		
		<i>Trachurus trachurus</i> 14,545 t	<i>Trachurus trachurus</i> 9,500 t	
		<i>Trachurus mediterraneus</i> 1,455 t	<i>Trachurus mediterraneus</i> 1,500 t	
Merge	Combine input taxon with output taxon	<i>Anarchichas spp.</i> 100 t	Taxon deleted	Merge higher-order taxa with the only existing species level taxon
		<i>Anarchichas lupus</i> 1,000 t	<i>Anarchichas lupus</i> 1,100 t	
Remove	Remove input taxon	<i>Laminaria digitata</i> 5,000 t	Taxon and landings deleted and species by threshold re-calculated	Algae not considered under MSFD D3
		<i>Rapana venosa</i>		Non indigenous species not to be considered under D3
Ignore	Keep landing weights and values of input taxon but do not include in any selection by thresholds	<i>Osteichthyes</i> 10,000 t	Landings included but taxon ignored in any selection by cut-off thresholds	Tonnage and value add substantially to total in that region
Keep	Keep input taxon as is	<i>Sepia officinalis</i>	<i>Sepia officinalis</i>	Stock assessments available for this species or taxon
		<i>Ammodytes spp.</i>	<i>Ammodytes spp.</i>	Stock assessment at family level
Rename	Assign valid nomenclature	<i>Scomber japonicus</i>	<i>Scomber colias</i>	

2.2.2 Application of thresholds

Thresholds with different cut-off values were applied across all MSFD (sub)regions (90%, 95%, 98% and 99%) to generate D3 taxa lists. The cumulative thresholds considered were selected on the basis of previous ICES advice and Article 12 assessments undertaken by the European Commission, and previous HELCOM work that established a suite of D3 species for the Baltic Sea (HELCOM, 2021).

The workshop subgroups considered the D3 taxa lists at different cumulative threshold levels and how well they reflected the suite of commercially exploited species for the (sub)region. The inclusion of widely-distributed stocks in the (sub)regional lists was also considered and discussed.

2.3 Post-workshop data processing

Based on the taxonomic clean-up operations identified by the workshop participants, the FDI data were reprocessed to obtain a consistent set of data across all (sub)regions. This enabled different threshold types to be considered, and both cumulative (90%, 95%, 98% and 99%) thresholds by weight and value, as well as minimum (0.1%, 1%) thresholds by weight and value were applied to generate D3 taxa lists for each (sub)region. These final taxa lists are provided in section 4.

3 Implications of thresholds for species lists

WKD3Lists2 considered thresholds to be applied to two landing metrics i.e. weight of landings and value of landings. The application of threshold to both metrics introduced additional taxa to the list compared to a threshold applied only to weight of landings. The combination of weight and value information for the selection of relevant taxa provided a more comprehensive list of commercially important taxa, by including taxa with low landing weights but high landing values.

Thresholds can be applied in two different ways, i.e. minimum thresholds vs. cumulative thresholds. Minimum thresholds select species based on a minimum value of the landing metric, e.g. species accounting for at least 1 % of total landing weight or 1% of the total landing value. Cumulative thresholds select species which are ranked in decreasing order by the landing metric and the landing metric is cumulatively summed. Then all species accounting for 95% (or any other cut-off value) of the cumulative landings weight or value are selected.

Both threshold types were applied with different cut-off values (90%, 95%, 98% and 99% for cumulative thresholds and 0.1% and 1% for minimum thresholds) across all MSFD (sub)/regions. The cut-off values applied to weights and values alike, i.e. any taxon that fell below (cumulative threshold) or above (minimum threshold) the cut-off value for either weight or value was included.

The application of cumulative thresholds is technically more challenging, because for applying cumulative thresholds to two landing metrics (weight and value), taxa lists have to be sorted, summed and filtered twice. In contrast, minimum thresholds can be applied without sorting weight or value proportions, as these do not need to be cumulatively summed.

Depending on the cut-off value of the thresholds, the number of selected taxa varied profoundly (Figure 3.1, Table 3.1). The 99% cumulative threshold resulted in the highest number of selected taxa, except for the Baltic Sea and Black Sea, where the minimum 0.1% threshold selected the highest of taxa. In terms of the number of taxa included on the lists, the 98%-cumulative threshold is broadly comparable to the 0.1% minimum threshold. The 1% minimum threshold generally captures fewer taxa than the 90% cumulative threshold.

Table 3.1. Overview of selected number of taxa for different threshold types and cut-off values. Thresholds and cut-off values resulting in the highest number of selected taxa are highlighted in yellow

Threshold type	Total	Cumulative				Minimum	
		90%	95%	98%	99%	0.1%	1%
MSFD sub/region							
Adriatic Sea	158	29	42	68	84	64	23
Aegean-Levantine Sea	151	40	51	68	84	68	25
Baltic Sea	54	8	12	19	21	23	12
Bay of Biscay & Iberian Coast	333	51	74	115	144	83	24
Black Sea	27	7	8	12	13	18	11
Celtic Seas	173	24	35	55	69	57	20
Greater North Sea	160	24	37	53	59	58	26

Threshold type	Cumulative					Minimum	
Ionian Sea & Central Med.	185	43	57	81	100	78	28
Macaronesia	216	20	36	56	77	54	16
Western Mediterranean Sea	323	57	75	104	126	87	29

When considering the proportion of total taxa included in the lists, no threshold type nor cut-off value included more than 50 % of all taxa (except for 0.1% minimum threshold in the Black Sea and the 99% cumulative threshold in the Aegean-Levantine Sea and the Ionian Sea & Central Mediterranean) (Figure 3.2). Therefore, the application of the thresholds tested by the WKD3Lists2 resulted in the exclusion of substantially large number of taxa from the list. However, these taxa represent very small volumes and values of landings, both individually and cumulatively. Given data quality concerns for taxa that are reported in such low frequencies (e.g. accuracy of taxonomic identification), as well as the very small quantities that they represent meaning that they are unlikely to be significant ‘commercially exploited’ species. WKD3Lists2 did assume that the exclusion of these taxa jeopardises the quality or completeness of MSFD reporting on Descriptor 3.

Comparing the outcome of threshold types and cut-off values the question arises whether a generic EU-wide threshold type and cut-off value can be established?

The D3 taxa lists at different cumulative threshold levels were considered by the experts in regional subgroups in relation to how effectively each threshold captured the important commercial species (Table 3.2).

The 90% cumulative threshold was considered to be too low across all of the (sub)regions, as it usually fails to capture some important species by value or weight. In contrast, the 99% cumulative threshold was generally considered as too high, bringing in a large number of species with minimal levels of catches, that are not considered commercially important, and potentially incorporating species that have been misclassified in reporting.

The 95% and 98% cumulative thresholds were considered to be most appropriate across the (sub)regions, with the preference between them generally reflecting the diversity of species present in each (sub)region. Those (sub)regions with very high diversity tended to prefer the 95% cumulative threshold (Adriatic Sea; Aegean-Levantine Sea; Ionian Sea & Central Mediterranean; Western Mediterranean; Bay of Biscay & Iberian Coast; Macaronesia) (or alternatively the 90% with the addition of specific species as mentioned in the table). Those (sub)regions with less diverse species assemblages tended to prefer the 98% cumulative threshold (Baltic Sea; Black Sea; Celtic Seas; Greater North Sea).

If a single threshold were to be established across all (sub)regions, this would result in the lists for some (sub)regions either not capturing all commercially important species, or including a long list of species which are not commercially important and are potentially misclassified, increasing the reporting burden without adding useful information in relation to GES. Alternatively, if D3 taxa lists are developed that reflect the important commercially exploited species in each (sub)region, taking into account the differences in species richness, this would imply adopting different thresholds across (sub)regions.

The cumulative 98%-threshold was considered as an appropriate threshold in several MSFD (sub)regions in particular for the Baltic Sea, the Greater North Sea and the Celtic Sea. In advance

to WKD3Lists2, HELCOM established a suite of D3 species for the Baltic Sea using a 98% cumulative threshold.

However, participants from the Mediterranean Sea (i.e. the Western Mediterranean Sea, the Ionian Sea and the Central Mediterranean Sea, the Aegean-Levantine Sea, the Adriatic Sea), and Bay of Biscay and Iberian Coast considered a 98% cumulative threshold as resulting in species lists that were too long and impractical (up to 100 taxa, see section 4), including too many species without commercial significance. In these sub-regions a lower threshold was preferred (Table 3.2). Several regional experts also expressed their concern that for many of these taxa no data for assessment will become available, because data availability and accuracy is too limited due to incomplete or erroneous reporting and low commercial interest in the species. Furthermore, many taxa may fall below the sampling obligations of the DCF/DC-MAP (e.g. of 200 tonnes per year), making the future availability of data highly unlikely. Hence long regional D3-lists would result in integrated assessments with many gaps, reducing the informative content of such assessments. However, WKD3Lists2 again expressed the generic contemplation that the compilation of regional D3 taxa lists should not be based on availability of data and existence of assessments, but that integrated assessments may be condensed afterwards by only including taxa which are actually assessed. Thereby the full assessments would indicate the gaps in knowledge but focus on the assessed taxa for the integrated evaluation of the descriptor status.

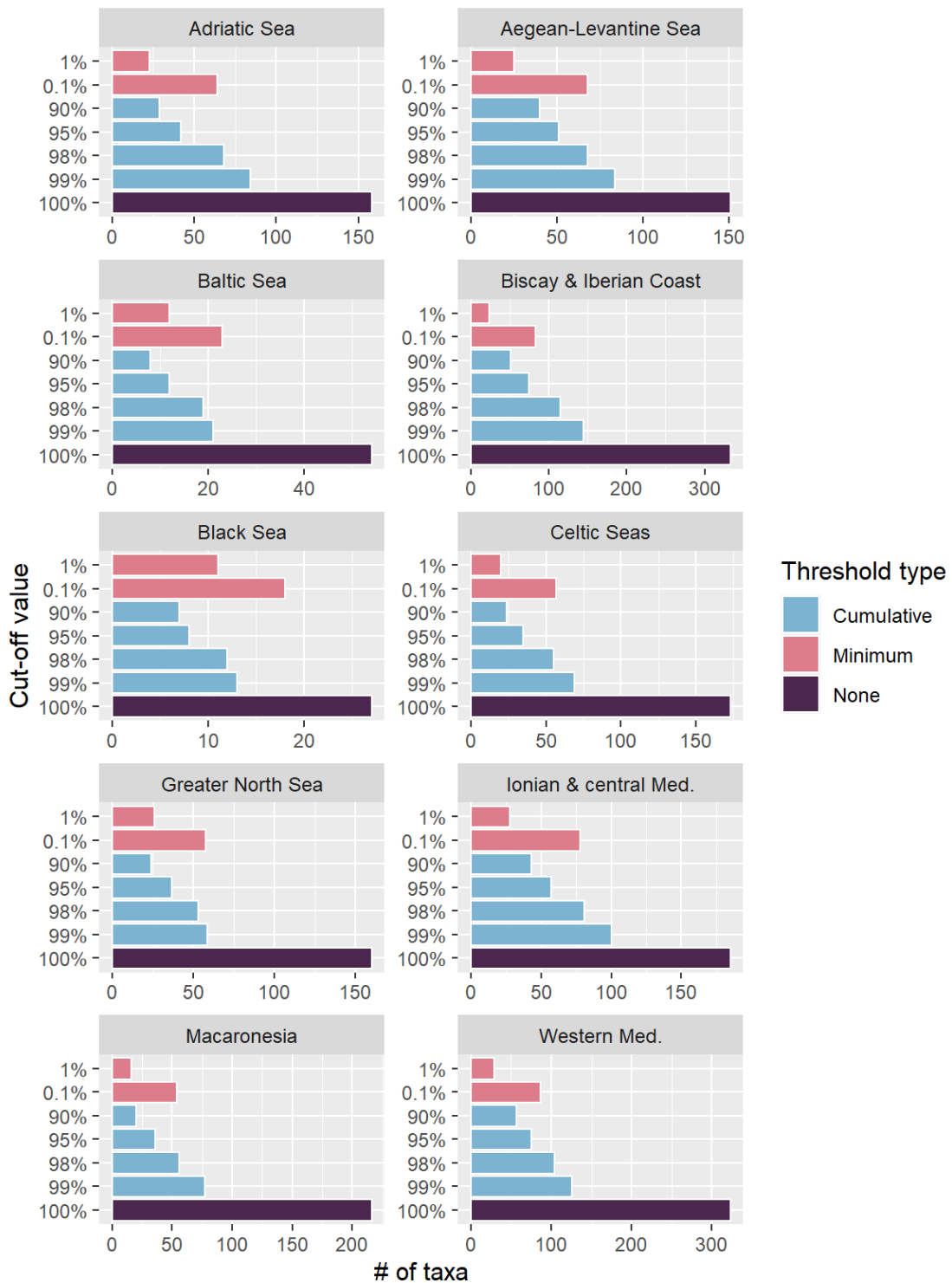


Figure 3.1. Overview of the number of selected taxa by MSFD (sub)region applying different types of selection thresholds and cut-off values.

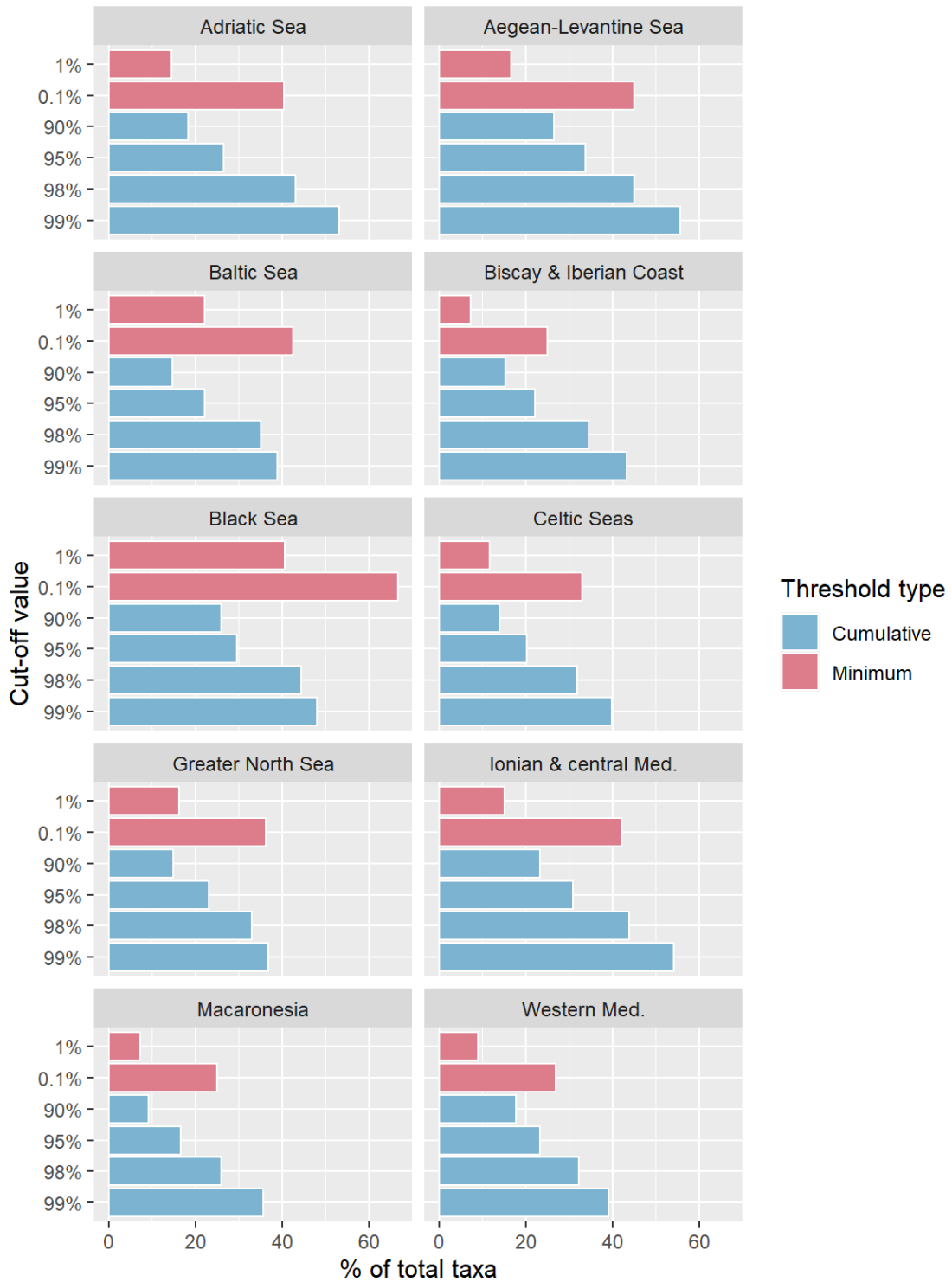


Figure 3.2. Overview of included percentages of total taxa by threshold type and cut-off value in each MSFD (sub)region.

Table 3.2. Overview on expert opinions of different cut-off values for cumulative thresholds and indication of preferred choice (shaded fields). Below (sub)region names total number of taxa is indicated

(Sub)region	Cumulative threshold (both weight and value)			
	90%	95%	98%	99%
Baltic Sea (N=54)	Too low to capture the main commercial species, attributed to strong dominance of herring and sprat	Adds just 4 taxa to the 90% list. Does not adequately reflect the composition of commercial landings and prevailing fisheries advice in a relevant way. Excludes for example <i>Salmo trutta</i> , <i>Scophthalmus maximus</i> , and <i>Limanda limanda</i> , which are assessed by ICES for this region	Adds 7 taxa to the 95% list. Contains all species identified by HELCOM (2021) in a preceding process (see text), but two species identified by HELCOM were not included: <i>Solea solea</i> , and <i>Esox lucius</i> *	Exactly matches the list of regional species agreed on by HELCOM (2021), adding <i>Solea solea</i> , and <i>Esox lucius</i>
Black Sea (N=27)	Captures main species of commercial interest	Captures the main commercial species, adding just one species (<i>Mytilus galloprovincialis</i>) to the list	Further expands the list with four additional species of minor commercial interest (<i>Alosa pontica</i> , <i>Mesogobius melanostous</i> , <i>Sarda sarda</i> , <i>Squalus acanthias</i>)	Adds one further species that is not felt to be critical for reporting on the status of D3 for the subregion
Mediterranean – Adriatic Sea (N=158)	Captures the main species, but misses some of commercial interest (e.g. <i>Scophthalmus maximus</i> , <i>Pecten jacobaeus</i> , <i>Aristeus antennatus</i>) and conservation interest (<i>Mustelus mustelus</i>)	Effectively captures the most important species, adding 13 taxa. Apart from those aforementioned, in most cases the additional species are not critical for reporting on the status of D3 for the subregion because their importance is at local level. Widely-distributed swordfish (<i>Xiphias gladius</i>) is also included	Expands the 95% list by 26 taxa of minor interest, that includes some species of local relevance (<i>Sprattus sprattus</i>) and an elasmobranch of commercial relevance (<i>Raja clavata</i>)	Expands the 98% list by 16 taxa that are not felt to be critical for reporting on the status of D3 for the subregion
Mediterranean – Aegean-Levantine Sea (N=151)	Captures main species, but misses a handful of important species (e.g. <i>Scomber scombrus</i> , <i>Dicentrarchus labrax</i> , <i>Epinephelus marginatus</i>)	Effectively captures the most important species. Only notable missing species are the widely distributed <i>Xiphias gladius</i> and <i>Thunnus thynnus</i> (both already reported for D3 by CY), as well as <i>Aristaeomorpha foliacea</i> , which is the target of a GFCM management plan	Expands the 95% list by 17 taxa. Other than the three aforementioned species, the other species are not felt to be critical for reporting on the status of D3 for the subregion	Expands the 98% list by 16 taxa that are not felt to be critical for reporting on the status of D3 for the subregion
Mediterranean – Ionian Sea & Central Mediterranean (N=185)	Capture the vast majority of species most relevant for fisheries (43)	Effectively captures all the relevant commercial species. Increases the assessment of 13 taxa, most of them not critical as commercial species, with some that are relevant locally (e.g. <i>Dicentrarchus labrax</i> , <i>Eledone cirrhosa</i> , <i>Phycis phycis</i>)	Further expand the list with other 24 species of minor interest, that includes a few elasmobranchs of commercial value (e.g. <i>Squalus acanthias</i> , <i>Scyliorhinus canicula</i> , <i>Mustelus mustelus</i>)	Adds further 19 species that are not felt to be critical for reporting on the status of D3 for the subregion

(Sub)region	Cumulative threshold (both weight and value)			
	90%	95%	98%	99%
Mediterranean – Western Mediterranean (N=323)	Captures main species, but excludes some elasmobranchs that are of commercial and ecological importance (<i>Raja clavata</i> , <i>R. asterias</i> , <i>Scyliorhinus canicula</i>)	Includes the aforementioned elasmobranchs; however, the other additional species are, in most of the cases, not felt to be critical for reporting on the status of D3 for the subregion	Further expands the 95% list, although the additional 29 taxa are not felt to be critical for reporting on the status of D3 for the subregion	Adds further species that are not felt to be critical for reporting on the status of D3 for the subregion
NE Atlantic – Celtic Seas (173)	Captures the main taxa (N=24), but excludes some that are of commercial importance (<i>Aequipecten opercularis</i> , <i>Dicentrarchus labrax</i> , <i>Maja squinado</i> , <i>Sepia officinalis</i>)	Effectively captures the most important taxa, adding 10 taxa to the 90% list including those mentioned	Broadens the 95% list to include a more comprehensive species list, adding a further 21 taxa including <i>Thunnus alalunga</i> , <i>Glyptocephalus cynoglossus</i> , <i>Hippoglossus hippoglossus</i>	Further expands the 98% list, although the additional 14 taxa were not felt to be critical for reporting on the status of D3 for the subregion
NE Atlantic – Greater North Sea (N=160)	Captures species dominating by weight (N=24)	Adds more species (N=13), some species with higher value (<i>Scophthalmus rhombus</i> , <i>Dicentrarchus labrax</i>)	Extends list by several taxa (N=17), of which many are considered as valuable commercial species (<i>Zeus faber</i> , <i>Hippoglossus hippoglossus</i> , <i>Mullus spp.</i>)	Adds few species (N=5) mostly of relevance as by-catch (<i>Eutrigla gurnardus</i> , <i>Platichthys flesus</i>)
NE Atlantic – Bay of Biscay & Iberian Coast (N=333)	Captures main species dominating by weight but some valuable species are missing	Effectively captures the most important species Broadens the 90% list to include species with high value such as <i>Ensis spp.</i> , <i>Necora puber</i> and <i>Pagellus bogaraveo</i>	Further expands the 95% list, although the additional 39 taxa are not felt to be critical for reporting on the status of D3 for the subregion	Adds further species that are not felt to be critical for reporting on the status of D3 for the subregion
NE Atlantic – Macaronesia (216)	Captures main species dominating by weight, but excludes some valuable commercial species	Effectively captures the most important species such as <i>Sardina pilchadus</i> , <i>Beryx decadactylus</i> , <i>Pattella ulyssiponensis</i> , critical for reporting on the status of D3 in the subregion	Expands the 95% list with 19 additional taxa, but additional species are not felt to be critical for reporting on the status of D3 for the subregion	Adds further species that are not felt to be critical for reporting on the status of D3 for the subregion

* The difference could be due to interannual variability/ decreasing landings value over time for these species (current data set encompassed years 2015-2020, as compared to 2015-2019 by HELCOM), but this was not explicitly tested

4 D3 species lists

The following table contains all taxa in each MSFD (sub)region, which were selected by the application of cumulative thresholds of both landings weight and value, with cut-off values of 90%, 95%, 98% and 99% or minimum thresholds with cut-off values of 0.1% and 1 %, respectively. Landing weights and values are based on aggregated FDI landings data from 2015 – 2020 and the applied data treatment procedures described in this report. Note that threshold flags are inclusive i.e. lists for the 95% cumulative threshold will include species flagged with '< 90%' and '< 95%'.

For species in Atlantic MSFD (sub)regions (Baltic Sea, Greater North Sea, Celtic Seas, Bay of Biscay & Iberian Coast & Macaronesia) relevant stocks from the ICES stock data base were merged with species to include relevant stocks of the taxon within the MSFD (sub)region.

Note: These lists are based on landings weight and value data from each MSFD (sub)region, as required by the terms of reference of the workshop, and do not claim to reflect the criteria listed in EU/2017/848.

Table 4.1. Regional D3 taxa lists with different thresholds. The landings and threshold data of taxa that are listed with multiple stocks are representative of the taxa level (not the stock level). Different colour fill within the same MSFD (sub)region reflect different cumulative threshold levels.

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Adriatic Sea	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL		262349.1	143899903	40.388	9.016	≤ 90%	≥ 1%
Adriatic Sea	<i>Engraulis encrasicolus</i>	European anchovy	ANE		120815.3	177855649	18.599	11.144	≤ 90%	≥ 1%
Adriatic Sea	<i>Chamelea gallina</i>	Striped venus	SVE		60783.7	150081997	9.357	9.404	≤ 90%	≥ 1%
Adriatic Sea	<i>Merluccius merluccius</i>	European hake	HKE		18609.7	109154102	2.865	6.839	≤ 90%	≥ 1%
Adriatic Sea	<i>Mullus barbatus</i>	Red mullet	MUT		14448.6	52164051	2.224	3.268	≤ 90%	≥ 1%
Adriatic Sea	<i>Squilla mantis</i>	Spottail mantis squillid	MTS		14054.9	91408063	2.164	5.727	≤ 90%	≥ 1%
Adriatic Sea	<i>Sepia officinalis</i>	Common cuttlefish	CTC		13138	123796233	2.023	7.757	≤ 90%	≥ 1%
Adriatic Sea	<i>Parapenaeus longirostris</i>	Deep-water rose shrimp	DPS		12923.3	62303460	1.989	3.904	≤ 90%	≥ 1%

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Adriatic Sea	<i>Scomber colias</i>	Atlantic chub mackerel	VMA		10391.7	8271323	1.600	0.518	≤ 90%	≥ 1%
Adriatic Sea	<i>Solea solea</i>	Common sole	SOL		8000.9	82836081	1.232	5.190	≤ 90%	≥ 1%
Adriatic Sea	<i>Bolinus brandaris</i>	Purple dye murex	BOY		6841.7	11491795	1.053	0.720	≤ 90%	≥ 1%
Adriatic Sea	<i>Eledone moschata</i>	Musky octopus	EDT		6562.4	30730076	1.010	1.925	≤ 90%	≥ 1%
Adriatic Sea	<i>Liza aurata</i>	Golden grey mullet	MGA		6335.7	2575222	0.975	0.161	≤ 90%	≥ 0.1%
Adriatic Sea	<i>Tritia mutabilis</i>	Changeable nassa	NSQ		6183.1	19274590	0.952	1.208	≤ 90%	≥ 1%
Adriatic Sea	<i>Eledone cirrhosa</i>	Horned octopus	EOI		5754.3	30481492	0.886	1.910	≤ 90%	≥ 1%
Adriatic Sea	<i>Illex coindetii</i>	Broadtail shortfin squid	SQM		5652.4	23881697	0.870	1.496	≤ 90%	≥ 1%
Adriatic Sea	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM		5587.8	2184340	0.860	0.137	≤ 90%	≥ 0.1%
Adriatic Sea	<i>Thunnus thynnus</i>	Atlantic bluefin tuna	BFT		4681	19593743	0.721	1.228	≤ 90%	≥ 1%
Adriatic Sea	<i>Callista chione</i>	Smooth callista	KLK		4493	21478793	0.692	1.346	≤ 90%	≥ 1%
Adriatic Sea	<i>Penaeus kerathurus</i>	Caramote prawn	TGS		4310.2	62728474	0.664	3.930	≤ 90%	≥ 1%
Adriatic Sea	<i>Merlangius merlangus</i>	Whiting	WHG		4280.3	12204592	0.659	0.765	≤ 90%	≥ 0.1%
Adriatic Sea	<i>Nephrops norvegicus</i>	Norway lobster	NEP		4001.9	75551870	0.616	4.734	≤ 90%	≥ 1%
Adriatic Sea	<i>Lophius budegassa</i>	Blackbellied angler	ANK		3025.3	19688276	0.466	1.234	≤ 90%	≥ 1%
Adriatic Sea	<i>Chelidonichthys lucerna</i>	Tub gurnard	GUU		2846.4	10693126	0.438	0.670	≤ 90%	≥ 0.1%
Adriatic Sea	<i>Octopus vulgaris</i>	Common octopus	OCC		2657.1	23475074	0.409	1.471	≤ 90%	≥ 1%
Adriatic Sea	<i>Sparus aurata</i>	Gilthead seabream	SBG		2504.9	26118736	0.386	1.637	≤ 90%	≥ 1%

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Adriatic Sea	<i>Scomber scombrus</i>	Atlantic mackerel	MAC		2480.3	10775391	0.382	0.675	≤ 90%	≥ 0.1%
Adriatic Sea	<i>Loligo vulgaris</i>	European squid	SQR		2229	26062858	0.343	1.633	≤ 90%	≥ 1%
Adriatic Sea	<i>Aristaeomorpha foliacea</i>	Giant red shrimp	ARS		637.1	15736389	0.098	0.986	≤ 90%	≥ 0.1%
Adriatic Sea	<i>Trachurus mediterraneus</i>	Mediterranean horse mackerel	HMM		3612.4	1915738	0.556	0.120	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Trisopterus minutus</i>	Poor cod	POD		1721.9	5444153	0.265	0.341	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Mustelus mustelus</i>	Smooth-hound	SMD		961.8	4706305	0.148	0.295	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Xiphias gladius</i>	Swordfish	SWO		875.1	9568403	0.135	0.600	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Pecten jacobaeus</i>	Great Mediterranean scallop	SJA		767.6	6718710	0.118	0.421	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Atherina boyeri</i>	Big-scale sand smelt	ATB		657.7	4189323	0.101	0.262	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Dicentrarchus labrax</i>	European seabass	BSS		475.1	8295679	0.073	0.520	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Mullus surmuletus</i>	Surmullet	MUR		467.1	4503496	0.072	0.282	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Lithognathus mormyrus</i>	Sand steenbras	SSB		455.8	4048231	0.070	0.254	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Scophthalmus maximus</i>	Turbot	TUR		344.6	7792058	0.053	0.488	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Zeus faber</i>	John dory	JOD		285.7	5417814	0.044	0.339	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Aristeus antennatus</i>	Blue and red shrimp	ARA		240.2	6100078	0.037	0.382	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Alloteuthis media</i>	Midsized squid	OUM		207.4	4514609	0.032	0.283	≤ 95%	≥ 0.1%
Adriatic Sea	<i>Boops boops</i>	Bogue	BOG		1817	1680495	0.280	0.105	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Mugil cephalus</i>	Flathead grey mullet	MUF		1308.4	829256	0.201	0.052	≤ 98%	≥ 0.1%

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Adriatic Sea	<i>Raja clavata</i>	Thornback ray	RJC		1136.7	3233143	0.175	0.203	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Euthynnus alletteratus</i>	Little tunny(=Atl.black skipj)	LTA		1060.9	2565275	0.163	0.161	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Arnoglossus laterna</i>	Mediterranean scaldfish	MSF		923.8	2695232	0.142	0.169	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Sardinella aurita</i>	Round sardinella	SAA		875.2	440665	0.135	0.028	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Liza ramada</i>	Thinlip grey mullet	MGC		724.3	575451	0.112	0.036	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Liza saliens</i>	Leaping mullet	LZS		704.5	397393	0.108	0.025	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Micromesistius poutassou</i>	Blue whiting(=Poutassou)	WHB		659.8	990481	0.102	0.062	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Todarodes sagittatus</i>	European flying squid	SQE		597.2	2565069	0.092	0.161	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Sprattus sprattus</i>	European sprat	SPR		594.4	877921	0.092	0.055	≤ 98%	
Adriatic Sea	<i>Pagellus erythrinus</i>	Common pandora	PAC		546.7	2400236	0.084	0.150	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Mimachlamys varia</i>	Variegated scallop	VSC		521.5	2340322	0.080	0.147	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Mustelus punctulatus</i>	Blackspotted smooth-hound	MPT		423.9	1951855	0.065	0.122	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Pomatomus saltatrix</i>	Bluefish	BLU		405	2131424	0.062	0.134	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Venus verrucosa</i>	Warty venus	VEV		400.3	3787735	0.062	0.237	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Todaropsis eblanae</i>	Lesser flying squid	TDQ		322.2	1825558	0.050	0.114	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Scorpaena scrofa</i>	Red scorpionfish	RSE		319.7	3451883	0.049	0.216	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Lophius piscatorius</i>	Angler(=Monk)	MON		244.5	1840457	0.038	0.115	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Plesionika edwardsii</i>	Striped soldier shrimp	LKW		199.2	1292217	0.031	0.081	≤ 98%	

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Adriatic Sea	<i>Diplodus sargus</i>	White seabream	SWA		153.1	1900479	0.024	0.119	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Diplodus vulgaris</i>	Common two-banded seabream	CTB		138.4	1176388	0.021	0.074	≤ 98%	
Adriatic Sea	<i>Loligo forbesii</i>	Veined squid	SQF		135.2	1763840	0.021	0.111	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Umbrina cirrosa</i>	Shi drum	COB		132.6	2026156	0.020	0.127	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Dentex dentex</i>	Common dentex	DEC		93.3	1786131	0.014	0.112	≤ 98%	≥ 0.1%
Adriatic Sea	<i>Palinurus elephas</i>	Common spiny lobster	SLO		35.3	1551581	0.005	0.097	≤ 98%	
Adriatic Sea	<i>Conger conger</i>	European conger	COE		463	762026	0.071	0.048	≤ 99%	
Adriatic Sea	<i>Spicara smaris</i>	Picarel	SPC		410.8	599218	0.063	0.038	≤ 99%	
Adriatic Sea	<i>Sarpa salpa</i>	Salema	SLM		399.9	965437	0.062	0.060	≤ 99%	
Adriatic Sea	<i>Raja asterias</i>	Mediterranean starry ray	JRS		395.3	980583	0.061	0.061	≤ 99%	
Adriatic Sea	<i>Ostrea edulis</i>	European flat oyster	OYF		379.8	939719	0.058	0.059	≤ 99%	
Adriatic Sea	<i>Phycis phycis</i>	Forkbeard	FOR		332.1	417379	0.051	0.026	≤ 99%	
Adriatic Sea	<i>Sarda sarda</i>	Atlantic bonito	BON		246.2	904720	0.038	0.057	≤ 99%	
Adriatic Sea	<i>Lichia amia</i>	Leerfish	LEE		179.1	1084344	0.028	0.068	≤ 99%	
Adriatic Sea	<i>Squalus acanthias</i>	Picked dogfish	DGS		169.2	837313	0.026	0.052	≤ 99%	
Adriatic Sea	<i>Helicolenus dactylopterus</i>	Blackbelly rosefish	BRF		162.4	1172006	0.025	0.073	≤ 99%	
Adriatic Sea	<i>Pegusa impar</i>	Adriatic sole	OAM		132.3	762444	0.020	0.048	≤ 99%	
Adriatic Sea	<i>Platichthys flesus</i>	European flounder	FLE		111.2	1061375	0.017	0.067	≤ 99%	

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Adriatic Sea	<i>Seriola dumerili</i>	Greater amberjack	AMB		101.8	939180	0.016	0.059	≤ 99%	
Adriatic Sea	<i>Scophthalmus rhombus</i>	Brill	BLL		73.2	1054430	0.011	0.066	≤ 99%	
Adriatic Sea	<i>Pagrus pagrus</i>	Red porgy	RPG		66.3	1030173	0.010	0.065	≤ 99%	
Adriatic Sea	<i>Homarus gammarus</i>	European lobster	LBE		25.6	839673	0.004	0.053	≤ 99%	
Aegean-Levantine Sea	<i>Engraulis encrasicolus</i>	European anchovy	ANE		54875.8	145494126	20.766	9.347	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL		45910.3	130065120	17.373	8.355	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Merluccius merluccius</i>	European hake	HKE		14011.4	158173549	5.302	10.161	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Boops boops</i>	Bogue	BOG		12479.9	45855121	4.723	2.946	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Parapenaeus longirostris</i>	Deep-water rose shrimp	DPS		10081.1	51033296	3.815	3.278	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Octopus vulgaris</i>	Common octopus	OCC		9657	66089439	3.654	4.246	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Sepia officinalis</i>	Common cuttlefish	CTC		8330.3	47132055	3.152	3.028	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Mullus barbatus</i>	Red mullet	MUT		8313.7	105611706	3.146	6.784	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Scomber colias</i> (former <i>S. japonicus</i>)	Chub mackerel	VMA (MAS)		7008.5	29840767	2.652	1.917	≤ 90%	≥ 1%

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Aegean-Levantine Sea	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM		6436.1	19234407	2.436	1.236	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Mullus surmuletus</i>	Surmullet	MUR		5829.8	88434804	2.206	5.681	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Sardinella aurita</i>	Round sardinella	SAA		5333.1	10891300	2.018	0.700	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Penaeus kerathurus</i>	Caramote prawn	TGS		4548.7	71808397	1.721	4.613	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Spicara smaris</i>	Picarel	SPC		4498.3	15603343	1.702	1.002	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Illex coindetii</i>	Broadtail shortfin squid	SQM		4059.5	15307179	1.536	0.983	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Pagellus erythrinus</i>	Common pandora	PAC		3762.3	45860295	1.424	2.946	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Micromesistius poutassou</i>	Blue whiting(=Poutassou)	WHB		3342.3	14242336	1.265	0.915	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Pagrus pagrus</i>	Red porgy	RPG		3105.8	58713710	1.175	3.772	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Sarda sarda</i>	Atlantic bonito	BON		2639.1	18767022	0.999	1.206	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Thunnus alalunga</i>	Albacore	ALB		2444.1	4962659	0.925	0.319	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Lophius budegassa</i>	Blackbellied angler	ANK		2420.3	14708796	0.916	0.945	≤ 90%	≥ 0.1%

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Aegean-Levantine Sea	<i>Mugil cephalus</i>	Flathead grey mullet	MUF		2281.5	14607768	0.863	0.938	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Scorpaena scrofa</i>	Red scorpionfish	RSE		2220.5	24124434	0.840	1.550	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Sparus aurata</i>	Gilthead seabream	SBG		1854.2	29152832	0.702	1.873	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Trachurus mediterraneus</i>	Mediterranean horse mackerel	HMM		1809.3	5120243	0.685	0.329	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Diplodus sargus</i>	White seabream	SWA		1636.4	26675694	0.619	1.714	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Euthynnus alletteratus</i>	Little tunny(=Atl.black skipj)	LTA		1626.7	8670796	0.616	0.557	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Eledone moschata</i>	Musky octopus	EDT		1605.3	3196767	0.607	0.205	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Serranus cabrilla</i>	Comber	CBR		1557.3	4649687	0.589	0.299	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Solea solea</i>	Common sole	SOL		1532.4	21994395	0.580	1.413	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Spicara maena</i>	Blotched picarel	BPI		1386	5254626	0.524	0.338	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Seriola dumerili</i>	Greater amberjack	AMB		1384.5	13667877	0.524	0.878	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Loligo vulgaris</i>	European squid	SQR		1279.3	14722168	0.484	0.946	≤ 90%	≥ 0.1%

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Aegean-Levantine Sea	<i>Oblada melanura</i>	Saddled seabream	SBS		1275	10720665	0.482	0.689	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Dentex dentex</i>	Common dentex	DEC		1114.8	21567710	0.422	1.386	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Diplodus vulgaris</i>	Common two-banded seabream	CTB		1040.5	15590752	0.394	1.002	≤ 90%	≥ 1%
Aegean-Levantine Sea	<i>Nephrops norvegicus</i>	Norway lobster	NEP		830.2	13202871	0.314	0.848	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Epinephelus costae</i>	Goldblotch grouper	EPK		525.4	12289306	0.199	0.789	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Palinurus elephas</i>	Common spiny lobster	SLO		458	13223701	0.173	0.849	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Epinephelus aeneus</i>	White grouper	GPW		405.2	9454778	0.153	0.607	≤ 90%	≥ 0.1%
Aegean-Levantine Sea	<i>Scomber scombrus</i>	Atlantic mackerel	MAC		1150.4	8566726	0.435	0.550	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Auxis rochei</i>	Bullet tuna	BLT		1106.7	5750726	0.419	0.369	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Sparisoma cretense</i>	Parrotfish	PRR		969.4	6841702	0.367	0.440	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Sphyaena sphyraena</i>	European barracuda	YRS		834.7	5416708	0.316	0.348	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Dentex macrophthalmus</i>	Large-eye dentex	DEL		783.5	6064263	0.296	0.390	≤ 95%	≥ 0.1%

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Aegean-Levantine Sea	<i>Dicentrarchus labrax</i>	European seabass	BSS		762.4	7592755	0.289	0.488	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Pagellus acarne</i>	Axillary seabream	SBA		741.2	3913899	0.280	0.251	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Diplodus annularis</i>	Annular seabream	ANN		722.8	2346248	0.274	0.151	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Zeus faber</i>	John dory	JOD		686.3	6007773	0.260	0.386	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Spondyliosoma cantharus</i>	Black seabream	BRB		551	8496364	0.209	0.546	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Epinephelus marginatus</i>	Dusky grouper	GPD		363.2	7332061	0.137	0.471	≤ 95%	≥ 0.1%
Aegean-Levantine Sea	<i>Raja clavata</i>	Thornback ray	RJC		602.7	2825914	0.228	0.182	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Phycis phycis</i>	Forkbeard	FOR		514.6	2008688	0.195	0.129	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Lepidorhombus boscii</i>	Four-spot megrim	LDB		503.4	2072494	0.190	0.133	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Raja oxyrinchus</i>	Longnosed skate	RJO		431.8	1619763	0.163	0.104	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Pomatomus saltatrix</i>	Bluefish	BLU		374.4	3425409	0.142	0.220	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Pagellus bogaraveo</i>	Blackspot(=red) seabream	SBR		370	2420078	0.140	0.155	≤ 98%	≥ 0.1%

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Aegean-Levantine Sea	<i>Xiphias gladius</i>	Swordfish	SWO		354.3	3909635	0.134	0.251	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Dasyatis pastinaca</i>	Common stingray	JDP		344	1486749	0.130	0.096	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Liza aurata</i>	Golden grey mullet	MGA		343	909941	0.130	0.058	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Phycis blennoides</i>	Greater forkbeard	GFB		339.4	1169497	0.128	0.075	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Scorpaena notata</i>	Small red scorpionfish	SNQ		333.1	936060	0.126	0.060	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Lithognathus mormyrus</i>	Sand steenbras	SSB		313.1	4084587	0.118	0.262	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Scorpaena porcus</i>	Black scorpionfish	BBS		294.4	1586809	0.111	0.102	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Uranoscopus scaber</i>	Stargazer	UUC		288.9	1635281	0.109	0.105	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Thunnus thynnus</i>	Atlantic bluefin tuna	BFT		286.2	2150284	0.108	0.138	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Aristaeomorpha foliacea</i>	Giant red shrimp	ARS		207.4	2747545	0.078	0.177	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Dentex gibbosus</i>	Pink dentex	DEP		76.2	2084746	0.029	0.134	≤ 98%	≥ 0.1%
Aegean-Levantine Sea	<i>Scyliorhinus canicula</i>	Small-spotted catshark	SYC		252	686399	0.095	0.044	≤ 99%	

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Aegean-Levantine Sea	<i>Serranus scriba</i>	Painted comber	SRK		250.3	911644	0.095	0.059	≤ 99%	
Aegean-Levantine Sea	<i>Chelidonichthys lucerna</i>	Tub gurnard	GUU		223.7	1126537	0.085	0.072	≤ 99%	
Aegean-Levantine Sea	<i>Belone belone</i>	Garfish	GAR		208.1	874308	0.079	0.056	≤ 99%	
Aegean-Levantine Sea	<i>Auxis thazard</i>	Frigate and bullet tunas	FRZ		200.3	833930	0.076	0.054	≤ 99%	
Aegean-Levantine Sea	<i>Katsuwonus pelamis</i>	Skipjack tuna	SKJ		197.7	1033550	0.075	0.066	≤ 99%	
Aegean-Levantine Sea	<i>Trachinus draco</i>	Greater weever	WEG		176.4	654583	0.067	0.042	≤ 99%	
Aegean-Levantine Sea	<i>Conger conger</i>	European conger	COE		175.4	611389	0.066	0.039	≤ 99%	
Aegean-Levantine Sea	<i>Trisopterus minutus</i>	Poor cod	POD		174.2	586563	0.066	0.038	≤ 99%	
Aegean-Levantine Sea	<i>Raja batis</i>	Blue skate	RJB		169.9	818048	0.064	0.053	≤ 99%	
Aegean-Levantine Sea	<i>Lophius piscatorius</i>	Angler(=Monk)	MON		165.2	876777	0.063	0.056	≤ 99%	
Aegean-Levantine Sea	<i>Scophthalmus rhombus</i>	Brill	BLL		142.4	1159211	0.054	0.074	≤ 99%	
Aegean-Levantine Sea	<i>Sciaena umbra</i>	Brown meagre	CBM		94.5	877833	0.036	0.056	≤ 99%	

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Aegean-Levantine Sea	<i>Umbrina cirrosa</i>	Shi drum	COB		77	1106903	0.029	0.071	≤ 99%	
Aegean-Levantine Sea	<i>Epinephelus caninus</i>	Dogtooth grouper	EFJ		72.3	1257546	0.027	0.081	≤ 99%	
Aegean-Levantine Sea	<i>Polyprion americanus</i>	Wreckfish	WRF		63.7	1099840	0.024	0.071	≤ 99%	
Baltic Sea	<i>Clupea harengus</i>	Atlantic herring	HER	her.27.20-24 her.27.3031 her.27.28 her.27.25-2932	1942273.1	460971226	49.680	36.434	≤ 90%	≥ 1%
Baltic Sea	<i>Sprattus sprattus</i>	European sprat	SPR	spr.27.22-32	1450849.5	301129116	37.110	23.801	≤ 90%	≥ 1%
Baltic Sea	<i>Gadus morhua</i>	Atlantic cod	COD	cod.27.24-32 cod.27.22-24	141390	175203338	3.617	13.848	≤ 90%	≥ 1%
Baltic Sea	<i>Platichthys flesus</i>	European flounder	FLE	fle.27.2223	98326	42289191	2.515	3.342	≤ 90%	≥ 1%
Baltic Sea	<i>Pleuronectes platessa</i>	European plaice	PLE	ple.27.24-32 ple.27.21-23	21342.8	30055043	0.546	2.375	≤ 90%	≥ 1%
Baltic Sea	<i>Perca fluviatilis</i>	European perch	FPE		18179.7	37564632	0.465	2.969	≤ 90%	≥ 1%
Baltic Sea	<i>Coregonus albula</i>	Vendace	FVE		9099.8	59667370	0.233	4.716	≤ 90%	≥ 1%
Baltic Sea	<i>Anguilla anguilla</i>	European eel	ELE	ele.2737.nea	2072.4	22418671	0.053	1.772	≤ 90%	≥ 1%
Baltic Sea	<i>Mytilus edulis</i>	Blue mussel	MUS		117808.3	16075412	3.013	1.271	≤ 95%	≥ 1%
Baltic Sea	<i>Sander lucioperca</i>	Pike-perch	FPP		4566.7	22391717	0.117	1.770	≤ 95%	≥ 1%
Baltic Sea	<i>Coregonus spp</i>	Whitefishes including C maraena and C wiedegreni	WHF		3586.9	15403999	0.092	1.217	≤ 95%	≥ 1%
Baltic Sea	<i>Salmo salar</i>	Atlantic salmon	SAL	sal.27.22-31 sal.27.32	2757.4	13407536	0.071	1.060	≤ 95%	≥ 1%
Baltic Sea	<i>Osmerus eperlanus</i>	European smelt	SME		24736.6	9273377	0.633	0.733	≤ 98%	≥ 0.1%
Baltic Sea	<i>Ammodytes spp + Gymnoammodytes spp</i>	Sandeels(=Sandlances)	SAN		21933.3	4083602	0.561	0.323	≤ 98%	≥ 0.1%
Baltic Sea	<i>Abramis spp</i>	Freshwater breams	FBR		11181.4	6742644	0.286	0.533	≤ 98%	≥ 0.1%
Baltic Sea	<i>Rutilus rutilus</i>	Roach	FRO		10440.5	5752911	0.267	0.455	≤ 98%	≥ 0.1%
Baltic Sea	<i>Limanda limanda</i>	Common dab	DAB	dab.27.22-32	6795.8	5913663	0.174	0.467	≤ 98%	≥ 0.1%

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Baltic Sea	<i>Scophthalmus maximus</i>	Turbot	TUR	tur.27.22-32	1467.5	6876094	0.038	0.543	≤ 98%	≥ 0.1%
Baltic Sea	<i>Salmo trutta</i>	Sea trout	TRS	trs.27.22-32	1390.7	8658272	0.036	0.684	≤ 98%	≥ 0.1%
Baltic Sea	<i>Esox lucius</i>	Northern pike	FPI		2007	3620552	0.051	0.286	≤ 99%	≥ 0.1%
Baltic Sea	<i>Solea solea</i>	Common sole	SOL	sol.27.20-24	306.4	3906021	0.008	0.309	≤ 99%	≥ 0.1%
Baltic Sea	<i>Merlangius merlangus</i>	Whiting	WHG		5665.1	2384393	0.145	0.188		≥ 0.1%
Baltic Sea	<i>Belone belone</i>	Garfish	GAR		2802.2	2392767	0.072	0.189		≥ 0.1%
Biscay & Iberian Coast	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM	hom.27.9a hom.27.2a4a5b6a7a-ce-k8	343326.8	276077336	12.871	4.637	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Scomber colias</i>	Chub mackerel	VMA		329915.4	131984843	12.369	2.217	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL	pil.27.8c9a pil.27.8abd	264377.3	336148274	9.912	5.646	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Scomber scombrus</i>	Atlantic mackerel	MAC	mac.27.nea	259561.2	262068310	9.731	4.402	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Engraulis encrasicolus</i>	European anchovy	ANE	ane.27.9a	233287.9	358924681	8.746	6.029	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Engraulis encrasicolus</i>	European anchovy	ANE	ane.27.8	233287.9	358924681	8.746	6.029	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Merluccius merluccius</i>	European hake	HKE	hke.27.3a46-8abd hke.27.8c9a	199384.5	636850360	7.475	10.697	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Micromesistius poutassou</i>	Blue whiting(=Poutassou)	WHB	whb.27.1-91214	166334.6	144293621	6.236	2.424	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Thunnus alalunga</i>	Albacore	ALB	ALB-N (AL31)	101904.8	344689111	3.820	5.790	≤ 90%	≥ 1%

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Biscay & Iberian Coast	<i>Octopus vulgaris</i>	Common octopus	OCC		59849.6	344935317	2.244	5.794	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Boops boops</i>	Bogue	BOG		44797.7	16567530	1.679	0.278	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Conger conger</i>	European conger	COE		34886.3	62357898	1.308	1.047	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Sepia officinalis</i>	Common cuttlefish	CTC		34506.5	177698271	1.294	2.985	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Lophius piscatorius</i>	Angler(=Monk)	MON	mon.27.78abd mon.27.8c9a	29939.9	133507505	1.122	2.242	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Capros aper</i>	Boarfish	BOC	boc.27.6-8	27672.7	4113623	1.037	0.069	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Solea solea</i>	Common sole	SOL	sol.27.8ab sol.27.8c9a	24314.4	308417834	0.912	5.180	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Solea solea</i>	Common sole	SOL		24314.4	308417834	0.912	5.180	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Trachurus picturatus</i>	Blue jack mackerel	JAA		22987.1	8642713	0.862	0.145	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Trisopterus luscus</i>	Pouting(=Bib)	BIB		22916.1	33797527	0.859	0.568	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Lophius budegassa</i>	Blackbellied angler	ANK	ank.27.8c9a ank.27.78abd	21286.9	101702634	0.798	1.708	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Prionace glauca</i>	Blue shark	BSH		20736.2	30032522	0.777	0.504	≤ 90%	≥ 0.1%

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Biscay & Iberian Coast	<i>Nephrops norvegicus</i>	Norway lobster	NEP	nep.fu.2829 nep.fu.2324 nep.fu.25 nep.fu.30 nep.fu.2627 nep.fu.31	19727.6	236163463	0.740	3.967	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Dicentrarchus labrax</i>	European seabass	BSS	bss.27.8c9a bss27.8ab	19095.6	250911716	0.716	4.214	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Lepidorhombus whiffiagonis</i>	Megrim	MEG	meg.27.7b-k8abd meg.27.8c9a	17188.7	74458345	0.644	1.251	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Aphanopus carbo</i>	Black scabbardfish	BSF	bsf.27.nea	14630.1	41499476	0.548	0.697	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Loligo spp.</i>	Common squid nei	SQR		13651.7	109904398	0.512	1.846	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Chamelea gallina</i>	Striped venus	SVE		12470.2	39167645	0.468	0.658	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Merlangius merlangus</i>	Whiting	WHG	whg.27.89a	10781.2	28137109	0.404	0.473	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Cancer pagurus</i>	Edible crab	CRE		10012.3	27566326	0.375	0.463	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Scyliorhinus canicula</i>	Small-spotted catshark	SYC	syc.27.8c9a syc.27.8abd	9775.1	5047481	0.366	0.085	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Triglidae</i>	Gurnards, searobins nei	GUX		9565	21431367	0.359	0.360	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Spisula solida</i>	Solid surf clam	ULO		9517.3	13331308	0.357	0.224	≤ 90%	≥ 0.1%

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Biscay & Iberian Coast	<i>Pollachius pol-lachius</i>	Pollack	POL	pol.27.89a	9376.3	54201631	0.352	0.910	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Raja clavata</i>	Thornback ray	RJC	rjc.27.8 rjc.27.9a	9089.1	21941922	0.341	0.369	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Maja squinado</i>	Spinous spider crab	SCR		8897.2	31169986	0.334	0.524	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Parapenaeus longirostris</i>	Deep-water rose shrimp	DPS		8761	88783900	0.328	1.491	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Sarda sarda</i>	Atlantic bonito	BON		8704	22774168	0.326	0.383	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Argyrosomus regius</i>	Meagre	MGR		8610.5	66316954	0.323	1.114	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Mullus surmuletus</i>	Surmullet	MUR	mur.27.67a-ce-k89a	8034.6	69475202	0.301	1.167	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Xiphias gladius</i>	Swordfish	SWO	SWO-N(BIL94B)	7841.9	28412070	0.294	0.477	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Illex spp.</i>	Shortfin squids nei	ILL		7670.1	21310377	0.288	0.358	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Diplodus sargus</i>	White seabream	SWA		7539	47050453	0.283	0.790	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Spondyliosoma cantharus</i>	Black seabream	BRB		7530.8	25490931	0.282	0.428	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Dicologlossa cuneata</i>	Wedge sole	CET		6041.3	26018368	0.226	0.437	≤ 90%	≥ 0.1%

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Biscay & Iberian Coast	<i>Zeus faber</i>	John dory	JOD		5947.4	66071059	0.223	1.110	≤ 90%	≥ 1%
Biscay & Iberian Coast	<i>Pagellus acarne</i>	Axillary seabream	SBA		5692.7	21729460	0.213	0.365	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Sparus aurata</i>	Gilthead seabream	SBG		4731	56122695	0.177	0.943	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Thunnus thynnus</i>	Atlantic bluefin tuna	BFT	BFT-E (BF54, BF58)	4585.5	34578166	0.172	0.581	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Paracentrotus lividus</i>	Stony sea urchin	URM		3661.3	23819572	0.137	0.400	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Palaemon serratus</i>	Common prawn	CPR		1925.7	43423790	0.072	0.729	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Scophthalmus maximus</i>	Turbot	TUR		1521.4	26065430	0.057	0.438	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Pollicipes pollicipes</i>	Barnacle	PCB		1494.2	41610997	0.056	0.699	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Homarus gammarus</i>	European lobster	LBE		1136.4	23268449	0.043	0.391	≤ 90%	≥ 0.1%
Biscay & Iberian Coast	<i>Trachurus mediterraneus</i>	Mediterranean horse mackerel	HMM		8083.9	13448799	0.303	0.226	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Leucoraja naevus</i>	Cuckoo ray	RJN	rjn.27.9a rjn.27.678abd rjn.27.8c	6672.9	12167817	0.250	0.204	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Sarpa salpa</i>	Salema	SLM		4551.9	2713751	0.171	0.046	≤ 95%	≥ 0.1%

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Biscay & Iberian Coast	<i>Eledone cirrosa</i>	Horned octopus	EOI		4453.3	8684245	0.167	0.146	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Helicolenus dactylopterus</i>	Blackbelly rosefish	BRF		3052.1	11146941	0.114	0.187	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Thunnus obesus</i>	Bigeye tuna	BET		3009.8	9534757	0.113	0.160	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Squilla mantis</i>	Spottail mantis squillid	MTS		2683.9	9817331	0.101	0.165	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Pagellus erythrinus</i>	Common pandora	PAC		2270.3	9190310	0.085	0.154	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Solea lascaris</i>	Sand sole	SOS		1731.2	12405974	0.065	0.208	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Microchirus variegatus</i>	Thickback sole	MKG		1654.1	11005097	0.062	0.185	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Ensis arcuatus</i>	Arched razor shell	EQK		1533.1	15835156	0.057	0.266	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Ensis ensis</i>	Pod razor shell	EQE		1525.9	14283158	0.057	0.240	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Pagrus pagrus</i>	Red porgy	RPG		1326.5	19776796	0.050	0.332	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Scophthalmus rhombus</i>	Brill	BLL		1164.7	14233083	0.044	0.239	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Necora puber</i>	Velvet swimcrab	LIO		1144.4	13740575	0.043	0.231	≤ 95%	≥ 0.1%

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Biscay & Iberian Coast	<i>Pagellus bogaraveo</i>	Blackspot(=red) seabream	SBR	sbr.27.6-8 sbr.27.9	1132	18406573	0.042	0.309	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Crangon crangon</i>	Common shrimp	CSH		892.3	11343668	0.033	0.191	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Penaeus kerathurus</i>	Caramote prawn	TGS		816.4	16732304	0.031	0.281	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Alloteuthis subulata</i>	European commom squid	OUL		713.9	10801837	0.027	0.181	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Anguilla anguilla</i>	European eel	ELE	ele.2737.nea	598.9	10358614	0.022	0.174	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Aristeus antennatus</i>	Blue and red shrimp	ARA		573	10826955	0.021	0.182	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Polyprion americanus</i>	Wreckfish	WRF		493.4	8832318	0.018	0.148	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Plesiopenaeus edwardsianus</i>	Scarlet shrimp	SSH		376	10691634	0.014	0.180	≤ 95%	≥ 0.1%
Biscay & Iberian Coast	<i>Scomberesox saurus</i>	Atlantic saury	SAU		4008.7	2397867	0.150	0.040	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Scyliorhinus stellaris</i>	Nursehound	SYT		4003.4	2939971	0.150	0.049	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Mustelus mustelus</i>	Smooth-hound	SMD		3934	7630037	0.147	0.128	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Carcinus maenas</i>	Green crab	CRG		2619.3	2247702	0.098	0.038	≤ 98%	

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Biscay & Iberian Coast	<i>Labrus bergylta</i>	Ballan wrasse	USB		2579.1	5364545	0.097	0.090	≤ 98%	
Biscay & Iberian Coast	<i>Diplodus vulgaris</i>	Common two-banded sea-bream	CTB		2342.4	5861228	0.088	0.098	≤ 98%	
Biscay & Iberian Coast	<i>Raja brachyura</i>	Blonde ray	RJH	rjh.27.9a	2277.5	6478219	0.085	0.109	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Callista chione</i>	Smooth callista	KLK		2223.2	3771897	0.083	0.063	≤ 98%	
Biscay & Iberian Coast	<i>Mugil cephalus</i>	Flathead grey mullet	MUF		2206.2	2493042	0.083	0.042	≤ 98%	
Biscay & Iberian Coast	<i>Trachinus draco</i>	Greater weever	WEG		2045.9	2586847	0.077	0.043	≤ 98%	
Biscay & Iberian Coast	<i>Liza ramada</i>	Thinlip grey mullet	MGC		1925.9	2285258	0.072	0.038	≤ 98%	
Biscay & Iberian Coast	<i>Raja montagui</i>	Spotted ray	RJM	rjm.27.9a rjm.27.8	1903.1	4758177	0.071	0.080	≤ 98%	
Biscay & Iberian Coast	<i>Chelon labrosus</i>	Thicklip grey mullet	MLR		1894.3	5579773	0.071	0.094	≤ 98%	
Biscay & Iberian Coast	<i>Donax trunculus</i>	Truncate donax	DXL		1876.3	5489357	0.070	0.092	≤ 98%	
Biscay & Iberian Coast	<i>Todarodes sagittatus</i>	European flying squid	SQE		1829.8	6230145	0.069	0.105	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Aequipecten opercularis</i>	Queen scallop	QSC		1639.3	4873049	0.061	0.082	≤ 98%	

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Biscay & Iberian Coast	<i>Phycis blennoides</i>	Greater forkbeard	GFB	gfb.27.nea	1612.5	5432912	0.060	0.091	≤ 98%	
Biscay & Iberian Coast	<i>Auxis rochei</i>	Bullet tuna	BLT		1429.9	1913338	0.054	0.032	≤ 98%	
Biscay & Iberian Coast	<i>Eledone moschata</i>	Musky octopus	EDT		1363.6	3206183	0.051	0.054	≤ 98%	
Biscay & Iberian Coast	<i>Molva molva</i>	Ling	LIN	lin.27.346-91214	1317.4	3496959	0.049	0.059	≤ 98%	
Biscay & Iberian Coast	<i>Oblada melanura</i>	Saddled seabream	SBS		1305.2	2779711	0.049	0.047	≤ 98%	
Biscay & Iberian Coast	<i>Phycis phycis</i>	Forkbeard	FOR		1259.4	4592244	0.047	0.077	≤ 98%	
Biscay & Iberian Coast	<i>Dosinia exoleta</i>	Mature dosinia	DSX		1238.2	2827587	0.046	0.047	≤ 98%	
Biscay & Iberian Coast	<i>Pomatomus saltatrix</i>	Bluefish	BLU		1088.6	3690797	0.041	0.062	≤ 98%	
Biscay & Iberian Coast	<i>Ensis siliqua</i>	Sword razor shell	EQI		989.6	4195987	0.037	0.070	≤ 98%	
Biscay & Iberian Coast	<i>Plectorhinchus mediterraneus</i>	Rubberlip grunt	GBR		958.8	3687320	0.036	0.062	≤ 98%	
Biscay & Iberian Coast	<i>Dicentrarchus punctatus</i>	Spotted seabass	SPU		944.4	6801807	0.035	0.114	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Pleuronectes platessa</i>	European plaice	PLE	ple.27.89a	903.6	3805409	0.034	0.064	≤ 98%	

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Biscay & Iberian Coast	<i>Citharus linguatula</i>	Spotted flounder	CIL		826.5	3192146	0.031	0.054	≤ 98%	
Biscay & Iberian Coast	<i>Lithognathus mormyrus</i>	Sand steenbras	SSB		807.9	5288580	0.030	0.089	≤ 98%	
Biscay & Iberian Coast	<i>Scorpaena scrofa</i>	Red scorpionfish	RSE		756.3	6602649	0.028	0.111	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Microchirus azevia</i>		MIA		557.1	5402670	0.021	0.091	≤ 98%	
Biscay & Iberian Coast	<i>Solea senegalensis</i>	Senegalese sole	OAL		554.5	6219090	0.021	0.104	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Beryx decadactylus</i>	Alfonsino	BXD		434.7	7061007	0.016	0.119	≤ 98%	≥ 0.1%
Biscay & Iberian Coast	<i>Chlamys varia</i>	Variegated scallop	VSC		409.4	3050216	0.015	0.051	≤ 98%	
Biscay & Iberian Coast	<i>Petromyzon marinus</i>	Sea lamprey	LAU		388.7	5070175	0.015	0.085	≤ 98%	
Biscay & Iberian Coast	<i>Mullus barbatus</i>	Red mullet	MUT		384.1	2817746	0.014	0.047	≤ 98%	
Biscay & Iberian Coast	<i>Bolinus brandaris</i>	Purple dye murex	BOY		290.7	4317686	0.011	0.073	≤ 98%	
Biscay & Iberian Coast	<i>Palinurus elephas</i>	Common spiny lobster	SLO		141.6	4644287	0.005	0.078	≤ 98%	
Biscay & Iberian Coast	<i>Ammodytes spp</i>	Sandeels(=Sandlances) nei	SAN		1136.7	2002223	0.043	0.034	≤ 99%	

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Biscay & Iberian Coast	<i>Belone belone</i>	Garfish	GAR		1048.5	1016843	0.039	0.017	≤ 99%	
Biscay & Iberian Coast	<i>Alosa fallax</i>	Twaite shad	TSD		993.5	628867	0.037	0.011	≤ 99%	
Biscay & Iberian Coast	<i>Todaropsis eblanae</i>	Lesser flying squid	TDQ		943.2	2207239	0.035	0.037	≤ 99%	
Biscay & Iberian Coast	<i>Isurus oxyrinchus</i>	Shortfin mako	SMA		836.8	2284632	0.031	0.038	≤ 99%	
Biscay & Iberian Coast	<i>Portunus spp</i>	Portunus swimcrabs nei	CRS		775.1	8634	0.029	0.000	≤ 99%	
Biscay & Iberian Coast	<i>Katsuwonus pelamis</i>	Skipjack tuna	SKJ	SKJ-E (SJ01)	762.9	1601031	0.029	0.027	≤ 99%	
Biscay & Iberian Coast	<i>Melanogrammus aeglefinus</i>	Haddock	HAD		758.4	1698576	0.028	0.029	≤ 99%	
Biscay & Iberian Coast	<i>Atherina presbyter</i>	Sand smelt	ATP		732.4	1901247	0.027	0.032	≤ 99%	
Biscay & Iberian Coast	<i>Squalus blainvillei</i>	Longnose spurdog	QUB		725.2	2128041	0.027	0.036	≤ 99%	
Biscay & Iberian Coast	<i>Galeorhinus galeus</i>	Tope shark	GAG	gag.27.nea	703.2	1457796	0.026	0.024	≤ 99%	
Biscay & Iberian Coast	<i>Balistes carolinensis</i>	Grey triggerfish	TRG		660.3	1995623	0.025	0.034	≤ 99%	
Biscay & Iberian Coast	<i>Alosa alosa</i>	Allis shad	ASD		632	2628351	0.024	0.044	≤ 99%	

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Biscay & Iberian Coast	<i>Mustelus asterias</i>	Starry smooth-hound	SDS	sdv.27.nea	623.1	647145	0.023	0.011	≤ 99%	
Biscay & Iberian Coast	<i>Molva dypterygia</i>	Blue ling	BLI	bli.27.nea	615	1085483	0.023	0.018	≤ 99%	
Biscay & Iberian Coast	<i>Ommastrephes bartrami</i>	Neon flying squid	OFJ		602.9	1216828	0.023	0.020	≤ 99%	
Biscay & Iberian Coast	<i>Brama brama</i>	Atlantic pomfret	POA		567.2	700407	0.021	0.012	≤ 99%	
Biscay & Iberian Coast	<i>Sardinella aurita</i>	Round sardinella	SAA		557.1	408761	0.021	0.007	≤ 99%	
Biscay & Iberian Coast	<i>Bothidae</i>	Lefteye flounders nei	LEF		479.8	1485059	0.018	0.025	≤ 99%	
Biscay & Iberian Coast	<i>Venus verrucosa</i>	Warty venus	VEV		456.6	1988313	0.017	0.033	≤ 99%	
Biscay & Iberian Coast	<i>Microstomus kitt</i>	Lemon sole	LEM		449.1	2293453	0.017	0.039	≤ 99%	
Biscay & Iberian Coast	<i>Platichthys flesus</i>	European flounder	FLE		431.4	1572239	0.016	0.026	≤ 99%	
Biscay & Iberian Coast	<i>Lepidopus caudatus</i>	Silver scabbardfish	SFS		408.3	2401493	0.015	0.040	≤ 99%	
Biscay & Iberian Coast	<i>Sepiidae, Sepiolidae</i>	Cuttlefish, bobtail squids nei	CTL		384.4	1692370	0.014	0.028	≤ 99%	
Biscay & Iberian Coast	<i>Solen marginatus</i>	European razor clam	RAE		342.4	1683799	0.013	0.028	≤ 99%	

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Biscay & Iberian Coast	<i>Scorpaena porcus</i>	Black scorpionfish	BBS		262.5	1771024	0.010	0.030	≤ 99%	
Biscay & Iberian Coast	<i>Dentex gibbosus</i>	Pink dentex	DEP		207.7	1836845	0.008	0.031	≤ 99%	
Biscay & Iberian Coast	<i>Dentex dentex</i>	Common dentex	DEC		161	1833442	0.006	0.031	≤ 99%	
Biscay & Iberian Coast	<i>Pagrus auriga</i>	Redbanded seabream	REA		159	1642019	0.006	0.028	≤ 99%	
Black Sea	<i>Sprattus sprattus</i>	European sprat	SPR		18406.7	8104238	59.189	23.083	≤ 90%	≥ 1%
Black Sea	<i>Mullus barbatus</i>	Red mullet	MUT		3391.6	3489824	10.906	9.940	≤ 90%	≥ 1%
Black Sea	<i>Mya arenaria</i>	Sand gaper	CLS		3094.8	9509321	9.952	27.085	≤ 90%	≥ 1%
Black Sea	<i>Pomatomus saltatrix</i>	Bluefish	BLU		1479.6	3645119	4.758	10.382	≤ 90%	≥ 1%
Black Sea	<i>Engraulis encrasicolus</i>	European anchovy	ANE		970.8	852716	3.122	2.429	≤ 90%	≥ 1%
Black Sea	<i>Trachurus mediterraneus</i>	Mediterranean horse mackerel	HMM		968.2	2043098	3.114	5.819	≤ 90%	≥ 1%
Black Sea	<i>Scophthalmus maximus</i>	Turbot	TUR		584.1	4096348	1.878	11.668	≤ 90%	≥ 1%
Black Sea	<i>Mytilus galloprovincialis</i>	Mediterranean mussel	MSM		804.3	1030176	2.586	2.934	≤ 95%	≥ 1%
Black Sea	<i>Squalus acanthias</i>	Picked dogfish	DGS		361.1	642820	1.161	1.831	≤ 98%	≥ 1%
Black Sea	<i>Mesogobius melanostous</i>	round goby	NBU		274.5	291047	0.883	0.829	≤ 98%	≥ 0.1%
Black Sea	<i>Sarda sarda</i>	Atlantic bonito	BON		147.3	376356	0.474	1.072	≤ 98%	≥ 1%
Black Sea	<i>Alosa pontica</i>	Pontic shad	SHC		129.6	430496	0.417	1.226	≤ 98%	≥ 1%
Black Sea	<i>Raja clavata</i>	Thornback ray	RJC		168.3	206918	0.541	0.589	≤ 99%	≥ 0.1%
Black Sea	<i>Est Atherina boyeri</i>	Big-scale sand smelt			101	56284	0.325	0.160		≥ 0.1%
Black Sea	<i>Merlangius merlangus</i>	Whiting	WHG		56.3	44310	0.181	0.126		≥ 0.1%

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Black Sea	<i>Belone belone</i>	Garfish	GAR		36.6	108705	0.118	0.310		≥ 0.1%
Black Sea	<i>Mugil cephalus</i>	Flathead grey mullet	MUF		33.6	42501	0.108	0.121		≥ 0.1%
Black Sea	<i>Dasyatis pastinaca</i>	Common stingray	JDP		25.3	39564	0.081	0.113		≥ 0.1%
Celtic Seas	<i>Scomber scombrus</i>	Atlantic mackerel	MAC	mac.27.nea	2229885.6	2158446487	24.282	20.205	≤ 90%	≥ 1%
Celtic Seas	<i>Micromesistius poutassou</i>	Blue whiting(=Poutassou)	WHB	whb.27.1-91214	1681456.2	480260257	18.310	4.496	≤ 90%	≥ 1%
Celtic Seas	<i>Clupea harengus</i>	Atlantic herring	HER	her.27.1-24a514a her.27.nirs her.27.irls her.27.6a7bc	1620307.1	818173636	17.644	7.659	≤ 90%	≥ 1%
Celtic Seas	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM	hom.27.2a4a5b6a7a-ce-k8	386370.5	107980143	4.207	1.011	≤ 90%	≥ 1%
Celtic Seas	<i>Merluccius merluccius</i>	European hake	HKE	hke.27.3a46-8abd	368568.2	1198773855	4.013	11.221	≤ 90%	≥ 1%
Celtic Seas	<i>Lophius piscatorius</i>	Angler(=Monk)	MON	mon.27.78abd	264941.7	399686298	2.885	3.741	≤ 90%	≥ 1%
Celtic Seas	<i>Melanogrammus aeglefinus</i>	Haddock	HAD	had.27.7b-k had.27.46a20 had.27.7a had.27.6b	248523.1	426340280	2.706	3.991	≤ 90%	≥ 1%
Celtic Seas	<i>Pollachius virens</i>	Saithe(=Pollock)	POK	pok.27.3a46	221028.4	276886890	2.407	2.592	≤ 90%	≥ 1%
Celtic Seas	<i>Nephrops norvegicus</i>	Norway lobster	NEP	nep.fu.12 nep.27.6aoutFU nep.fu.17 nep.fu.14 nep.fu.16 nep.fu.15 nep.27.7outFU nep.fu.2021 nep.fu.22 nep.fu.13 nep.fu.11 nep.fu.19	187461.6	846880504	2.041	7.927	≤ 90%	≥ 1%
Celtic Seas	<i>Cancer pagurus</i>	Edible crab	CRE		164799.2	358624783	1.795	3.357	≤ 90%	≥ 1%
Celtic Seas	<i>Pecten maximus</i>	Great Atlantic scallop	SCE		164762.1	473608372	1.794	4.433	≤ 90%	≥ 1%
Celtic Seas	<i>Buccinum undatum</i>	Whelk	WHE		158864.4	253577839	1.730	2.374	≤ 90%	≥ 1%

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Celtic Seas	<i>Trisopterus esmarkii</i>	Norway pout	NOP	nop.27.6a	153469.3	37654560	1.671	0.352	≤ 90%	≥ 1%
Celtic Seas	<i>Gadus morhua</i>	Atlantic cod	COD	cod.27.6a cod.27.7e-k cod.27.7a cod.27.6b	143087.3	415946363	1.558	3.894	≤ 90%	≥ 1%
Celtic Seas	<i>Merlangius merlangus</i>	Whiting	WHG	whg.27.7b-ce-k whg.27.6b whg.27.6a whg.27.7a	128971.9	183678849	1.404	1.719	≤ 90%	≥ 1%
Celtic Seas	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL	pil.27.7	110132.1	61606261	1.199	0.577	≤ 90%	≥ 1%
Celtic Seas	<i>Lepidorhombus whiffiagonis</i>	Megrim	MEG	meg.27.7b-k8abd	89464	309345422	0.974	2.896	≤ 90%	≥ 1%
Celtic Seas	<i>Molva molva</i>	Ling	LIN	lin.27.5b lin.27.346-91214	61551.3	112957061	0.670	1.057	≤ 90%	≥ 1%
Celtic Seas	<i>Sepiidae, Sepiolidae</i>	Cuttlefish, bobtail squids nei	CTL		29051.9	96547522	0.316	0.904	≤ 90%	≥ 0.1%
Celtic Seas	<i>Microstomus kitt</i>	Lemon sole	LEM		19933.6	89316268	0.217	0.836	≤ 90%	≥ 0.1%
Celtic Seas	<i>Solea solea</i>	Common sole	SOL	sol.27.7a sol.27.7h-k sol.27.7bc sol.27.7fg sol.27.7e	14850.2	185680938	0.162	1.738	≤ 90%	≥ 1%
Celtic Seas	<i>Homarus gammarus</i>	European lobster	LBE		12824	202611052	0.140	1.897	≤ 90%	≥ 1%
Celtic Seas	<i>Zeus faber</i>	John dory	JOD		10316.2	91972223	0.112	0.861	≤ 90%	≥ 0.1%
Celtic Seas	<i>Scophthalmus maximus</i>	Turbot	TUR		6710.8	80430008	0.073	0.753	≤ 90%	≥ 0.1%
Celtic Seas	<i>Sprattus sprattus</i>	European sprat	SPR	spr.27.67a-cf-k spr.27.7de	69701.2	17653577	0.759	0.165	≤ 95%	≥ 0.1%
Celtic Seas	<i>Capros aper</i>	Boarfish	BOC	boc.27.6-8	58309.1	9100000	0.635	0.085	≤ 95%	≥ 0.1%
Celtic Seas	<i>Aequipecten opercularis</i>	Queen scallop	QSC		48413.6	48599477	0.527	0.455	≤ 95%	≥ 0.1%
Celtic Seas	<i>Pleuronectes platessa</i>	European plaice	PLE	ple.27.7a ple.27.7fg ple.27.7e ple.27.7h-k	41498.5	78827311	0.452	0.738	≤ 95%	≥ 0.1%

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				ple.27.7bc						
Celtic Seas	<i>Maja squinado</i>	Spinous spider crab	SCR		36372.7	65370895	0.396	0.612	≤ 95%	≥ 0.1%
Celtic Seas	<i>Loligo spp</i>	Common squids nei	SQC		24588.1	39864742	0.268	0.373	≤ 95%	≥ 0.1%
Celtic Seas	<i>Argentina silus</i>	Greater argentine	ARU	aru.27.6b7-1012 aru.27.5b6a	23889.2	12750368	0.260	0.119	≤ 95%	≥ 0.1%
Celtic Seas	<i>Pollachius pol-lachius</i>	Pollack	POL	pol.27.67	22950.7	72634697	0.250	0.680	≤ 95%	≥ 0.1%
Celtic Seas	<i>Sepia officinalis</i>	Common cuttlefish	CTC		21138.1	71208116	0.230	0.667	≤ 95%	≥ 0.1%
Celtic Seas	<i>Thunnus alalunga</i>	Albacore	ALB		18137	54128424	0.197	0.507	≤ 95%	≥ 0.1%
Celtic Seas	<i>Dicentrarchus labrax</i>	European seabass	BSS	bss.27.4bc7ad-h bss.27.6a7bj	3386.4	43360882	0.037	0.406	≤ 95%	≥ 0.1%
Celtic Seas	<i>Scyliorhinus canic-ula</i>	Small-spotted catshark	SYC	syc.27.67a-ce-j	22394.6	383895	0.244	0.004	≤ 98%	≥ 0.1%
Celtic Seas	<i>Glycymeris glycymeris</i>	Common European bitter-sweet	GKL		20339.1	8317274	0.221	0.078	≤ 98%	≥ 0.1%
Celtic Seas	<i>Aspitrigla cuculus</i>	Red gurnard	GUR		18320.4	4218200	0.199	0.039	≤ 98%	≥ 0.1%
Celtic Seas	<i>Glyptocephalus cynoglossus</i>	Witch flounder	WIT		16551.7	30285654	0.180	0.283	≤ 98%	≥ 0.1%
Celtic Seas	<i>Leucoraja naevus</i>	Cuckoo ray	RJN		13849.1	39035	0.151	0.000	≤ 98%	≥ 0.1%
Celtic Seas	<i>Trisopterus luscus</i>	Pouting(=Bib)	BIB		13784.1	8924731	0.150	0.084	≤ 98%	≥ 0.1%
Celtic Seas	<i>Raja brachyura</i>	Blonde ray	RJH	rjh.27.4a6 rjh.27.7afg rjh.27.7e	12292.9	41281	0.134	0.000	≤ 98%	≥ 0.1%
Celtic Seas	<i>Aphanopus carbo</i>	Black scabbardfish	BSF	bsf.27.nea	10779.4	35559525	0.117	0.333	≤ 98%	≥ 0.1%
Celtic Seas	<i>Necora puber</i>	Velvet swimcrab	LIO		10753	34148417	0.117	0.320	≤ 98%	≥ 0.1%
Celtic Seas	<i>Illex spp</i>	Shortfin squids nei	ILL		10685.1	18790777	0.116	0.176	≤ 98%	≥ 0.1%
Celtic Seas	<i>Molva dypterygia</i>	Blue ling	BLI	bli.27.5b67 bli.27.nea	10370.5	15802779	0.113	0.148	≤ 98%	≥ 0.1%
Celtic Seas	<i>Conger conger</i>	European conger	COE		10200.9	12315514	0.111	0.115	≤ 98%	≥ 0.1%
Celtic Seas	<i>Phycis blennoides</i>	Greater forkbeard	GFB	gfb.27.nea	6450.5	15641624	0.070	0.146	≤ 98%	≥ 0.1%
Celtic Seas	<i>Spondyliosoma can-tharus</i>	Black seabream	BRB		6109.2	17821703	0.067	0.167	≤ 98%	≥ 0.1%

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Celtic Seas	<i>Scophthalmus rhombus</i>	Brill	BLL	bll.27.3a47de	4602.9	37225124	0.050	0.348	≤ 98%	≥ 0.1%
Celtic Seas	<i>Venus verrucosa</i>	Warty venus	VEV		3656.5	15996749	0.040	0.150	≤ 98%	≥ 0.1%
Celtic Seas	<i>Mullus surmuletus</i>	Surmullet	MUR	mur.27.67a-ce-k89a	2926.1	17189978	0.032	0.161	≤ 98%	≥ 0.1%
Celtic Seas	<i>Pandalus borealis</i>	Northern prawn	PRA		2080.1	12325463	0.023	0.115	≤ 98%	≥ 0.1%
Celtic Seas	<i>Palaemon serratus</i>	Common prawn	CPR		1731.8	20583128	0.019	0.193	≤ 98%	≥ 0.1%
Celtic Seas	<i>Hippoglossus hippoglossus</i>	Atlantic halibut	HAL		1403.2	11612914	0.015	0.109	≤ 98%	≥ 0.1%
Celtic Seas	<i>Raja clavata</i>	Thornback ray	RJC	rjc.27.6 rjc.27.7e rjc.27.7afg	10225.5	28156	0.111	0.000	≤ 99%	≥ 0.1%
Celtic Seas	<i>Mustelus mustelus</i>	Smooth-hound	SMD		8901.7	9925819	0.097	0.093	≤ 99%	
Celtic Seas	<i>Ensis siliqua</i>	Sword razor shell	EQI		8719.7	10019287	0.095	0.094	≤ 99%	
Celtic Seas	<i>Argentina sphyraena</i>	Argentine	ARY		8062.9	3924951	0.088	0.037	≤ 99%	
Celtic Seas	<i>Engraulis encrasicolus</i>	European anchovy	ANE		7760.2	6165344	0.085	0.058	≤ 99%	
Celtic Seas	<i>Raja montagui</i>	Spotted ray	RJM	rjm.27.7ae-h rjm.27.67bj	7122.8	23635	0.078	0.000	≤ 99%	
Celtic Seas	<i>Prionace glauca</i>	Blue shark	BSH		6356.3	8094094	0.069	0.076	≤ 99%	
Celtic Seas	<i>Mytilus edulis</i>	Blue mussel	MUS		5210	4438355	0.057	0.042	≤ 99%	
Celtic Seas	<i>Anarhichas lupus</i>	Atlantic wolffish	CAA		4306.2	10369202	0.047	0.097	≤ 99%	
Celtic Seas	<i>Helicolenus dactylopterus</i>	Blackbelly rosefish	BRF		4216.9	11114866	0.046	0.104	≤ 99%	≥ 0.1%
Celtic Seas	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	GHL	ghl.27.561214	1821.2	6200867	0.020	0.058	≤ 99%	
Celtic Seas	<i>Chaceon affinis</i>	Deep-sea red crab	KEF		889.1	7557108	0.010	0.071	≤ 99%	
Celtic Seas	<i>Crangon crangon</i>	Common shrimp	CSH		660.2	6336756	0.007	0.059	≤ 99%	
Celtic Seas	<i>Sparus aurata</i>	Gilthead seabream	SBG		605.3	8439995	0.007	0.079	≤ 99%	
Greater North Sea	<i>Clupea harengus</i>	Atlantic herring	HER	her.27.3a47d her.27.20-24 her.27.1-24a514a	2291564.1	1130895357	23.937	9.962	≤ 90%	≥ 1%

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Greater North Sea	<i>Scomber scombrus</i>	Atlantic mackerel	MAC	mac.27.nea	1222585.9	1268737731	12.771	11.176	≤ 90%	≥ 1%
Greater North Sea	<i>Ammodytes spp</i>	Sandeels(=Sandlances) nei	SAN	san.sa.1r san.sa.2r san.sa.3r san.sa.4 san.sa.5r san.sa.6 san.sa.7r	1168958.2	244600213	12.211	2.155	≤ 90%	≥ 1%
Greater North Sea	<i>Sprattus sprattus</i>	European sprat	SPR	spr.27.3a4 spr.27.7de	1141894.8	285274688	11.928	2.513	≤ 90%	≥ 1%
Greater North Sea	<i>Pleuronectes platessa</i>	European plaice	PLE	ple.27.21-23 ple.27.7e ple.27.7d ple.27.420	424306.1	803151249	4.432	7.075	≤ 90%	≥ 1%
Greater North Sea	<i>Pecten maximus</i>	Great Atlantic scallop	SCE		283654	814802171	2.963	7.177	≤ 90%	≥ 1%
Greater North Sea	<i>Pollachius virens</i>	Saithe(=Pollock)	POK	pok.27.3a46	206946.5	262206793	2.162	2.310	≤ 90%	≥ 1%
Greater North Sea	<i>Crangon crangon</i>	Common shrimp	CSH		201632.1	870154916	2.106	7.665	≤ 90%	≥ 1%
Greater North Sea	<i>Mytilus edulis</i>	Blue mussel	MUS		192464.1	138327107	2.010	1.218	≤ 90%	≥ 1%
Greater North Sea	<i>Gadus morhua</i>	Atlantic cod	COD	cod.27.21 cod.27.7e-k cod.27.47d20	188077.7	553651669	1.965	4.877	≤ 90%	≥ 1%
Greater North Sea	<i>Melanogrammus aeglefinus</i>	Haddock	HAD	had.27.46a20 had.27.7b-k	173412.4	291311792	1.811	2.566	≤ 90%	≥ 1%
Greater North Sea	<i>Trisopterus esmarkii</i>	Norway pout	NOP	nop.27.3a4	165047.9	40578916	1.724	0.357	≤ 90%	≥ 1%
Greater North Sea	<i>Buccinum undatum</i>	Whelk	WHE		162792.3	274894599	1.700	2.421	≤ 90%	≥ 1%
Greater North Sea	<i>Cancer pagurus</i>	Edible crab	CRE		154084.9	970837	1.610	0.009	≤ 90%	≥ 1%
Greater North Sea	<i>Merlangius merlangus</i>	Whiting	WHG	whg.27.3a whg.27.7b-ce-k whg.27.47d	138151.9	169070156	1.443	1.489	≤ 90%	≥ 1%

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Greater North Sea	<i>Nephrops norvegicus</i>	Norway lobster	NEP	nep.fu.33 nep.fu.34 nep.fu.9 nep.fu.7 nep.fu.5 nep.fu.32 nep.fu.3-4 nep.fu.10 nep.fu.6 nep.fu.8 nep-fu.27.4outFU	122254.2	654954425	1.277	5.769	≤ 90%	≥ 1%
Greater North Sea	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL	pil.27.7	104810.6	64003158	1.095	0.564	≤ 90%	≥ 1%
Greater North Sea	<i>Lophius piscatorius</i>	Angler(=Monk)	MON	mon.27.78abd	101456.2	362293153	1.060	3.191	≤ 90%	≥ 1%
Greater North Sea	<i>Solea solea</i>	Common sole	SOL	sol.27.7e sol.27.4 sol.27.20-24 sol.27.7d	86592.5	950672146	0.905	8.374	≤ 90%	≥ 1%
Greater North Sea	<i>Merluccius merluccius</i>	European hake	HKE	hke.27.3a46-8abd	83276	220784386	0.870	1.945	≤ 90%	≥ 1%
Greater North Sea	<i>Loligo spp</i>	Common squids nei	SQC		40354.6	129483859	0.422	1.141	≤ 90%	≥ 1%
Greater North Sea	<i>Scophthalmus maximus</i>	Turbot	TUR	tur.27.3a tur.27.4	25197.8	243901984	0.263	2.148	≤ 90%	≥ 1%
Greater North Sea	<i>Pandalus borealis</i>	Northern prawn	PRA	pra.27.3a4a pra.27.4a	21608.2	146530758	0.226	1.291	≤ 90%	≥ 1%
Greater North Sea	<i>Homarus gammarus</i>	European lobster	LBE		17444.1	279201572	0.182	2.459	≤ 90%	≥ 1%
Greater North Sea	<i>Cerastoderma edule</i>	Common edible cockle	COC		86443	68033032	0.903	0.599	≤ 95%	≥ 0.1%
Greater North Sea	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM	hom.27.2a4a5b6a7a-ce-k8 hom.27.3a4bc7d	80269.4	19927614	0.838	0.176	≤ 95%	≥ 0.1%
Greater North Sea	<i>Sepia officinalis</i>	Common cuttlefish	CTC		66597.6	122854439	0.696	1.082	≤ 95%	≥ 1%
Greater North Sea	<i>Micromesistius poutassou</i>	Blue whiting(=Poutassou)	WHB	whb.27.1-91214	35739.6	11094107	0.373	0.098	≤ 95%	≥ 0.1%

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Greater North Sea	<i>Ensis ensis</i>	Pod razor shell	EQE		34989.2	55877917	0.365	0.492	≤ 95%	≥ 0.1%
Greater North Sea	<i>Maja squinado</i>	Spinous spider crab	SCR		34115.5	184989	0.356	0.002	≤ 95%	≥ 0.1%
Greater North Sea	<i>Chelidonichthys lucerna</i>	Tub gurnard	GUU		31997.6	4104247	0.334	0.036	≤ 95%	≥ 0.1%
Greater North Sea	<i>Limanda limanda</i>	Common dab	DAB	dab.27.3a4	31415.5	27178096	0.328	0.239	≤ 95%	≥ 0.1%
Greater North Sea	<i>Molva molva</i>	Ling	LIN	lin.27.346-91214	27913.6	50019667	0.292	0.441	≤ 95%	≥ 0.1%
Greater North Sea	<i>Microstomus kitt</i>	Lemon sole	LEM	lem.27.3a47d	25104.2	115622515	0.262	1.018	≤ 95%	≥ 1%
Greater North Sea	<i>Pollachius pollachius</i>	Pollack	POL	pol.27.3a4 pol.27.67	14852.4	51091391	0.155	0.450	≤ 95%	≥ 0.1%
Greater North Sea	<i>Scophthalmus rhombus</i>	Brill	BLL	bll.27.3a47de	13415	94371076	0.140	0.831	≤ 95%	≥ 0.1%
Greater North Sea	<i>Dicentrarchus labrax</i>	European seabass	BSS	bss.27.4bc7ad-h	6364.2	79674187	0.066	0.702	≤ 95%	≥ 0.1%
Greater North Sea	<i>Scyliorhinus canicula</i>	Small-spotted catshark	SYC	syc.27.67a-ce-j syc.27.3a47d	27246.6	840025	0.285	0.007	≤ 98%	≥ 0.1%
Greater North Sea	<i>Glycymeris glycymeris</i>	Common European bitter-sweet	GKL		25677.1	11998392	0.268	0.106	≤ 98%	≥ 0.1%
Greater North Sea	<i>Engraulis encrasicolus</i>	European anchovy	ANE		23275.8	10119017	0.243	0.089	≤ 98%	≥ 0.1%
Greater North Sea	<i>Trisopterus luscus</i>	Pouting(=Bib)	BIB		23274.9	14341860	0.243	0.126	≤ 98%	≥ 0.1%
Greater North Sea	<i>Aequipecten opercularis</i>	Queen scallop	QSC		22946.6	23576427	0.240	0.208	≤ 98%	≥ 0.1%
Greater North Sea	<i>Mullus surmuletus</i>	Surmullet	MUR	mur.27.67a-ce-k89a mur.27.3a47d	21076	163719	0.220	0.001	≤ 98%	≥ 0.1%
Greater North Sea	<i>Spisula solidus</i>	Solid surf clam	ULO		19428.7	18633226	0.203	0.164	≤ 98%	≥ 0.1%
Greater North Sea	<i>Aspitrigla cuculus</i>	Red gurnard	GUR		17050	1247654	0.178	0.011	≤ 98%	≥ 0.1%
Greater North Sea	<i>Raja clavata</i>	Thornback ray	RJC	rjc.27.7e rjc.27.3a47d	14930	353011	0.156	0.003	≤ 98%	≥ 0.1%

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Greater North Sea	<i>Glyptocephalus cynoglossus</i>	Witch flounder	WIT	wit.27.3a47d	14241.8	31825230	0.149	0.280	≤ 98%	≥ 0.1%
Greater North Sea	<i>Mustelus spp</i>	Smooth-hounds nei	SDV		13607.6	17268684	0.142	0.152	≤ 98%	≥ 0.1%
Greater North Sea	<i>Spondyliosoma cantharus</i>	Black seabream	BRB		11854.3	31801652	0.124	0.280	≤ 98%	≥ 0.1%
Greater North Sea	<i>Lepidorhombus whiffiagonis</i>	Megrim	MEG	meg.27.7b-k8abd	11095.1	37776396	0.116	0.333	≤ 98%	≥ 0.1%
Greater North Sea	<i>Necora puber</i>	Velvet swimcrab	LIO		6041.9	19523728	0.063	0.172	≤ 98%	≥ 0.1%
Greater North Sea	<i>Zeus faber</i>	John dory	JOD		4194.9	42273711	0.044	0.372	≤ 98%	≥ 0.1%
Greater North Sea	<i>Hippoglossus hippoglossus</i>	Atlantic halibut	HAL		2040.7	17326494	0.021	0.153	≤ 98%	≥ 0.1%
Greater North Sea	<i>Eutrigla gurnardus</i>	Grey gurnard	GUG	gug.27.3a47d	12164.3	333611	0.127	0.003	≤ 99%	≥ 0.1%
Greater North Sea	<i>Platichthys flesus</i>	European flounder	FLE	fle.27.3a4	11221.9	9128995	0.117	0.080	≤ 99%	≥ 0.1%
Greater North Sea	<i>Anarhichas spp</i>	Wolffishes(=Catfishes) nei	CAT		5721.3	14738032	0.060	0.130	≤ 99%	≥ 0.1%
Greater North Sea	<i>Venus verrucosa</i>	Warty venus	VEV		3656.9	15996748	0.038	0.141	≤ 99%	≥ 0.1%
Greater North Sea	<i>Cyclopterus lumpus</i>	Lumpfish(=Lumpsucker)	LUM		1910.5	11899823	0.020	0.105	≤ 99%	≥ 0.1%
Greater North Sea	<i>Sparus aurata</i>	Gilthead seabream	SBG		621.5	8680826	0.006	0.076	≤ 99%	
Ionian & central Med.	<i>Parapenaeus longirostris</i>	Deep-water rose shrimp	DPS		31671.2	200490601	12.947	11.464	≤ 90%	≥ 1%
Ionian & central Med.	<i>Engraulis encrasicolus</i>	European anchovy	ANE		22203.2	55323878	9.077	3.163	≤ 90%	≥ 1%
Ionian & central Med.	<i>Merluccius merluccius</i>	European hake	HKE		16989.6	129662604	6.945	7.414	≤ 90%	≥ 1%

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Ionian & central Med.	<i>Thunnus thynnus</i>	Atlantic bluefin tuna	BFT		13335.9	121778932	5.452	6.963	≤ 90%	≥ 1%
Ionian & central Med.	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL		11770	25052582	4.812	1.432	≤ 90%	≥ 1%
Ionian & central Med.	<i>Aristaeomorpha foliacea</i>	Giant red shrimp	ARS		10971.5	259094184	4.485	14.814	≤ 90%	≥ 1%
Ionian & central Med.	<i>Mullus surmuletus</i>	Surmullet	MUR		8904	66683491	3.640	3.813	≤ 90%	≥ 1%
Ionian & central Med.	<i>Xiphias gladius</i>	Swordfish	SWO		8335.6	79298232	3.408	4.534	≤ 90%	≥ 1%
Ionian & central Med.	<i>Sepia officinalis</i>	Common cuttlefish	CTC		7825.1	75047644	3.199	4.291	≤ 90%	≥ 1%
Ionian & central Med.	<i>Mullus barbatus</i>	Red mullet	MUT		6899.2	46394672	2.820	2.653	≤ 90%	≥ 1%
Ionian & central Med.	<i>Thunnus alalunga</i>	Albacore	ALB		6804.9	21855876	2.782	1.250	≤ 90%	≥ 1%
Ionian & central Med.	<i>Boops boops</i>	Bogue	BOG		6220.2	18930573	2.543	1.082	≤ 90%	≥ 1%
Ionian & central Med.	<i>Octopus vulgaris</i>	Common octopus	OCC		5666.4	47549779	2.316	2.719	≤ 90%	≥ 1%
Ionian & central Med.	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM		5237	9237018	2.141	0.528	≤ 90%	≥ 1%
Ionian & central Med.	<i>Lepidopus caudatus</i>	Silver scabbardfish	SFS		5134.7	17152496	2.099	0.981	≤ 90%	≥ 1%

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Ionian & central Med.	<i>Scomber colias</i> (former <i>S. japonicus</i>)	Chub mackerel	VMA (MAS)		4240.3	5193288	1.733	0.297	≤ 90%	≥ 1%
Ionian & central Med.	<i>Illex coindetii</i>	Broadtail shortfin squid	SQM		3809	14664321	1.557	0.838	≤ 90%	≥ 1%
Ionian & central Med.	<i>Aristeus antennatus</i>	Blue and red shrimp	ARA		3543.7	84400933	1.449	4.826	≤ 90%	≥ 1%
Ionian & central Med.	<i>Coryphaena hippurus</i>	Common dolphinfish	DOL		2901.5	13129923	1.186	0.751	≤ 90%	≥ 1%
Ionian & central Med.	<i>Sarda sarda</i>	Atlantic bonito	BON		2884.3	14446717	1.179	0.826	≤ 90%	≥ 1%
Ionian & central Med.	<i>Loligo vulgaris</i>	European squid	SQR		2871.1	23405794	1.174	1.338	≤ 90%	≥ 1%
Ionian & central Med.	<i>Eledone moschata</i>	Musky octopus	EDT		2597.8	14001656	1.062	0.801	≤ 90%	≥ 1%
Ionian & central Med.	<i>Pagellus erythrinus</i>	Common pandora	PAC		2589.8	17277377	1.059	0.988	≤ 90%	≥ 1%
Ionian & central Med.	<i>Spicara smaris</i>	Picarel	SPC		2334	7150687	0.954	0.409	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Lophius budegassa</i>	Blackbellied angler	ANK		2305.5	13456589	0.942	0.769	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Nephrops norvegicus</i>	Norway lobster	NEP		2237.6	44007768	0.915	2.516	≤ 90%	≥ 1%
Ionian & central Med.	<i>Euthynnus alletteratus</i>	Little tunny(=Atl.black skipj)	LTA		2048.7	7910787	0.838	0.452	≤ 90%	≥ 0.1%

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Ionian & central Med.	<i>Spicara maena</i>	Blotched picarel	BPI		2023.6	9556866	0.827	0.546	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Scorpaena scrofa</i>	Red scorpionfish	RSE		1844.9	16306329	0.754	0.932	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Sardinella aurita</i>	Round sardinella	SAA		1832.7	2767463	0.749	0.158	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Scomber scombrus</i>	Atlantic mackerel	MAC		1788.1	6424343	0.731	0.367	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Raja clavata</i>	Thornback ray	RJC		1631.7	3454045	0.667	0.197	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Trachurus mediterraneus</i>	Mediterranean horse mackerel	HMM		1595.1	3075763	0.652	0.176	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Squilla mantis</i>	Spottail mantis squillid	MTS		1481.7	6536568	0.606	0.374	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Seriola dumerili</i>	Greater amberjack	AMB		1455.7	14817851	0.595	0.847	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Sparus aurata</i>	Gilthead seabream	SBG		1300.7	19853802	0.532	1.135	≤ 90%	≥ 1%
Ionian & central Med.	<i>Penaeus kerathurus</i>	Caramote prawn	TGS		1278.1	20535603	0.523	1.174	≤ 90%	≥ 1%
Ionian & central Med.	<i>Helicolenus dactylopterus</i>	Blackbelly rosefish	BRF		1247.8	10234796	0.510	0.585	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Diplodus sargus</i>	White seabream	SWA		1187.1	17855744	0.485	1.021	≤ 90%	≥ 1%

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Ionian & central Med.	<i>Solea solea</i>	Common sole	SOL		845.1	9020533	0.345	0.516	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Pagrus pagrus</i>	Red porgy	RPG		810.6	12296091	0.331	0.703	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Palinurus elephas</i>	Common spiny lobster	SLO		522.5	19621910	0.214	1.122	≤ 90%	≥ 1%
Ionian & central Med.	<i>Dentex dentex</i>	Common dentex	DEC		519.1	9314521	0.212	0.533	≤ 90%	≥ 0.1%
Ionian & central Med.	<i>Eledone cirrosa</i>	Horned octopus	EOI		1127	4738720	0.461	0.271	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Phycis phycis</i>	Forkbeard	FOR		859.8	4669922	0.352	0.267	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Plesionika edwardsii</i>	Striped soldier shrimp	LKW		841.2	8728573	0.344	0.499	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Zeus faber</i>	John dory	JOD		827.5	6178923	0.338	0.353	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Chelidonichthys lucerna</i>	Tub gurnard	GUU		813.3	5517056	0.332	0.315	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Mugil cephalus</i>	Flathead grey mullet	MUF		796.3	5012325	0.326	0.287	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Diplodus annularis</i>	Annular seabream	ANN		586.4	2984921	0.240	0.171	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Oblada melanura</i>	Saddled seabream	SBS		508	3735830	0.208	0.214	≤ 95%	≥ 0.1%

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Ionian & central Med.	<i>Pagellus acarne</i>	Axillary seabream	SBA		506.6	2882579	0.207	0.165	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Conger conger</i>	European conger	COE		497.4	1380307	0.203	0.079	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Lithognathus mormyrus</i>	Sand steenbras	SSB		476.5	4889328	0.195	0.280	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Diplodus vulgaris</i>	Common two-banded seabream	CTB		439	4681903	0.179	0.268	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Dicentrarchus labrax</i>	European seabass	BSS		403.5	5773474	0.165	0.330	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Epinephelus aeneus</i>	White grouper	GPW		285.2	5313077	0.117	0.304	≤ 95%	≥ 0.1%
Ionian & central Med.	<i>Alloteuthis media</i>	Midsized squid	OUM		437.5	2185529	0.179	0.125	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Katsuwonus pelamis</i>	Skipjack tuna	SKJ		418.1	1712422	0.171	0.098	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Scorpaena porcus</i>	Black scorpionfish	BBS		417.5	3957947	0.171	0.226	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Lophius piscatorius</i>	Angler(=Monk)	MON		409.6	2579477	0.167	0.147	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Raja miraletus</i>	Brown ray	JAI		398.8	804418	0.163	0.046	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Mustelus mustelus</i>	Smooth-hound	SMD		388.9	1426479	0.159	0.082	≤ 98%	≥ 0.1%

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Ionian & central Med.	<i>Sphyraena sphyraena</i>	European barracuda	YRS		374.2	2174824	0.153	0.124	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Sparisoma cretense</i>	Parrotfish	PRR		352.7	2431405	0.144	0.139	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Phycis blennoides</i>	Greater forkbeard	GFB		350.9	1465877	0.143	0.084	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Scyliorhinus canicula</i>	Small-spotted catshark	SYC		336.9	786267	0.138	0.045	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Micromesistius poutassou</i>	Blue whiting(=Poutassou)	WHB		325.8	1244335	0.133	0.071	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Sarpa salpa</i>	Salema	SLM		325.8	680602	0.133	0.039	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Aspitrigla cuculus</i>	Red gurnard	GUR		275.5	1632289	0.113	0.093	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Naucrates ductor</i>	Pilotfish	NAU		268	1001493	0.110	0.057	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Squalus acanthias</i>	Picked dogfish	DGS		260.4	564540	0.106	0.032	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Epinephelus marginatus</i>	Dusky grouper	GPD		259.1	4473518	0.106	0.256	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Dentex macrophthalmus</i>	Large-eye dentex	DEL		243.1	2300761	0.099	0.132	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Paracentrotus lividus</i>	Stony sea urchin	URM		232.1	1039082	0.095	0.059	≤ 98%	

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Ionian & central Med.	<i>Pagellus bogaraveo</i>	Blackspot(=red) seabream	SBR		226.3	1803098	0.093	0.103	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Uranoscopus scaber</i>	Stargazer	UUC		226.1	1529476	0.092	0.087	≤ 98%	
Ionian & central Med.	<i>Raja alba</i>	White skate	RJA		201.3	605175	0.082	0.035	≤ 98%	
Ionian & central Med.	<i>Diplodus puntazzo</i>	Sharpsnout seabream	SHR		200.2	3386915	0.082	0.194	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Epinephelus costae</i>	Goldblotch grouper	EPK		184.7	3897807	0.075	0.223	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Xyrichtys novacula</i>	Pearly razorfish	XYN		180	1862538	0.074	0.106	≤ 98%	≥ 0.1%
Ionian & central Med.	<i>Auxis rochei</i>	Bullet tuna	BLT		196.5	936813	0.080	0.054	≤ 99%	
Ionian & central Med.	<i>Chelidonichthys lastoviza</i>	Streaked gurnard	CTZ		176.5	949146	0.072	0.054	≤ 99%	
Ionian & central Med.	<i>Belone belone</i>	Garfish	GAR		174.8	910340	0.071	0.052	≤ 99%	
Ionian & central Med.	<i>Todarodes sagittatus</i>	European flying squid	SQE		154	574618	0.063	0.033	≤ 99%	
Ionian & central Med.	<i>Lepidotrigla cavillone</i>	Large-scaled gurnard	LDV		150.4	168581	0.061	0.010	≤ 99%	
Ionian & central Med.	<i>Scorpaena notata</i>	Small red scorpionfish	SNQ		142.5	348075	0.058	0.020	≤ 99%	

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Ionian & central Med.	<i>Todaropsis eblanae</i>	Lesser flying squid	TDQ		140.4	664694	0.057	0.038	≤ 99%	
Ionian & central Med.	<i>Citharus linguatula</i>	Spotted flounder	CIL		137.6	568324	0.056	0.032	≤ 99%	
Ionian & central Med.	<i>Sprattus sprattus</i>	European sprat	SPR		135	75874	0.055	0.004	≤ 99%	
Ionian & central Med.	<i>Trigla lyra</i>	Piper gurnard	GUN		131.3	673346	0.054	0.039	≤ 99%	
Ionian & central Med.	<i>Serranus cabrilla</i>	Comber	CBR		126	401022	0.052	0.023	≤ 99%	
Ionian & central Med.	<i>Liza aurata</i>	Golden grey mullet	MGA		123.9	296841	0.051	0.017	≤ 99%	
Ionian & central Med.	<i>Solenocera membranacea</i>	Atlantic mud shrimp	SKM		110.6	664321	0.045	0.038	≤ 99%	
Ionian & central Med.	<i>Spondyliosoma cantharus</i>	Black seabream	BRB		104	1235565	0.043	0.071	≤ 99%	
Ionian & central Med.	<i>Alosa alosa</i>	Allis shad	ASD		98.2	58667	0.040	0.003	≤ 99%	
Ionian & central Med.	<i>Squalus blainvillei</i>	Longnose spurdog	QUB		96.7	161151	0.040	0.009	≤ 99%	
Ionian & central Med.	<i>Loligo forbesi</i>	Veined squid	SQF		94.3	694731	0.039	0.040	≤ 99%	
Ionian & central Med.	<i>Polyprion americanus</i>	Wreckfish	WRF		76.7	726623	0.031	0.042	≤ 99%	

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Ionian & central Med.	<i>Homarus gammarus</i>	European lobster	LBE		49.4	1346420	0.020	0.077	≤ 99%	
Macaronesia	<i>Prionace glauca</i>	Blue shark	BSH		72928.1	100506286	32.633	19.091	≤ 90%	≥ 1%
Macaronesia	<i>Katsuwonus pelamis</i>	Skipjack tuna	SKJ		26712.9	28328758	11.953	5.381	≤ 90%	≥ 1%
Macaronesia	<i>Thunnus obesus</i>	Bigeye tuna	BET		25964.5	61443180	11.618	11.671	≤ 90%	≥ 1%
Macaronesia	<i>Xiphias gladius</i>	Swordfish	SWO		21539	88962082	9.638	16.899	≤ 90%	≥ 1%
Macaronesia	<i>Thunnus alalunga</i>	Albacore	ALB		20337.6	50889620	9.100	9.667	≤ 90%	≥ 1%
Macaronesia	<i>Aphanopus carbo</i>	Black scabbardfish	BSF	bsf.27.nea	12702	36948489	5.684	7.018	≤ 90%	≥ 1%
Macaronesia	<i>Trachurus picturatus</i>	Blue jack mackerel	JAA	jaa.27.10a2	9751.2	11135121	4.363	2.115	≤ 90%	≥ 1%
Macaronesia	<i>Scomber colias</i>	Atlantic chub mackerel	MAZ		4666.2	4113477	2.088	0.781	≤ 90%	≥ 1%
Macaronesia	<i>Isurus oxyrinchus</i>	Shortfin mako	SMA		3573.9	9014170	1.599	1.712	≤ 90%	≥ 1%
Macaronesia	<i>Thunnus thynnus</i>	Atlantic bluefin tuna	BFT		1845.9	11205707	0.826	2.129	≤ 90%	≥ 1%
Macaronesia	<i>Sparisoma cretense</i>	Parrotfish	PRR		1830.5	9929758	0.819	1.886	≤ 90%	≥ 1%
Macaronesia	<i>Loligo forbesi</i>	Veined squid	SQF		1607.7	12905690	0.719	2.451	≤ 90%	≥ 1%
Macaronesia	<i>Thunnus albacares</i>	Yellowfin tuna	YFT		1279.3	3264696	0.572	0.620	≤ 90%	≥ 0.1%
Macaronesia	<i>Lepidocybium flavobrunneum</i>	Escolar	LEC		1053.9	6207032	0.472	1.179	≤ 90%	≥ 1%
Macaronesia	<i>Pagellus bogaraveo</i>	Blackspot(=red) seabream	SBR	sbr.27.10	901	12846315	0.403	2.440	≤ 90%	≥ 1%
Macaronesia	<i>Conger conger</i>	European conger	COE		851.1	4465148	0.381	0.848	≤ 90%	≥ 0.1%
Macaronesia	<i>Dentex gibbosus</i>	Pink dentex	DEP		800.1	5362445	0.358	1.019	≤ 90%	≥ 1%

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Macaronesia	<i>Pagrus pagrus</i>	Red porgy	RPG		749.7	6335002	0.335	1.203	<= 90%	>= 1%
Macaronesia	<i>Beryx splendens</i>	Splendid alfonso	BYS		722.9	4422094	0.323	0.840	<= 90%	>= 0.1%
Macaronesia	<i>Helicolenus dactylopterus</i>	Blackbelly rosefish	BRF		592.1	3204860	0.265	0.609	<= 90%	>= 0.1%
Macaronesia	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL		1765.2	176856	0.790	0.034	<= 95%	>= 0.1%
Macaronesia	<i>Sardinella aurita</i>	Round sardinella	SAA		988.7	1275105	0.442	0.242	<= 95%	>= 0.1%
Macaronesia	<i>Patella aspera</i>	Rough limpet	LQY		675.6	2816976	0.302	0.535	<= 95%	>= 0.1%
Macaronesia	<i>Ruvettus pretiosus</i>	Oilfish	OIL		521.8	1344970	0.234	0.255	<= 95%	>= 0.1%
Macaronesia	<i>Balistes capriscus</i>	Grey triggerfish	TRG		473.8	1550144	0.212	0.294	<= 95%	>= 0.1%
Macaronesia	<i>Pseudocaranx dentex</i>	White trevally	TRZ		398.1	2286042	0.178	0.434	<= 95%	>= 0.1%
Macaronesia	<i>Phycis phycis</i>	Forkbeard	FOR		369.5	1912786	0.165	0.363	<= 95%	>= 0.1%
Macaronesia	<i>Polyprion americanus</i>	Wreckfish	WRF		284.7	3123454	0.127	0.593	<= 95%	>= 0.1%
Macaronesia	<i>Plesionika narval</i>	Narwal shrimp	PVJ		262.6	2042708	0.118	0.388	<= 95%	>= 0.1%
Macaronesia	<i>Octopus vulgaris</i>	Common octopus	OCC		250.9	1292823	0.112	0.246	<= 95%	>= 0.1%
Macaronesia	<i>Epinephelus marginatus</i>	Dusky grouper	GPD		240.7	2107067	0.108	0.400	<= 95%	>= 0.1%
Macaronesia	<i>Seriola dumerili</i>	Greater amberjack	AMB		240.4	1410015	0.108	0.268	<= 95%	>= 0.1%
Macaronesia	<i>Merluccius merluccius</i>	European hake	HKE		213.8	1446572	0.096	0.275	<= 95%	>= 0.1%
Macaronesia	<i>Beryx decadactylus</i>	Alfonso	BXD		156	2393366	0.070	0.455	<= 95%	>= 0.1%
Macaronesia	<i>Schedophilus ovalis</i>	Imperial blackfish	HDV		13.8	1695124	0.006	0.322	<= 95%	>= 0.1%

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Macaronesia	<i>Nesiarchus nasutus</i>	Black gemfish	NEN		7.9	2307570	0.004	0.438	<= 95%	>= 0.1%
Macaronesia	<i>Muraena helena</i>	Mediterranean moray	MMH		350.5	1106590	0.157	0.210	<= 98%	>= 0.1%
Macaronesia	<i>Acanthocybium sordani</i>	Wahoo	WAH		291.5	867764	0.130	0.165	<= 98%	>= 0.1%
Macaronesia	<i>Sardinella maderensis</i>	Madeiran sardinella	SAE		276.3	306341	0.124	0.058	<= 98%	>= 0.1%
Macaronesia	<i>Mora moro</i>	Common mora	RIB		268	972546	0.120	0.185	<= 98%	>= 0.1%
Macaronesia	<i>Sarpa salpa</i>	Salema	SLM		221.3	463008	0.099	0.088	<= 98%	
Macaronesia	<i>Diplodus sargus</i>	White seabream	SWA		205.6	842075	0.092	0.160	<= 98%	>= 0.1%
Macaronesia	<i>Pagellus erythrinus</i>	Common pandora	PAC		184.3	758508	0.082	0.144	<= 98%	>= 0.1%
Macaronesia	<i>Stephanolepis hispidus</i>	Planehead filefish	FIK		159.4	613575	0.071	0.117	<= 98%	>= 0.1%
Macaronesia	<i>Serranus cabrilla</i>	Comber	CBR		142.5	1069580	0.064	0.203	<= 98%	>= 0.1%
Macaronesia	<i>Spondyliosoma cantharus</i>	Black seabream	BRB		130.2	524300	0.058	0.100	<= 98%	
Macaronesia	<i>Mullus surmuletus</i>	Surmullet	MUR		128.8	1249367	0.058	0.237	<= 98%	>= 0.1%
Macaronesia	<i>Diplodus vulgaris</i>	Common two-banded seabream	CTB		110.1	1147690	0.049	0.218	<= 98%	>= 0.1%
Macaronesia	<i>Coryphaena hippurus</i>	Common dolphinfish	DOL		107.5	566682	0.048	0.107	<= 98%	>= 0.1%
Macaronesia	<i>Seriola rivoliana</i>	Longfin yellowtail	YTL		99.6	618893	0.045	0.118	<= 98%	>= 0.1%
Macaronesia	<i>Pagrus auriga</i>	Redbanded seabream	REA		92.3	824561	0.041	0.157	<= 98%	>= 0.1%
Macaronesia	<i>Mycteroperca fusca</i>	Island grouper	MKF		81.9	643672	0.037	0.122	<= 98%	>= 0.1%
Macaronesia	<i>Plesionika edwardsii</i>	Striped soldier shrimp	LKW		71.6	746297	0.032	0.142	<= 98%	>= 0.1%

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Macaronesia	<i>Scorpaena scrofa</i>	Red scorpionfish	RSE		68	872246	0.030	0.166	<= 98%	>= 0.1%
Macaronesia	<i>Epigonus telescopus</i>	Black cardinal fish	EPI		32.3	540555	0.014	0.103	<= 98%	>= 0.1%
Macaronesia	<i>Abudefduf luridus</i>	Canary damsel	AUU		0.8	1087498	0.000	0.207	<= 98%	>= 0.1%
Macaronesia	<i>Istiophorus albicans</i>	Atlantic sailfish	SAI		178.5	183196	0.080	0.035	<= 99%	
Macaronesia	<i>Sarda sarda</i>	Atlantic bonito	BON		169.4	372699	0.076	0.071	<= 99%	
Macaronesia	<i>Boops boops</i>	Bogue	BOG		169.1	112220	0.076	0.021	<= 99%	
Macaronesia	<i>Engraulis encrasicolus</i>	European anchovy	ANE		125.6	213454	0.056	0.041	<= 99%	
Macaronesia	<i>Lepidopus caudatus</i>	Silver scabbardfish	SFS		123.4	406905	0.055	0.077	<= 99%	
Macaronesia	<i>Raja clavata</i>	Thornback ray	RJC		117.8	176856	0.053	0.034	<= 99%	
Macaronesia	<i>Pagellus acarne</i>	Axillary seabream	SBA		100.4	268514	0.045	0.051	<= 99%	
Macaronesia	<i>Trachinotus ovatus</i>	Pompano	POP		96.3	132969	0.043	0.025	<= 99%	
Macaronesia	<i>Pontinus kuhlii</i>	Offshore rockfish	POI		82.9	419131	0.037	0.080	<= 99%	
Macaronesia	<i>Dentex macrophthalmus</i>	Large-eye dentex	DEL		77.9	375812	0.035	0.071	<= 99%	
Macaronesia	<i>Parapristipoma octolineatum</i>	African striped grunt	GRA		60.7	317145	0.027	0.060	<= 99%	
Macaronesia	<i>Chaceon affinis</i>	Deep-sea red crab	KEF		57	255384	0.025	0.049	<= 99%	
Macaronesia	<i>Diplodus cervinus</i>	Zebra seabream	SBZ		49.7	245562	0.022	0.047	<= 99%	
Macaronesia	<i>Tetrapturus audax</i>	Striped marlin	MLS		49.7	285061	0.022	0.054	<= 99%	
Macaronesia	<i>Gymnothorax unicolor</i>	Brown moray	AGK		48.5	225549	0.022	0.043	<= 99%	

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Macaronesia	<i>Gymnothorax polygonus</i>	Polygon moray	AGI		45.9	248222	0.021	0.047	<= 99%	
Macaronesia	<i>Dentex dentex</i>	Common dentex	DEC		37.1	258797	0.017	0.049	<= 99%	
Macaronesia	<i>Zeus faber</i>	John dory	JOD		23.3	232508	0.010	0.044	<= 99%	
Macaronesia	<i>Loligo vulgaris</i>	European squid	SQR		18.2	353500	0.008	0.067	<= 99%	
Macaronesia	<i>Palinurus elephas</i>	Common spiny lobster	SLO		11.5	360494	0.005	0.068	<= 99%	
Macaronesia	<i>Brama brama</i>	Atlantic pomfret	POA		10.1	239804	0.005	0.046	<= 99%	
Western Med.	<i>Engraulis encrasicolus</i>	European anchovy	ANE	ANE01 ANE06	178567.1	343412132	25.442	10.354	≤ 90%	≥ 1%
Western Med.	<i>Sardina pilchardus</i>	European pilchard(=Sardine)	PIL	PIL010304 PIL06	80841.5	124252677	11.518	3.746	≤ 90%	≥ 1%
Western Med.	<i>Thunnus thynnus</i>	Atlantic bluefin tuna	BFT	BFT-E (BF59)	39187	376044628	5.583	11.337	≤ 90%	≥ 1%
Western Med.	<i>Sardinella aurita</i>	Round sardinella	SAA		31641.6	28715900	4.508	0.866	≤ 90%	≥ 1%
Western Med.	<i>Merluccius merluccius</i>	European hake	HKE	HKE1567 HKE891011	24629.9	173072563	3.509	5.218	≤ 90%	≥ 1%
Western Med.	<i>Octopus vulgaris</i>	Common octopus	OCC		22036.8	149647080	3.140	4.512	≤ 90%	≥ 1%
Western Med.	<i>Mullus barbatus</i>	Red mullet	MUT	MUT06 MUT07 MUT10	19267.1	120447515	2.745	3.631	≤ 90%	≥ 1%
Western Med.	<i>Xiphias gladius</i>	Swordfish	SWO	SWO-M (BIL95)	19207.5	148904974	2.737	4.489	≤ 90%	≥ 1%
Western Med.	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM		17107	21835481	2.437	0.658	≤ 90%	≥ 1%
Western Med.	<i>Parapenaeus longirostris</i>	Deep-water rose shrimp	DPS	DPS010304 DPS05 DPS06 DPS91011	13546.8	110581783	1.930	3.334	≤ 90%	≥ 1%
Western Med.	<i>Sparus aurata</i>	Gilthead seabream	SBG		12953.7	167646693	1.846	5.054	≤ 90%	≥ 1%

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Western Med.	<i>Trachurus mediterraneus</i>	Mediterranean horse mackerel	HMM		10891.7	16063042	1.552	0.484	≤ 90%	≥ 1%
Western Med.	<i>Scomber scombrus</i>	Atlantic mackerel	MAC		10706.4	21367819	1.525	0.644	≤ 90%	≥ 1%
Western Med.	<i>Auxis thazard</i>	Frigate tuna	FRI		9668.8	15636546	1.378	0.471	≤ 90%	≥ 1%
Western Med.	<i>Eledone cirrosa</i>	Horned octopus	EOI		9513.7	50801821	1.356	1.532	≤ 90%	≥ 1%
Western Med.	<i>Sepia officinalis</i>	Common cuttlefish	CTC		8806.7	79286090	1.255	2.390	≤ 90%	≥ 1%
Western Med.	<i>Pagellus erythrinus</i>	Common pandora	PAC		7717	38524817	1.100	1.161	≤ 90%	≥ 1%
Western Med.	<i>Illex coindetii</i>	Broadtail shortfin squid	SQM		6913.8	42644118	0.985	1.286	≤ 90%	≥ 1%
Western Med.	<i>Squilla mantis</i>	Spottail mantis squillid	MTS		6515.9	32702092	0.928	0.986	≤ 90%	≥ 0.1%
Western Med.	<i>Euthynnus alletteratus</i>	Little tunny(=Atl.black skipj)	LTA		6072.7	16960304	0.865	0.511	≤ 90%	≥ 0.1%
Western Med.	<i>Aristeus antennatus</i>	Blue and red shrimp	ARA	ARA01 ARA02 ARA05 ARA06	5635.2	156352699	0.803	4.714	≤ 90%	≥ 1%
Western Med.	<i>Lophius budegassa</i>	Blackbellied angler	ANK		5237.3	30888708	0.746	0.931	≤ 90%	≥ 0.1%
Western Med.	<i>Boops boops</i>	Bogue	BOG		5188.6	8983762	0.739	0.271	≤ 90%	≥ 0.1%
Western Med.	<i>Trisopterus minutus</i>	Poor cod	POD		5187.4	12072387	0.739	0.364	≤ 90%	≥ 0.1%
Western Med.	<i>Mullus surmuletus</i>	Surmullet	MUR	MUR05	4856.8	56220836	0.692	1.695	≤ 90%	≥ 1%
Western Med.	<i>Sarda sarda</i>	Atlantic bonito	BON		4765.1	20192826	0.679	0.609	≤ 90%	≥ 0.1%
Western Med.	<i>Anguilla anguilla</i>	European eel	ELE		4486.3	45130295	0.639	1.361	≤ 90%	≥ 1%
Western Med.	<i>Lepidopus caudatus</i>	Silver scabbardfish	SFS		4342.4	21141017	0.619	0.637	≤ 90%	≥ 0.1%

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Western Med.	<i>Coryphaena hippurus</i>	Common dolphinfish	DOL		4301.3	15492243	0.613	0.467	≤ 90%	≥ 0.1%
Western Med.	<i>Seriola dumerili</i>	Greater amberjack	AMB		4256.8	40199233	0.607	1.212	≤ 90%	≥ 1%
Western Med.	<i>Micromesistius poutassou</i>	Blue whiting(=Poutassou)	WHB		3951.9	5399328	0.563	0.163	≤ 90%	≥ 0.1%
Western Med.	<i>Lophius piscatorius</i>	Angler(=Monk)	MON		3778.3	22683299	0.538	0.684	≤ 90%	≥ 0.1%
Western Med.	<i>Donax trunculus</i>	Truncate donax	DXL		3518.7	21654766	0.501	0.653	≤ 90%	≥ 0.1%
Western Med.	<i>Loligo vulgaris</i>	European squid	SQR		3513.1	50696117	0.501	1.528	≤ 90%	≥ 1%
Western Med.	<i>Chelon labrosus</i>	Thicklip grey mullet	MLR		3366.7	4080046	0.480	0.123	≤ 90%	≥ 0.1%
Western Med.	<i>Pagellus acarne</i>	Axillary seabream	SBA		3329.9	9943617	0.474	0.300	≤ 90%	≥ 0.1%
Western Med.	<i>Acanthocardia tuberculata</i>	Tuberculate cockle	KTT		3269.1	2835546	0.466	0.085	≤ 90%	≥ 0.1%
Western Med.	<i>Dicentrarchus labrax</i>	European seabass	BSS		3076.8	50732812	0.438	1.530	≤ 90%	≥ 1%
Western Med.	<i>Nephrops norvegicus</i>	Norway lobster	NEP	NEP05 NEP06 NEP09	2857.2	61212586	0.407	1.845	≤ 90%	≥ 1%
Western Med.	<i>Aspitrigla cuculus</i>	Red gurnard	GUR		2538.5	6050924	0.362	0.182	≤ 90%	≥ 0.1%
Western Med.	<i>Phycis blennoides</i>	Greater forkbeard	GFB		2528.5	9928568	0.360	0.299	≤ 90%	≥ 0.1%
Western Med.	<i>Scomberesox saurus</i>	Atlantic saury	SAU		2478.5	2209680	0.353	0.067	≤ 90%	≥ 0.1%
Western Med.	<i>Liza aurata</i>	Golden grey mullet	MGA		2432.3	6001548	0.347	0.181	≤ 90%	≥ 0.1%
Western Med.	<i>Chelidonichthys lucerna</i>	Tub gurnard	GUU		2268.6	20075216	0.323	0.605	≤ 90%	≥ 0.1%
Western Med.	<i>Thunnus alalunga</i>	Albacore	ALB	ALB-M (AL35)	2159	9480959	0.308	0.286	≤ 90%	≥ 0.1%
Western Med.	<i>Sarpa salpa</i>	Salema	SLM		2131.5	5950985	0.304	0.179	≤ 90%	≥ 0.1%

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Western Med.	<i>Aristaeomorpha foliacea</i>	Giant red shrimp	ARS	ARS91011	2103.7	46175200	0.300	1.392	≤ 90%	≥ 1%
Western Med.	<i>Lithognathus mormyrus</i>	Sand steenbras	SSB		1999.7	17864629	0.285	0.539	≤ 90%	≥ 0.1%
Western Med.	<i>Scorpaena scrofa</i>	Red scorpionfish	RSE		1931.2	21286459	0.275	0.642	≤ 90%	≥ 0.1%
Western Med.	<i>Solea solea</i>	Common sole	SOL		1882.9	33396969	0.268	1.007	≤ 90%	≥ 1%
Western Med.	<i>Penaeus kerathurus</i>	Caramote prawn	TGS		1801.4	40328056	0.257	1.216	≤ 90%	≥ 1%
Western Med.	<i>Plesionika edwardsii</i>	Striped soldier shrimp	LKW		1719.1	17228738	0.245	0.519	≤ 90%	≥ 0.1%
Western Med.	<i>Diplodus sargus</i>	White seabream	SWA		1665.5	16105416	0.237	0.486	≤ 90%	≥ 0.1%
Western Med.	<i>Palinurus elephas</i>	Common spiny lobster	SLO		1217.5	47289877	0.173	1.426	≤ 90%	≥ 1%
Western Med.	<i>Pagellus bogaraveo</i>	Blackspot(=red) seabream	SBR	SBR0103	1177.5	16125036	0.168	0.486	≤ 90%	≥ 0.1%
Western Med.	<i>Zeus faber</i>	John dory	JOD		792.1	12183027	0.113	0.367	≤ 90%	≥ 0.1%
Western Med.	<i>Aphia minuta</i>	Transparent goby	FIM		416.8	14872824	0.059	0.448	≤ 90%	≥ 0.1%
Western Med.	<i>Conger conger</i>	European conger	COE		1943.1	5574698	0.277	0.168	≤ 95%	≥ 0.1%
Western Med.	<i>Eledone moschata</i>	Musky octopus	EDT		1931.3	9917138	0.275	0.299	≤ 95%	≥ 0.1%
Western Med.	<i>Spicara smaris</i>	Picarel	SPC		1908.6	4006858	0.272	0.121	≤ 95%	≥ 0.1%
Western Med.	<i>Liza ramada</i>	Thinlip grey mullet	MGC		1897.2	5167002	0.270	0.156	≤ 95%	≥ 0.1%
Western Med.	<i>Mugil cephalus</i>	Flathead grey mullet	MUF		1795.4	4028300	0.256	0.121	≤ 95%	≥ 0.1%
Western Med.	<i>Nassarius mutabilis</i>	Changeable nassa	NSQ		1717.5	9976370	0.245	0.301	≤ 95%	≥ 0.1%
Western Med.	<i>Raja asterias</i>	Mediterranean starry ray	JRS		1661	5626152	0.237	0.170	≤ 95%	≥ 0.1%

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Western Med.	<i>Citharus linguatula</i>	Spotted flounder	CIL		1657.9	7432596	0.236	0.224	≤ 95%	≥ 0.1%
Western Med.	<i>Raja clavata</i>	Thornback ray	RJC		1570.3	6829824	0.224	0.206	≤ 95%	≥ 0.1%
Western Med.	<i>Scyliorhinus canicula</i>	Small-spotted catshark	SYC		1552.6	1981833	0.221	0.060	≤ 95%	≥ 0.1%
Western Med.	<i>Todarodes sagittatus</i>	European flying squid	SQE		1528.4	6266531	0.218	0.189	≤ 95%	≥ 0.1%
Western Med.	<i>Spicara maena</i>	Blotched picarel	BPI		1437.8	6565705	0.205	0.198	≤ 95%	≥ 0.1%
Western Med.	<i>Bolinus brandaris</i>	Purple dye murex	BOY		1363.6	9675480	0.194	0.292	≤ 95%	≥ 0.1%
Western Med.	<i>Helicolenus dactylopterus</i>	Blackbelly rosefish	BRF		1287	5759301	0.183	0.174	≤ 95%	≥ 0.1%
Western Med.	<i>Paracentrotus lividus</i>	Stony sea urchin	URM		847.6	10491151	0.121	0.316	≤ 95%	≥ 0.1%
Western Med.	<i>Dentex dentex</i>	Common dentex	DEC		798.4	12101527	0.114	0.365	≤ 95%	≥ 0.1%
Western Med.	<i>Pagrus pagrus</i>	Red porgy	RPG		682.3	8496132	0.097	0.256	≤ 95%	≥ 0.1%
Western Med.	<i>Scophthalmus rhombus</i>	Brill	BLL		396.2	6814119	0.056	0.205	≤ 95%	≥ 0.1%
Western Med.	<i>Argyrosomus regius</i>	Meagre	MGR		1106.7	4007170	0.158	0.121	≤ 98%	≥ 0.1%
Western Med.	<i>Callista chione</i>	Smooth callista	KLK		1051.2	3519604	0.150	0.106	≤ 98%	≥ 0.1%
Western Med.	<i>Oblada melanura</i>	Saddled seabream	SBS		966.5	4901869	0.138	0.148	≤ 98%	≥ 0.1%
Western Med.	<i>Liocarcinus depurator</i>	Blue-leg swimcrab	IOD		889.9	1827641	0.127	0.055	≤ 98%	≥ 0.1%
Western Med.	<i>Diplodus annularis</i>	Annular seabream	ANN		864.5	3390486	0.123	0.102	≤ 98%	≥ 0.1%
Western Med.	<i>Scomber colias (former S. japonicus)</i>	Chub mackerel	VMA (MAS)		781.2	1116160	0.111	0.034	≤ 98%	≥ 0.1%
Western Med.	<i>Uranoscopus scaber</i>	Stargazer	UUC		736.5	3843637	0.105	0.116	≤ 98%	≥ 0.1%

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Western Med.	<i>Diplodus vulgaris</i>	Common two-banded sea-bream	CTB		641.5	4016515	0.091	0.121	≤ 98%	≥ 0.1%
Western Med.	<i>Trachurus picturatus</i>	Blue jack mackerel	JAA		617.1	732495	0.088	0.022	≤ 98%	
Western Med.	<i>Trachinus draco</i>	Greater weever	WEG		592.9	1547775	0.084	0.047	≤ 98%	
Western Med.	<i>Sphyaena sphyraena</i>	European barracuda	YRS		588	1686054	0.084	0.051	≤ 98%	
Western Med.	<i>Cepola macrophthalmia</i>	Red bandfish	CBC		580.8	1433374	0.083	0.043	≤ 98%	
Western Med.	<i>Phycis phycis</i>	Forkbeard	FOR		580.5	2897736	0.083	0.087	≤ 98%	
Western Med.	<i>Scorpaena porcus</i>	Black scorpionfish	BBS		561.2	2997599	0.080	0.090	≤ 98%	
Western Med.	<i>Serranus scriba</i>	Painted comber	SRK		539.1	1737687	0.077	0.052	≤ 98%	
Western Med.	<i>Umbrina cirrosa</i>	Shi drum	COB		527.9	4271938	0.075	0.129	≤ 98%	≥ 0.1%
Western Med.	<i>Naucrates ductor</i>	Pilotfish	NAU		492.2	1270186	0.070	0.038	≤ 98%	
Western Med.	<i>Todaropsis eblanae</i>	Lesser flying squid	TDQ		477.7	2529545	0.068	0.076	≤ 98%	
Western Med.	<i>Pomatomus saltatrix</i>	Bluefish	BLU		475.7	2955170	0.068	0.089	≤ 98%	
Western Med.	<i>Arnoglossus laterna</i>	Mediterranean scaldfish	MSF		474.3	2248723	0.068	0.068	≤ 98%	
Western Med.	<i>Brama brama</i>	Atlantic pomfret	POA		473.1	2872445	0.067	0.087	≤ 98%	
Western Med.	<i>Katsuwonus pelamis</i>	Skipjack tuna	SKJ	SKJ-E (SJ20)	472.9	1418975	0.067	0.043	≤ 98%	
Western Med.	<i>Solen marginatus</i>	European razor clam	RAE		436.8	3977512	0.062	0.120	≤ 98%	≥ 0.1%
Western Med.	<i>Lichia amia</i>	Leerfish	LEE		406.9	2717465	0.058	0.082	≤ 98%	
Western Med.	<i>Centrolophus niger</i>	Rudderfish	CEO		405.9	4187873	0.058	0.126	≤ 98%	≥ 0.1%

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Western Med.	<i>Scophthalmus maximus</i>	Turbot	TUR		213.7	4816941	0.030	0.145	≤ 98%	≥ 0.1%
Western Med.	<i>Epinephelus marginatus</i>	Dusky grouper	GPD		175.8	3268796	0.025	0.099	≤ 98%	
Western Med.	<i>Alloteuthis subulata</i>	European common squid	OUL		81.7	2418772	0.012	0.073	≤ 98%	
Western Med.	<i>Homarus gammarus</i>	European lobster	LBE		70.4	2251944	0.010	0.068	≤ 98%	
Western Med.	<i>Argentina sphyraena</i>	Argentine	ARY		454.8	1828558	0.065	0.055	≤ 99%	
Western Med.	<i>Lepidorhombus boscii</i>	Four-spot megrim	LDB		361.7	1928489	0.052	0.058	≤ 99%	
Western Med.	<i>Galeus melastomus</i>	Blackmouth catshark	SHO		350.1	731997	0.050	0.022	≤ 99%	
Western Med.	<i>Sciaena umbra</i>	Brown meagre	CBM		349.8	1535259	0.050	0.046	≤ 99%	
Western Med.	<i>Trachinotus ovatus</i>	Pompano	POP		343.2	1474663	0.049	0.044	≤ 99%	
Western Med.	<i>Stichopus regalis</i>	Royal cucumber	JCR		338.8	1003280	0.048	0.030	≤ 99%	
Western Med.	<i>Spondyliosoma cantharus</i>	Black seabream	BRB		305.4	1250703	0.044	0.038	≤ 99%	
Western Med.	<i>Prionace glauca</i>	Blue shark	BSH		304.1	607322	0.043	0.018	≤ 99%	
Western Med.	<i>Plesionika heterocarpus</i>	Arrow shrimp	LKO		303	850240	0.043	0.026	≤ 99%	
Western Med.	<i>Eutrigla gurnardus</i>	Grey gurnard	GUG		285.2	779664	0.041	0.024	≤ 99%	
Western Med.	<i>Raja montagui</i>	Spotted ray	RJM		276.9	711778	0.039	0.021	≤ 99%	
Western Med.	<i>Oedalechilus labeo</i>	Boxlip mullet	ODL		276.7	469794	0.039	0.014	≤ 99%	
Western Med.	<i>Lepidotrigla cavillone</i>	Large-scaled gurnard	LDV		269	509149	0.038	0.015	≤ 99%	
Western Med.	<i>Belone belone</i>	Garfish	GAR		266.2	652893	0.038	0.020	≤ 99%	

MSFD sub/region	Taxon	English name	FAO code	Stock code	Weight landings (t)	Value landings (Euro)	% Lan. wgt.	% Lan. val.	Cumulative threshold	Minimal threshold
Western Med.	<i>Chamelea gallina</i>	Striped venus	SVE		239.8	1324121	0.034	0.040	≤ 99%	
Western Med.	<i>Geryon longipes</i>	Mediterranean geryon	GRQ		239.3	1016076	0.034	0.031	≤ 99%	
Western Med.	<i>Maja squinado</i>	Spinous spider crab	SCR		223.4	956496	0.032	0.029	≤ 99%	
Western Med.	<i>Palaemon serratus</i>	Common prawn	CPR		179	1866535	0.026	0.056	≤ 99%	
Western Med.	<i>Sepia orbignyana</i>	Pink cuttlefish	IAR		162.6	1630151	0.023	0.049	≤ 99%	
Western Med.	<i>Limanda limanda</i>	Common dab	DAB		160.8	1205111	0.023	0.036	≤ 99%	
Western Med.	<i>Sepia elegans</i>	Elegant cuttlefish	EJE		103	1400631	0.015	0.042	≤ 99%	
Western Med.	<i>Alloteuthis media</i>	Midsized squid	OUM		81.4	1171507	0.012	0.035	≤ 99%	

5 Coverage of straddling/widely distributed stocks in regional D3-lists

Several stocks and species are wide-ranging i.e. they are distributed across more than one MSFD (sub)region. In advance to WKD3Lists2 there was concern that these stocks could be neglected if caught in low quantities in each of the MSFD (sub)regions, such that they are not captured by the thresholds in any (sub)region (see ToR c).

The D3 taxa lists by WKD3Lists2 were therefore compared with the list of ICCAT stocks from EU/2021/1167 –Table 1 and with a list of widely distributed stocks within the ICES area (including MSFD (sub)regions Baltic Sea, Greater North Sea, Celtic Seas, Bay of Biscay & Iberian Coast and Macaronesia) provided by the ICES Secretariat in the follow-up of WKD3Lists2. In the Mediterranean subregions this analysis was not conducted, but participants confirmed an adequate representation of wide-ranging stocks by the ICCAT species.

Of the total of 39 ICCAT species, 14 species were included in at least one regional D3 taxa list, 25 species were not included (Table 5.1). The prohibited taxon *Mobula spp.* was not included in any regional D3 taxa list indicating no mismatch between landings data and legal requirements.

The jurisdictional area of ICCAT is larger than the MSFD, extending across the whole Atlantic Ocean (eastern and western, northern and southern). Therefore, it is likely that ICCAT species not included in any of the D3 taxa lists are mostly outside MSFD (sub)regions. WKD3Lists 2 therefore concluded that the total absence of some ICCAT species on regional D3 taxa list does not indicate a failure of the lists to capture relevant widely-distributed species, but rather that not all ICCAT species are caught in significant quantities in all MSFD (sub)regions. Several participants of WKD3Lists2 therefore expressed the opinion that not all ICCAT or ICES stocks/species should necessarily be included into at least one regional D3 taxa list, but only in those MSFD (sub)regions, where sufficient landings are recorded for them to be included within the selected threshold.

Table 5.1. Coverage of ICCAT stocks by regional D3-taxa lists. Prohibited species according to EU/2019/1241 are highlighted in bold.

Species	Baltic Sea	Black Sea	Macaronesia	Adriatic Sea	Aegean-Levantine Sea	Biscay & Iberian Coast	Greater North Sea	Ionian & central Med.	Western Med.	Celtic Seas	# of MSFD (sub)regions
<i>Acanthocybium solandri</i>			1								1
<i>Alopias superciliosus</i>											0
<i>Alopias vulpinus</i>											0
<i>Auxis rochei</i>					1	1		1			3
<i>Auxis thazard</i>					1				1		2

Species	Baltic Sea	Black Sea	Macaronesia	Adriatic Sea	Aegean-Levantine Sea	Biscay & Iberian Coast	Greater North Sea	Ionian & central Med.	Western Med.	Celtic Seas	# of MSFD (sub)regions
<i>Tetrapturus belone</i>											0
<i>Tetrapturus fluegeri</i>											0
<i>Tetrapturus georgii</i>											0
<i>Thunnus alalunga</i>			1		1	1		1	1	1	6
<i>Thunnus albacares</i>			1								1
<i>Thunnus atlanticus</i>											0
<i>Thunnus obesus</i>			1			1					2
<i>Thunnus thynnus</i>			1	1	1	1		1	1		6
<i>Xiphias gladius</i>			1	1	1	1		1	1		6
Total species	0	1	12	3	7	9	0	7	8	2	

Comparing the lists of wide-ranging ICES stocks i.e. stocks that cover more than one MSFD (sub)region to the regional D3 taxa lists indicates that the majority of stocks are included (n=95, 59 stocks included, 37 stocks not included among those two prohibited species angel shark *Squatina squatina* and basking shark *Cetorhinus maximus*, Table 5.2).

It should be noted that the reporting of wide-ranging species may be incomplete in many regions and due to the partially inconsistent overlap between FAO areas and MSFD (sub)regions, the spatial allocation of landings to MSFD (sub)regions may be erroneous. It was beyond the scope of WKD3Lists2 to resolve the spatial inconsistencies and data issues, therefore MS are encouraged to consider the inclusion of any of these stocks or species from Tables 5.1 and 5.2 when compiling national D3 taxa lists.

Table 5.2 Coverage of wide-ranging ICES stocks by regional D3 taxa lists. Prohibited species according to EU/2019/1241 are highlighted in bold. Wideranging here refers to presence in more than one MSFD sub/region.

Species	Stock						# of MSFD (sub)regions
		Baltic Sea	Macaronesia	Biscay & Iberian Coast	Greater North Sea	Celtic Seas	
<i>Alopias spp</i>	thr.27.nea						0
<i>Amblyraja radiata</i>	rjr.27.23a4						0
<i>Ammodytes spp</i>	san.27.6a				1		1
<i>Ammodytes spp</i>	san.sa.7r				1		1
<i>Anguilla anguilla</i>	ele.2737.nea	1		1			2
<i>Aphanopus carbo</i>	bsf.27.nea		1	1		1	3
<i>Argentina silus</i>	aru.27.6b7-1012					1	1
<i>Argentina silus</i>	aru.27.123a4						0
<i>Argentina silus</i>	aru.27.5b6a					1	1
<i>Beryx spp</i>	alf.27.nea						0
<i>Brosme brosme</i>	usk.27.3a45b6a7-912b						0
<i>Capros aper</i>	boc.27.6-8			1		1	2
<i>Centrophorus squamosus</i>	cyo.27.nea						0
<i>Centrophorus squamosus</i>	guq.27.nea						0
<i>Centroscymnus coelolepis</i>	cyo.27.nea						0
<i>Cetorhinus maximus</i>	bsk.27.nea						0
<i>Chelidonichthys cuculus</i>	gur.27.3-8						0
<i>Clupea harengus</i>	her.27.20-24	1			1		2
<i>Clupea harengus</i>	her.27.1-24a514a				1	1	2
<i>Clupea harengus</i>	her.27.6a7bc					1	1
<i>Coryphaenoides rupestris</i>	rng.27.1245a8914ab						0
<i>Coryphaenoides rupestris</i>	rng.27.5b6712b						0
<i>Dalatias licha</i>	sck.27.nea						0

Species	Stock						# of MSFD (sub)regions
		Baltic Sea	Macaronesia	Biscay & Iberian Coast	Greater North Sea	Celtic Seas	
<i>Dicentrarchus labrax</i>	bss.27.4bc7ad-h				1	1	2
<i>Dipturus batis</i>	rjb.27.3a4						0
<i>Dipturus batis</i>	rjb.27.67a-ce-k						0
<i>Gadus morhua</i>	cod.27.7e-k				1	1	2
<i>Galeorhinus galeus</i>	gag.27.nea			1			1
<i>Galeus melastomus</i>	sho.27.67						0
<i>Hoplostethus atlanticus</i>	ory.27.nea						0
<i>Lamna nasus</i>	por.27.nea						0
<i>Lepidorhombus</i>	lez.27.4a6a						0
<i>Lepidorhombus boscii</i>	ldb.27.7b-k8abd						0
<i>Lepidorhombus whiffiagonis</i>	meg.27.7b-k8abd			1	1	1	3
<i>Leucoraja naevus</i>	rjn.27.678abd			1			1
<i>Lophius budegassa</i>	ank.27.78abd			1			1
<i>Lophius budegassa</i>	anf.27.3a46						0
<i>Lophius piscatorius</i>	mon.27.78abd			1	1	1	3
<i>Lophius piscatorius</i>	anf.27.3a46				1	1	2
<i>Macrourus berglax</i>	rhg.27.nea						0
<i>Mallotus villosus</i>	cap.27.2a514						0
<i>Melanogrammus aeglefinus</i>	had.27.46a20				1	1	2
<i>Melanogrammus aeglefinus</i>	had.27.7b-k				1	1	2
<i>Melanogrammus aeglefinus</i>	had.27.6b					1	1
<i>Merlangius merlangus</i>	whg.27.7b-ce-k				1	1	2
<i>Merlangius merlangus</i>	whg.27.6b					1	1
<i>Merluccius merluccius</i>	hke.27.3a46-8abd			1	1	1	3

Species	Stock						# of MSFD (sub)regions
		Baltic Sea	Macaronesia	Biscay & Iberian Coast	Greater North Sea	Celtic Seas	
<i>Micromesistius poutassou</i>	whb.27.1-91214			1	1	1	3
<i>Molva dypterygia</i>	bli.27.nea			1		1	2
<i>Molva dypterygia</i>	bli.27.5b67					1	1
<i>Molva molva</i>	lin.27.3a4a6-91214			1	1	1	3
<i>Molva molva</i>	lin.27.5b					1	1
<i>Mullus surmuletus</i>	mur.27.67a-ce-k89a			1	1	1	3
<i>Mustelus asterias</i>	sdv.27.nea			1			1
<i>Nephrops norvegicus</i>	nep.fu.16					1	1
<i>Pagellus bogaraveo</i>	sbr.27.10		1				1
<i>Pagellus bogaraveo</i>	sbr.27.6-8			1			1
<i>Phycis blennoides</i>	gfb.27.nea			1		1	2
<i>Pleuronectes platessa</i>	ple.27.21-23	1			1		2
<i>Pleuronectes platessa</i>	ple.27.7e				1	1	2
<i>Pleuronectes platessa</i>	ple.27.7bc					1	1
<i>Pleuronectes platessa</i>	ple.27.7h-k					1	1
<i>Pollachius pollachius</i>	pol.27.67				1	1	2
<i>Pollachius virens</i>	pok.27.7-10				1	1	2
<i>Pollachius virens</i>	pok.27.3a46				1	1	2
<i>Raja brachyura</i>	rjh.27.4a6					1	1
<i>Raja brachyura</i>	rjh.27.7e					1	1
<i>Raja clavata</i>	rjc.27.7e				1	1	2
<i>Raja clavata</i>	rjc.27.6					1	1
<i>Raja microocellata</i>	rje.27.7de						0
<i>Raja montagui</i>	rjm.27.7ae-h					1	1

Species	Stock						# of MSFD (sub)regions
		Baltic Sea	Macaronesia	Biscay & Iberian Coast	Greater North Sea	Celtic Seas	
<i>Raja montagui</i>	rjm.27.67bj					1	1
<i>Raja undulata</i>	rju.27.7de						0
<i>Raja undulata</i>	rju.27.7bj						0
<i>Rajidae</i>	raj.27.1012						0
<i>Rajidae</i>	raj.27.67a-ce-h						0
<i>Reinhardtius hippoglossoides</i>	ghl.27.561214					1	1
<i>Rostroraja alba</i>	rja.27.nea						0
<i>Salmo salar</i>	sal.neac.all						0
<i>Sardina pilchardus</i>	pil.27.7				1	1	2
<i>Scomber scombrus</i>	mac.27.nea			1	1	1	3
<i>Scophthalmus rhombus</i>	bll.27.3a47de				1	1	2
<i>Scyliorhinus canicula</i>	syc.27.67a-ce-j				1	1	2
<i>Scyliorhinus stellaris</i>	syt.27.67						0
<i>Sebastes mentella</i>	reb.2127.dp						0
<i>Sebastes mentella</i>	reb.2127.sp						0
<i>Sebastes norvegicus</i>	reg.27.561214						0
<i>Solea solea</i>	sol.27.7e				1	1	2
<i>Solea solea</i>	sol.27.7bc					1	1
<i>Solea solea</i>	sol.27.7h-k					1	1
<i>Sprattus sprattus</i>	spr.27.7de				1	1	2
<i>Sprattus sprattus</i>	spr.27.67a-cf-k					1	1
<i>Squalus acanthias</i>	dgs.27.nea						0
<i>Squatina squatina</i>	agn.27.nea						0
<i>Trachurus trachurus</i>	hom.27.2a4a5b6a7a-ce-k8			1	1	1	3

Species	Stock	Baltic Sea	Macaronesia	Biscay & Iberian Coast	Greater North Sea	Celtic Seas	# of MSFD (sub)regions
<i>Trachyrincus scabrus</i>	tsu.27.nea						
Total species		3	2	18	29	48	

6 Considerations & recommendations for the use of regional D3 taxa lists in national D3 reporting

WKD3Lists discussed and compiled several suggestions on how member states could use and might need to complement the regional D3 taxa lists:

- Regional D3 taxa lists compiled by WKD3Lists2 are based on landings data and the application of weight and value thresholds, which aim to reflect the important commercial exploited species of fish and shellfish in each MSFD (sub)region. They may not be comprehensive with respect to EU regulations mentioned under EU/2017/848.
- Nationally and locally important stocks that are not included in the (sub)regional D3 taxa lists should be included in national reporting on the basis of national information (e.g. landings deriving from national waters) or expert judgement.
- Species/stocks that are included within the (sub)regional D3 taxa lists, but which are absent from a member state's national waters, could be reported as "not relevant".
- MS may use landings data confined to their national waters to identify absent taxa that are part of the regional D3 taxa list. However, catch/landing data should be spatially resolved (e.g. by ICES rectangles) and include international landings/catches to fully account for all catches in national waters. Landing statistics on national fleets operating also outside national waters should not be used for this purpose.
- Reporting of assessments should be at stock level wherever possible. For example, *Gadus morhua* in the Baltic Sea, should be reported according to the individual stock units of western Baltic cod.27.22-24 and eastern Baltic cod 27.24-32. If assessments are only available for a higher-order taxon, these should be reported (e.g. *Ammodytes* spp. in the Greater North Sea).
- For the Baltic Sea and North East Atlantic subregions (Greater North Sea, Celtic Seas, Bay of Biscay & Iberian Coast and Macaronesia), species have been resolved to stock level in this report. However, due to merging processes of non-congruent areas, the stocks listed in Table 4.1 may not be comprehensive. **Therefore, it remains within the responsibility of MS to verify and resolve higher-order taxa and species to stocks in the relevant (sub)region wherever possible.**
- Prohibited species according to EU/2019/1241 and EU/2021/92, such as angel shark *Squatina squatina*, or basking shark *Cetorhinus maximus*, as well as non-indigenous species, should not be part of any regional D3 taxa list, but be reported under other descriptors (e.g D1 and D2).
- In some (sub)regions, prohibited species according to EU/2019/1241 and EU/2021/92 (to be updated to the latest fishing opportunity regulation in the MSFD assessment cycle) are allocated with a small TAC to allow for limited bycatch in fisheries. Such species should, if selected by applied thresholds, be reported under both D3 and D1.
- WKD3Lists2 discussed whether formerly commercially relevant species, which have become depleted to the extent of not being included in D3 taxa lists due to low landings, should be reported under D3 or D1. While the MSFD guidance on Article 8 (European Commission 2022) states that such species need to be reported under D3, if it can be demonstrated that the depletion is a result of fishing, some participants of WKD3Lists2 suggested that such species should be reported under D1 instead, as it

will not always be possible to distinguish a singular cause for the depletion. As guidance, the following suggestions might be considered by MS (Figure 6.1):

- Stocks/species that have been reported under D3 the previous MSFD assessments (2012 and/or 2018), but have become depleted and are thus not included in regional D3 taxa lists in 2024, should be reported under D3 *and* D1 in 2024.
- In 2030, formerly relevant taxa from 2012 and/or 2018 could be reported solely under D1, if commercial catches do not result in their inclusion to the updated regional D3 taxa list.
- Formerly relevant commercial species, which have become depleted before and were not reported under D3 in 2012 and are not included in the regional D3 taxa list 2024, should be reported under D1, e.g. spur dog *Squalus acanthias* in the Northeast Atlantic.
- For MSFD assessments 2030 the compilation of regional D3 taxa list might need to be updated.
- In 2030 stocks/species that have been reported under D3 in 2024, but that are neither included in regional D3 taxa list in 2024 nor 2030, should be reported under D1.
- Generally depleted stocks/species that do not recover after a sharp reduction in fishing pressure, so that prevailing *environmental* conditions can be considered as the main hazard for recovery, should be considered to be listed only under D1 in subsequent MSFD assessment cycles. Examples may be Baltic cod stocks which might not recover to commercially relevant stock biomasses due to environmental changes. The shift of stocks/species from D3 to D1 should be agreed through regional or subregional cooperation. However, it remains to be clarified which bodies can authorise this shift.

7 Future recommendations

This section contains suggestions to be considered by data providers i.e. the JRC, the European Commission and ICES for the preparation of the next MSFD assessment cycle 2030, for which new regional D3 taxa lists might need to be established.

- The D3 taxa lists should be updated periodically (for each assessment cycle), using the latest available six years of data. To avoid significant changes in the lists between assessment cycles, it is recommended that taxa from the previous cycle be retained on the list for at least one subsequent cycle, even if they do not appear on the updated threshold lists.
- The available data from FDI was not optimally fit for purpose for the objectives of the WKD3Lists2. The following suggestions would facilitate the aggregation of (sub)regional catch lists:
 - FDI data could include a field with information on MSFD sub region to allow easy aggregation of landings data.
 - Landings data should be extractable for multiple years.
 - Format of landing and discard data should be unified and made available in a single file to account for species with high catches but low landings.
 - Extraction of data by ICES rectangles is tedious (works only at the map explorer by year or as shapefiles). Alternative query tools should be considered, e.g. an API for R.
- The taxonomic groups to be considered under D3 should be kept under review. Regional experts reported intensified wild harvest of marine algae in several MSFD (sub)regions which might become increasingly relevant in the upcoming years. In line with current D3 definitions, WKD3Lists2 removed algae and plants from landings data, but included all commercially exploited invertebrates (e.g., echinoderms, cnidarians, etc.). There were different opinions among WKD3Lists2 participants on whether marine plants and algae should be included in D3 in the future, and this could be considered in future updates.
- Further clarification should be provided on how to treat clams and mussels (and other shellfish), that are produced through extensive aquaculture, but which may be derived from wild seed. In several countries such as Spain several clam and mussel species are produced through extensive cultivation, but production figures may be included in the landings data, resulting in lack of clarity between wild-capture production and aquaculture production.
- Further disaggregation of species and higher-order taxa to stock level in the Mediterranean and Black Sea is required.
- In the follow-up of WKD3Lists2 regional D3 taxa lists should be consolidated by experts of WGCEPH. Especially with cephalopods the potential for misclassification onboard of commercial vessels or the reporting at higher-order taxa was predominant in all MSFD (sub)regions, resulting in high landings of taxa at genus-, family- or order-level. Further validation by cephalopod experts may allow some of these taxa to be resolved to species or stock levels.

8 References

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- ICES. 2020. EU request for advice on developing appropriate lists for Descriptor 3, commercially exploited fish and shellfish, for reporting by EU Member States under MSFD Article 17 in 2024. In Report of the ICES Advisory Committee, 2020. ICES Advice 2020, sr.2020.13, <https://doi.org/10.17895/ices.advice.7646>
- ICES. 2021. Workshop to review and progress the reported lists of EU MSFD Descriptor 3 (WKD3Lists). ICES Scientific Reports. 2:82. 128 pp. <http://doi.org/10.17895/ices.pub.7467>

Annex 1: List of participants

30 May – 2 June 2022

Participant	Institute	Country (of Institute)	e-mail
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Annex 2: Resolutions

The second **Workshop on Lists of Commercial Fish and Shellfish species for reporting of MSFD D3 (WKD3lists-2)**, chaired by Nikolaus Probst, will be established and will meet in ICES May 30- 02 June (hybrid) to:

- a) Develop and agree on regional (by MSFD region or subregion) lists of D3 based on agreed standardized weight and commercial value thresholds of the landings.
- b) Further guidance for Member States to prepare their individual D3 lists (including nationally important stocks, species included in national management plans,...).
- c) Account for widely distributed stocks in the regional lists using landings thresholds (by weight and value).
- d) Given the agreed-upon reference period (2016-2021), discuss the appropriateness of including a baseline for inclusion of species beyond the reference period.

WKD3lists_2 will report by June 24th for the attention of the Advisory Committee.

Supporting information

Priority	High. As a response to a special request from DGENV on the Commission Decision on criteria and methodological standards for Good Environmental Status (EU) 2017/848 and the reporting under MSFD Article 17 (on updates for MSFD Articles 8, 9 and 10). The advice will feed into ongoing efforts to provide guidance on the operational implementation of the MSFD.
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Scientific justification

WKD3lists-2 is a continuation of ICES work to develop appropriate lists for descriptor 3 (ICES 2021, ICES 2020).

Term of Reference a)

ICES described four general approaches used by MS in their 2018 reporting and advised that one of these is selected by the EC to be used as a standard by all MSs in their 2024 reporting under Article 17 of the EU Marine Strategy Framework Directive (MSFD) (ICES 2020). The Member States agreed to use ICES' preferred approach, namely approach 1 (WGGES 24). Approach 1 consists of MS using all species/stocks referred to in *Specifications and standardised methods for monitoring and assessment* of Decision 2017/848 for the MSFD (sub)region within which the MRU¹ is located (ICES 2020).

WKD3lists2 will develop regional (by MSFD region or subregion) lists of D3 according to approach 1 of ICES advice including a suggestion for standardised (by region) weight and commercial value thresholds of the landings for adoption at EU level.

Landings data will be extracted from the JRC FDI database and filtered by relevant ICES rectangle using ICES statistical rectangle factors (Flanders Marine Institute) to identify species that make up to an agreed upon percentage of landings by weight (and value) for any given MSFD region or sub-region.

Participation from JRC experts or experts with experience working with FDI database is strongly encouraged.

Participants will be distributed according to the MSFD region where the MRU from the MS they represent belongs and work stepwise towards developing regional lists of D3.

HELCOM have produced a regional (Baltic) commercial fish list according to approach 1 in ICES advice as part of their third holistic assessment (HELCOM 2021). The development process and final HELCOM regional list of commercial fish and shellfish will be presented at WKD3lists-2 and discussed for adoption.

Guidance on how to avoid the inconsistency to report elements at different taxonomic levels detected in previous reporting cycles will also be developed.

Term of Reference b)

The regional lists of D3 developed in ToR a) will be able to be used by Member States as reference lists to be included into the national reporting on D3 (upon agreement at WGGES). The regional lists can be amended by Member States with additional elements that do not reach the threshold to be included in the respective regional list. This can be the case for small-scale/local coastal fisheries or species/stocks in national management plans. WKD3lists2 will provide further guidance for Member States on criteria to consider in order to complement the regional lists with additional elements.

It is expected that the list of D3 elements will change over time. Hence, the guidance developed at WKD3lists will include a temporary aspect and a need to review the lists every MSFD reporting cycle to account for changes in the system (e.g. climate change).

WKD3lists2 will aim to provide regional lists of commercially relevant species for as many MSFD regions and sub-regions as possible.

Term of Reference c)

ICES advised to establish a threshold to include widely distributed stocks in the list for reporting D3 (ICES 2020). The regional approach to reporting advised too would solve part of the issue as most of the widely distributed stocks will be captured in the regional lists. For highly migratory stocks distributed in more than one MSFD region (e.g. mackerel, whiting, horse mackerel), WKD3lists2 will develop a complete list of the stocks affected and account for their inclusion in one or more regional lists.

Term of Reference d)

Stock advice to support the implementation of the common fisheries policy (CFP) is generally provided on an annual basis and represents the main source of data for reporting on D3. However, the Common Implementation Decision (EU 2018/848) requires a 6-year assessment period and allows a nominal assessment period within these years.

The 6-year assessment period for the next cycle of MSFD reporting is 2016-2021 and the assessment will be based on the average of the assessments of the nominal period and not the last year of assessment (WG GES adhoc-meeting 23 March 2022, WG GES meeting 25b). WKD3lists-2 will provide guidance on what nominal period to use for a robust and yet representative period that is comparable and consistent across Member States including a baseline for inclusion of species beyond the reference period needs to be addressed.

References

- HELCOM 2021: <https://portal.helcom.fi/meetings/ComFish%20WS%201-2021-934/default.aspx>
- ICES. 2020. EU request for advice on developing appropriate lists for Descriptor 3, commercially exploited fish and shellfish, for reporting by EU Member States under MSFD Article 17 in 2024. In Report of the ICES Advisory Committee, 2020. ICES Advice 2020, sr.2020.13, <https://doi.org/10.17895/ices.advice.7646>
- ICES. 2021. Workshop to review and progress the reported lists of EU MSFD Descriptor 3 (WKD3Lists). ICES Scientific Reports. 2:82. 128 pp. <http://doi.org/10.17895/ices.pub.7467>
- WGGES 24. <https://circabc.europa.eu/ui/group/326ae5ac-0419-4167-83cae3c210534a69/library/44df9d4e-802c-4e51-b6d0-5a7294e167e7/details>

Resource requirements	Secretariat support and advice process
Participants	Experts from EU Member States, MSFD data submitters, JRC, EC, HELCOM and participants from the ICES Secretariat. If requests to attend exceed the meeting capacity available, ICES reserves the right to allocate participants based on the experts' relevant qualification.
Secretariat facilities	Secretariat support and meeting rooms
Financial	Covered by DGENV special request to ICES
Linkages to advisory committees	The products from WKD3lists-2 will be peer-reviewed and enter into the ICES Advisory process to be approved by ACOM
Linkages to other committees or groups	Links to SCICOM
Linkages to other organizations	Links to RSCs and EC

Agenda

Online link -Microsoft Teams meeting:

[Click here to join the meeting](#)

Monday, 30.05.2022, 14:00 – 18:00

- 14:00-15:45 Welcome, general introductions, code of conduct/conflict of interest
Meeting etiquette
Adoption of the agenda
ICES advisory framework and the request from DGENV (Lara Salvany)
Introduction to workshop (Nik Probst)
- 15:45-16:00 Coffee break
- 16:00-18:00 Process carried out for identifying D3 species for the Baltic Sea (Lena Bergström)
Introduction to data structure and aggregation (Cecilia Kvaavik)
Designation to sub-groups
Introduction to first task: Consolidation of taxonomy

Tuesday, 31.05.2022, 09:00-11:30

- 09:00-11:30 Work in sub-groups: Consolidation of taxonomy
11:30-11:45 Coffee break
-

¹ * Marine reporting units (MRUs) are defined by individual MSs and can be of varying sizes, including region, subregion, EEZ, etc

- 11:45-13:00 Plenary 1: Discussion on thresholds
13:00-14:00 Lunch
14:00-16:45 Work in sub-groups: Apply thresholds and explore implications
16:45-17:00 Coffee break
17:00-18:00 Plenary 2: Criteria to add species by member states

Wednesday 01.06.2022 09:00-18:00

- 09:00-11:30 Work in sub-groups: Further consolidation of species lists
11:30-11:45: Coffee break
11:45-13:00 Plenary 3: View first results of species lists
13:00-14:00 Lunch
14:00-16:45 Work in sub-groups:
16:45-17:00 Coffee break
17:00-18:00 Plenary 4: How to deal with rare commercial species (overfished), straddling stocks, links between lists D1 and D3

Thursday, 02.06.2022 09:00-18:00

- 09:00-11:30 Work in sub-groups: Further consolidation, text drafting
11:30-11:40 Coffee break
11:45-13:00 Plenary 5: What's next, options for regional assessments by ICES/STECF
13:00-14:00 Lunch
14:00-16:45 Work in sub-groups: Finalization of species lists, text drafting
16:45-17:00 Coffee break
17:00-18:00 Plenary 6: Conclusion, closing of the meeting

Annex 3: Annex 3: R-Script to create initial landings lists by MSFD sub/region

```
# Create landings lists by MSFD sub/region
# in advance to ICES WKD3Lists2
# 30.05-02.06.2022 at ICES headquarters, Copenhagen, DK
# Author: W.N. Probst 2022

# Load libraries ----
library(raster)
library(maps)
library(mapdata)
library(maptools)
library(rgdal)
library(magrittr)
library(rgeos)
library(openxlsx)
library(scales)
library(plyr)
library(reshape)
library(ggplot2)
library(ggsci)
library(mefa)
library(rtf)
library(r2rtf)
library(gt)

# Import shapefiles ----

# Shapefiles should be stored in a subfolder of the working directory and named 'shapefiles'

## MSFD regions ----
msfd.regs<-readOGR("./shapefiles/Emodnet_HA_OtherManagementAreas_MSFDReportingUnits_20190422.shp")
crs(msfd.regs)<-CRS("+init=epsg:4326")

# Reduce complexity of MSFD sub/regions shapefiles
msfd.s<-gSimplify(msfd.regs,tol=100,topologyPreserve = T)
msfd.s.sregs<-msfd.s[c(3:13,18),]
msfd.sregs<-SpatialPolygonsDataFrame(msfd.s.sregs,data=msfd.regs[c(3:13,18),]@data)
crs(msfd.sregs)<-CRS("+init=epsg:4326")

### Exclude Sea of Azov and Marmara Sea as sub-regions ----
msfd.sregs2<-msfd.sregs[-c(3,4),]

### Save simplified version of MSFD regions ----
writeOGR(msfd.sregs2,"./shapefiles/msfd.sub.regions.shp",layer="name",driver="ESRI Shapefile")
```

```

# Get MSFD sub/region names
msfd.reg.names<-msfd.sregs$NAME
msfd.reg.names2<-msfd.reg.names[-3]
msfd.names<-msfd.sregs2$NAME
msfd.names2<-msfd.names

# Abbreviate some names
msfd.names2[1]<-"Baltic Sea"
msfd.names2[6]<-"Biscay & Iberian Coast"
msfd.names2[7]<-"Greater North Sea"
msfd.names2[8]<-"Ionian & central Med."
msfd.names2[9]<-"Western Med."

msfd.names3<-data.frame(msfd.names,msfd.names2)

## FAO areas ----
fao.areas<-readOGR("./shapefiles/FAO_AREAS_CWP/FAO_AREAS_CWP.shp")
fao.areas$F_CODE[which(fao.areas$F_CODE=="34.2")]<-"34.2.0"

## GSA areas ----
gsa.areas<-readOGR("./shapefiles/GSAs_simplified/GSAs_simplified.shp")
gsa.areas$SECT_COD[1:9]<-gsub("0","",gsa.areas$SECT_COD[1:9])
gsa.areas$SECT_COD[which(gsa.areas$SECT_COD=="GSA111")]<-"GSA11.1"
gsa.areas$SECT_COD[which(gsa.areas$SECT_COD=="GSA112")]<-"GSA11.2"

# Get FAO 3-letter-alpha species codes ----
fao.alpha<-read.csv("./FAO_ASFIS_sp/ASFIS_sp_2021.txt",sep=",")
fao.alpha.merge<-fao.alpha[,c(3:5)]
names(fao.alpha.merge)[1]<-"species"

# Import, subset & combine FDI data ----

## Get FAO areas by MSFD region ----
fao.msfd<-read.xlsx("fao.msfd.regs.xlsx")

# Combine landings data from 2015 until 2020 ----
yrs<-2020:2015

pb<-txtProgressBar(min=0,max=length(yrs),style=3)
for (j in 1:length(yrs)){
  fdi<-openxlsx::read.xlsx("./FDI landings EU.xlsx",sheet=j+1)
  names(fdi)[10]<-"sub.region"
  fdi.msfd<-subset(fdi,sub.region%in%fao.msfd$FAO.areas)
  if(j==1) fdis.msfd<-fdi.msfd else fdis.msfd<-rbind(fdis.msfd,fdi.msfd)
  setTxtProgressBar(pb,j)
}

## Store combined FDI data ----
write.csv(fdis.msfd,"/landings data/fdi.landings.dat.2015.2020.csv",row.names=F)

```

```

## Check included sub-regions & covered ICES rectangles ----
fao.cov<-fdis.msfd$sub.region %>% table %>% names
ices.cov<-ck.dat2$sicesnam %>% table %>% names

# Compile regional species lists ----
# Loop through MSFD sub/regions
for (i in 1:length(msfd.names)){

## Get FAO areas of sub/region ----
fao.idx<-subset(fao.msfd,MSFD.sub.region==msfd.names[i])$FAO.areas

fdi.sr<-subset(fdis.msfd,sub.region%in%fao.idx)
fdi.sr$total.live.weight.landed<-fdi.sr$total.live.weight.landed %>% as.numeric
fdi.sr$total.value.of.landings<-fdi.sr$total.value.of.landings %>% as.numeric

spc.sr<-plyr::ddply(fdi.sr,(species),summarize,
  wgt.landings=sum(total.live.weight.landed,na.rm=T),
  val.landings=sum(total.value.of.landings,na.rm=T))

# Add species names to 3-letter alpha codes ----
spc.sr<-merge(spc.sr,fao.alpha.merge)
spc.sr<-spc.sr[order(spc.sr$wgt.landings,decreasing=T),]

# Calculate proportional landings and values ----
spc.sr$prop.lan.wgt<-(spc.sr$wgt.landings/sum(spc.sr$wgt.landings)*100) %>% round(3)
spc.sr$prop.lan.val<-(spc.sr$val.landings/sum(spc.sr$val.landings)*100) %>% round(3)
spc.sr$cum.lan.wgt<-cumsum(spc.sr$prop.lan.wgt)

# Add region info ----
spc.sr$msfd.sub.region<-msfd.names[i]

spc.sr<-spc.sr[,c(9,4,5,1,2,3,6,7,8)]
names(spc.sr)[c(2,4)]<-c("species","FAO.species.code")

# Remove zero-entries created by rounding ----
if(nrow(spc.sr)>1) spc.sr<-spc.sr[-which(spc.sr$prop.lan.wgt==0&spc.sr$prop.lan.val==0),]

# Plot coverage ----
irl<-irls$ices.rect[which(irls$msfd.sub.region==msfd.names[i])]
irl.cov<-subset(ck.dat2,icesnam%in%irl)$icesnam %>% unique
paste0("./Spatial coverage/FAO_coverage_",msfd.names[i],".tiff") %>%
tiff(width=25,height=25,res=100,units="cm")
par(las=1,mar=c(6,6,8,2))
(if(i %in% c(2,4,5,8,9)) subset(gsa.areas,SECT_COD %in% (fdi.sr$sub.region %>% table %>%
names) else
  subset(fao.areas,F_CODE %in% (fdi.sr$sub.region %>% table %>% names %>% tolower)))
%>%
  plot(col="grey70",border="white",add=F,lwd=3)
plot(msfd.sregs[which(msfd.sregs$NAME==msfd.names[i]),],add=T,border=4,lwd=2)
subset(fao.areas,F_CODE %in% (fdi.sr$sub.region %>% table %>% names %>% tolower)) %>%
plot(col="grey70",border="white",add=T,lwd=3)

```

```
text(fao.areas,fao.areas$F_CODE,col="grey90",cex=1)
text(gsa.areas,gsa.areas$SECT_COD,col="white",cex=1)
plot(msfd.sregs[which(msfd.sregs$NAME==msfd.names[i]),],add=T,border=4,lwd=2)
map.axes()
legend("top",horiz=T,c("FAO area","MSFD region"),
      pch=c(15,NA),lty=c(NA,1),col=c("grey70",4),
      inset=c(0,-0.07),xpd=T,cex=1,x.intersp=1,bty="n",pt.cex=2,text.width=5)
title(xlab="Longitude [°]",ylab="Latitude [°]")
title(main=msfd.names[i],line=5,cex.main=2)
dev.off()

# Create comprehensive list accross all regions
if (i==1) spc.srs<-spc.sr else spc.srs<-rbind(spc.srs,spc.sr)

# Store results ----
write.xlsx(spc.sr,paste0("./Landings lists/",msfd.names[i],"_landings.xlsx"),rowNames=F)

}

# Store list of all regions
write.xlsx(spc.srs,"./Landings lists/all_regions_landings.xlsx",rowNames=F)
```

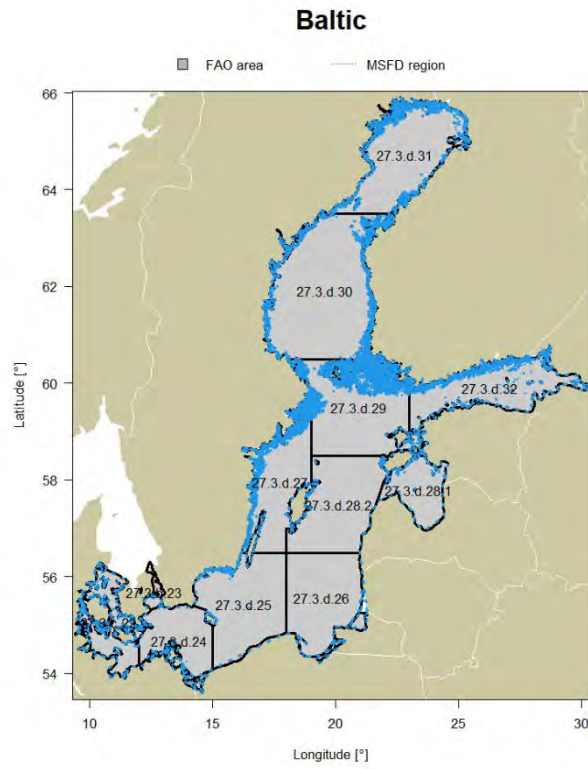

Annex 4: Annex 4: Overlap between FAO & MSFD sub/regions

The following table and figures indicate which FAO sub/regions were designated to which MSFD sub/regions to extract and merge FDI landings data from 2015-2020.

MSFD sub/region	FAO sub/region
Greater North Sea, incl. the Kattegat and the English Channel	27.3.A.20
Greater North Sea, incl. the Kattegat and the English Channel	27.3.A.21
Greater North Sea, incl. the Kattegat and the English Channel	27.3.B.23
Greater North Sea, incl. the Kattegat and the English Channel	27.4.A
Greater North Sea, incl. the Kattegat and the English Channel	27.4.B
Greater North Sea, incl. the Kattegat and the English Channel	27.4.C
Greater North Sea, incl. the Kattegat and the English Channel	27.7.D
Greater North Sea, incl. the Kattegat and the English Channel	27.7.E
Baltic	27.3.B.23
Baltic	27.3.C.22
Baltic	27.3.C.23
Baltic	27.3.D.24
Baltic	27.3.D.25
Baltic	27.3.D.26
Baltic	27.3.D.27
Baltic	27.3.D.28.1
Baltic	27.3.D.28.2
Baltic	27.3.D.29
Baltic	27.3.D.30
Baltic	27.3.D.31
Baltic	27.3.D.32
Celtic Seas	27.4.A
Celtic Seas	27.6.A
Celtic Seas	27.6.B

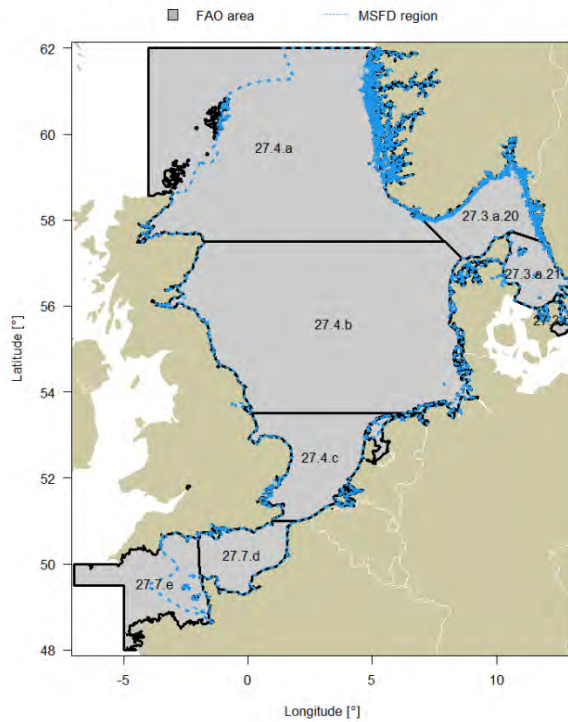
MSFD sub/region	FAO sub/region
Celtic Seas	27.7.A
Celtic Seas	27.7.B
Celtic Seas	27.7.C
Celtic Seas	27.7.E
Celtic Seas	27.7.F
Celtic Seas	27.7.G
Celtic Seas	27.7.H
Celtic Seas	27.7.J
Celtic Seas	27.7.K
Bay of Biscay and the Iberian Coast	27.8.A
Bay of Biscay and the Iberian Coast	27.8.B
Bay of Biscay and the Iberian Coast	27.8.C
Bay of Biscay and the Iberian Coast	27.8.D
Bay of Biscay and the Iberian Coast	27.8.E
Bay of Biscay and the Iberian Coast	27.9.A
Bay of Biscay and the Iberian Coast	27.9.B
Black Sea	GSA28
Black Sea	GSA29
Black Sea	GSA30
Western Mediterranean Sea	GSA1
Western Mediterranean Sea	GSA2
Western Mediterranean Sea	GSA3
Western Mediterranean Sea	GSA4
Western Mediterranean Sea	GSA5
Western Mediterranean Sea	GSA6
Western Mediterranean Sea	GSA7
Western Mediterranean Sea	GSA8
Western Mediterranean Sea	GSA9
Western Mediterranean Sea	GSA10

MSFD sub/region	FAO sub/region
Western Mediterranean Sea	GSA11.1
Western Mediterranean Sea	GSA11.2
Western Mediterranean Sea	GSA12
Adriatic Sea	GSA17
Adriatic Sea	GSA18
Ionian Sea and the Central Mediterranean Sea	GSA12
Ionian Sea and the Central Mediterranean Sea	GSA13
Ionian Sea and the Central Mediterranean Sea	GSA14
Ionian Sea and the Central Mediterranean Sea	GSA15
Ionian Sea and the Central Mediterranean Sea	GSA16
Ionian Sea and the Central Mediterranean Sea	GSA19
Ionian Sea and the Central Mediterranean Sea	GSA20
Ionian Sea and the Central Mediterranean Sea	GSA21
Aegean-Levantine Sea	GSA22
Aegean-Levantine Sea	GSA23
Aegean-Levantine Sea	GSA24
Aegean-Levantine Sea	GSA25
Aegean-Levantine Sea	GSA26
Aegean-Levantine Sea	GSA27
Macaronesia	27.9.B
Macaronesia	27.10.B
Macaronesia	27.10.A
Macaronesia	34.1.2
Macaronesia	34.2.0

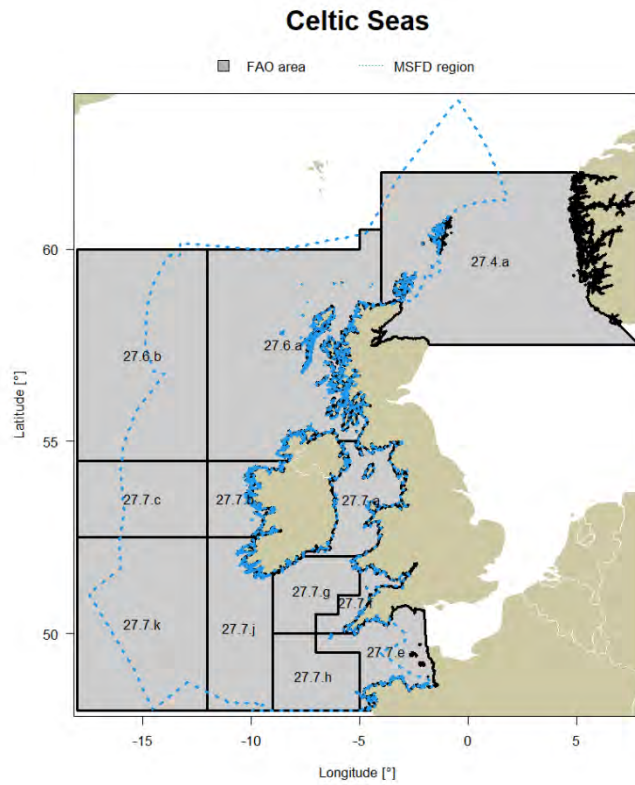


Overlap between MSFD region “Baltic” (blue outline) and FAO sub/regions (grey).

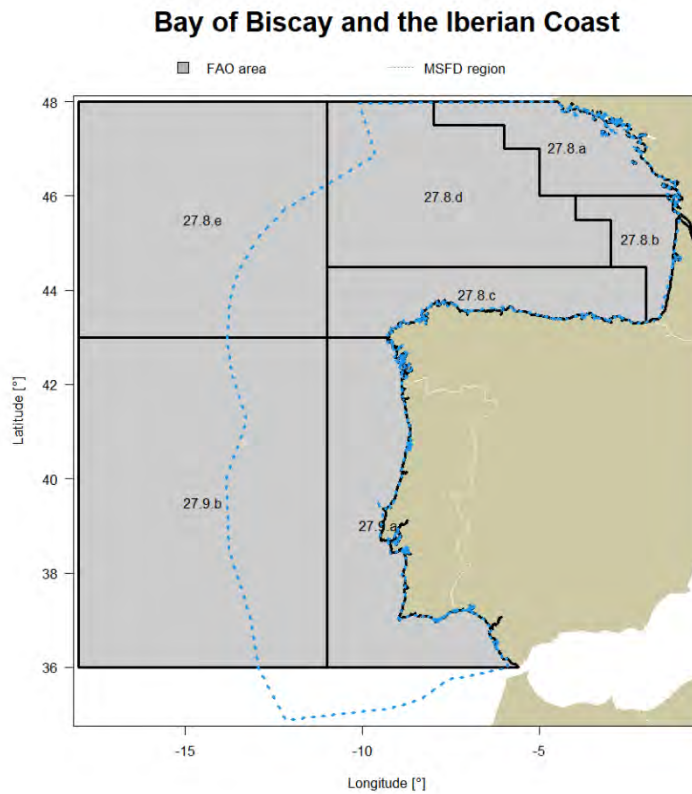
Greater North Sea, incl. the Kattegat and the English Channel



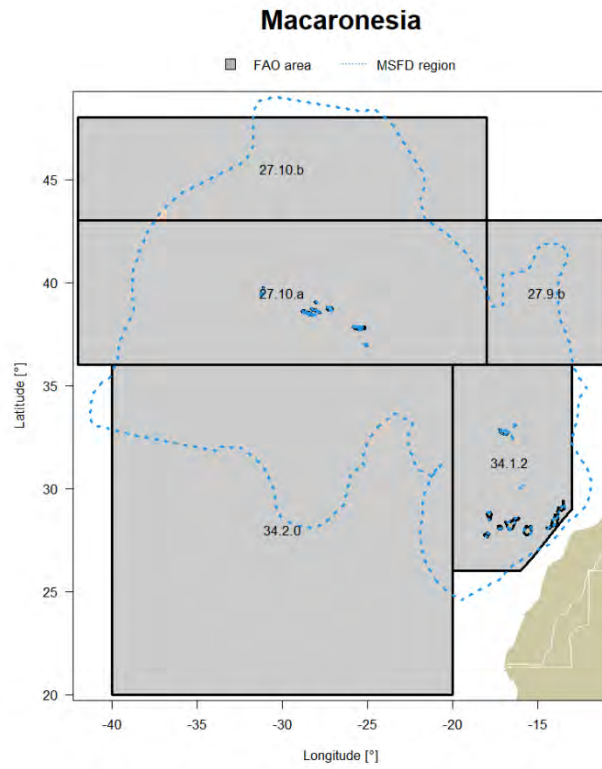
Overlap between MSFD region “Greater North Sea including Kattegat & English Channel” (blue outline) and FAO sub/regions (grey).



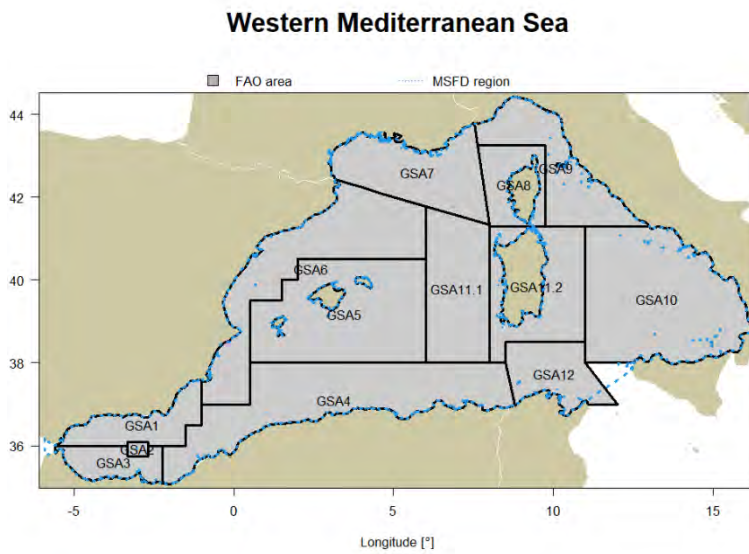
Overlap between MSFD region “Celtic Sea” (blue outline) and FAO sub/regions (grey).



Overlap between MSFD region “Bay of Biscay & Iberian COast” (blue outline) and FAO sub/regions (grey).

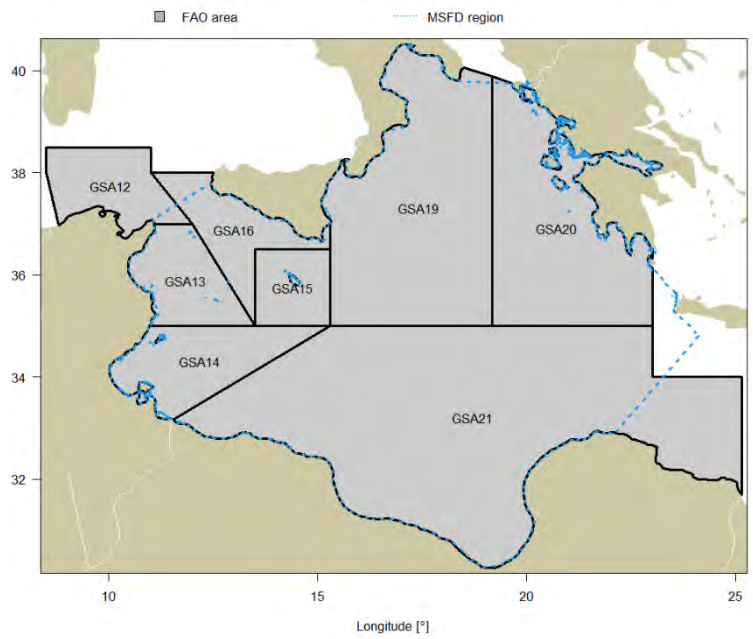


Overlap between MSFD region “Macaronesia” (blue outline) and FAO sub/regions (grey).



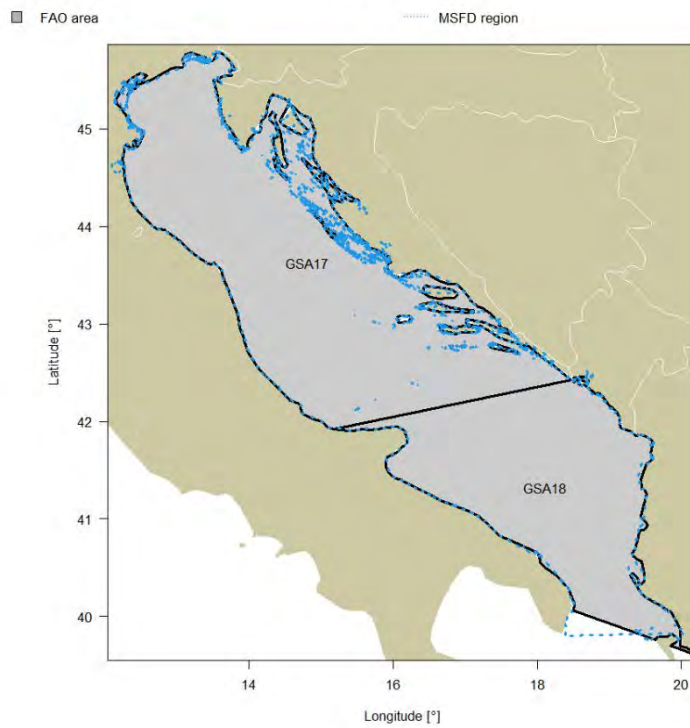
Overlap between MSFD region “Western Mediterranean” (blue outline) and FAO sub/regions (grey).

Ionian Sea and the Central Mediterranean Sea

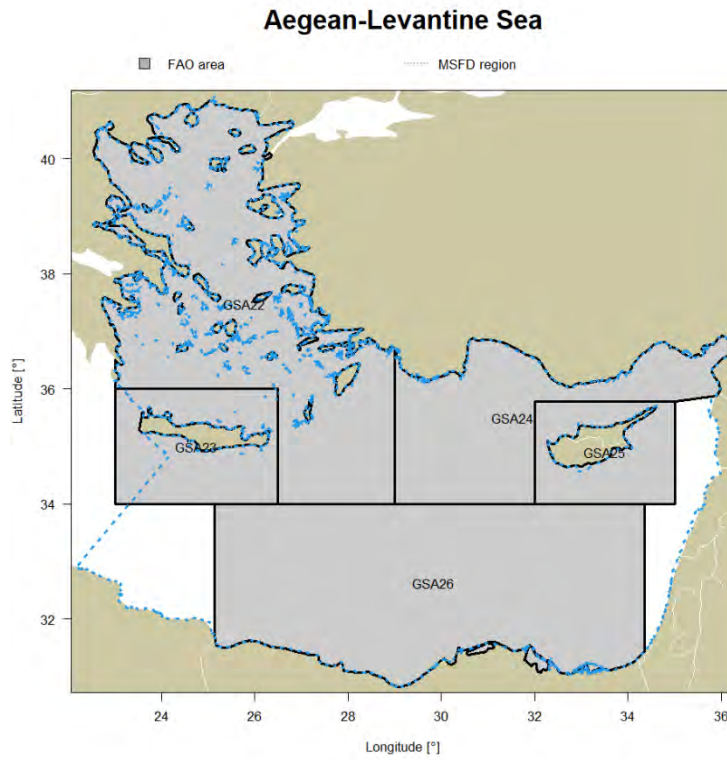


Overlap between MSFD region “Ionian Sea & Central Mediterranean” (blue outline) and FAO sub/regions (grey).

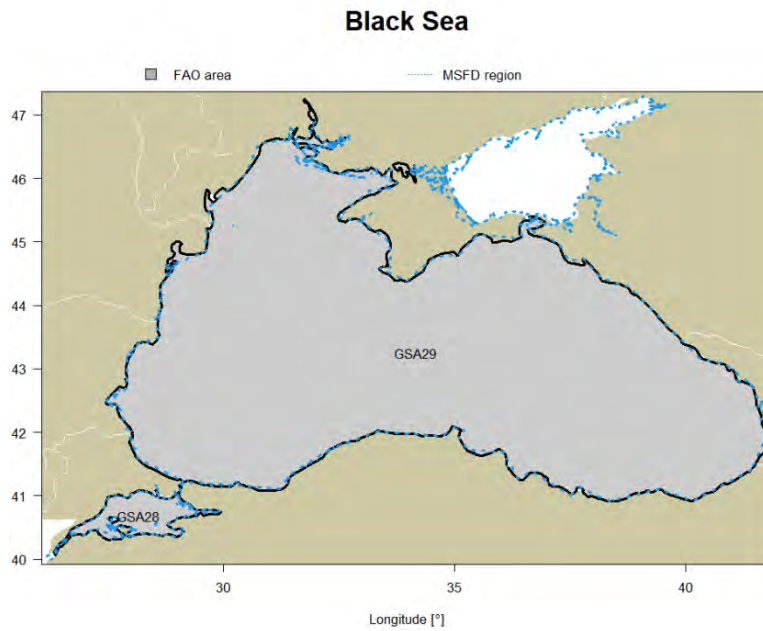
Adriatic Sea



Overlap between MSFD region “Adriatic Sea” (blue outline) and FAO sub/regions (grey).



Overlap between MSFD region “Aegean-Levantine Sea” (blue outline) and FAO sub/regions (grey). No data was available in the FDI data base on GSA 27.



Overlap between MSFD region “Black Sea” (blue outline) and FAO sub/regions (grey). No data was available in the FDI data for the Aszov Sea

Annex 5: Annex 4: Taxonomic clean-up operations – regional overview

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Adriatic Sea	<i>Trachurus spp</i>	Jack and horse mackerels nei	JAX	split	<i>Trachurus spp</i>	<i>Trachurus trachurus</i> , <i>Trachurus mediterraneus</i>	genus proportionally allocated to species
Adriatic Sea	<i>Mugilidae</i>	Mulletts nei	MUL	split	<i>Mugilidae</i>	<i>Mugil cephalus</i> , <i>Liza ramada</i> , <i>Liza aurata</i> , <i>Liza saliens</i>	family proportionally allocated to species
Adriatic Sea	<i>Actinopterygii</i>	Marine fishes nei	MZZ	remove	<i>Actinopterygii</i>		not allocable family
Adriatic Sea	<i>Mytilus galloprovincialis</i>	Mediterranean mussel	MSM	remove	<i>Mytilus galloprovincialis</i>		aquaculture
Adriatic Sea	<i>Mollusca</i>	Marine molluscs nei	MOL	remove	<i>Mollusca</i>		not allocable family
Adriatic Sea	<i>Brachyura</i>	Marine crabs nei	CRA	remove	<i>Brachyura</i>		not allocable family
Adriatic Sea	<i>Eledone spp</i>	Horned and musky octopuses	OCM	split	<i>Eledone spp</i>	<i>Eledone moschata</i> , <i>Eledone cirrhosa</i>	genus proportionally allocated to species
Adriatic Sea	<i>Liza spp</i>		LZZ	split	<i>Liza spp</i>	<i>Liza ramada</i> , <i>Liza aurata</i> , <i>Liza saliens</i>	genus proportionally allocated to species
Adriatic Sea	<i>Loliginidae</i> , <i>Ommastrephidae</i>	Various squids nei	SQU	remove	<i>Loliginidae</i> , <i>Ommastrephidae</i>		not allocable family
Adriatic Sea	<i>Gobiidae</i>	Gobies nei	GPA	remove	<i>Gobiidae</i>		not allocable family
Adriatic Sea	<i>Murex spp</i>	Murex	MUE	rename	<i>Murex spp</i>	<i>Bolinus spp</i>	name revised to permit automatic merging with <i>Bolinus brandaris</i>
Adriatic Sea	<i>Bolinus spp</i>	Murex	MUE	merge	<i>Bolinus spp</i>	<i>Bolinus brandaris</i>	genus proportionally allocated to species
Adriatic Sea	<i>Triglidae</i>	Gurnards, searobins nei	GUX	remove	<i>Triglidae</i>		not allocable family

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Adriatic Sea	<i>Echinoidea</i>	Sea urchins, etc. nei	URX	remove	<i>Echinoidea</i>		not allocable family
Adriatic Sea	<i>Raja spp</i>	Raja rays nei	SKA	split	<i>Raja spp</i>	<i>Raja clavata, Raja asterias, Raja miraletus</i>	genus proportionally allocated to species
Adriatic Sea	<i>Crustacea</i>	Marine crustaceans nei	CRU	remove	<i>Crustacea</i>		not allocable family
Adriatic Sea	<i>Lophius spp</i>	Monkfishes nei	MNZ	split	<i>Lophius spp</i>	<i>Lophius budegassa, Lophius piscatorius</i>	genus proportionally allocated to species
Adriatic Sea	<i>Atherinidae</i>	Silversides(=Sand smelts) nei	SIL	remove	<i>Atherinidae</i>		not allocable family
Adriatic Sea	<i>Pandalus borealis</i>	Northern prawn	PRA	remove	<i>Pandalus borealis</i>		possible misreporting
Adriatic Sea	<i>Sepiidae, Sepiolidae</i>	Cuttlefish, bobtail squids nei	CTL	remove	<i>Sepiidae, Sepiolidae</i>		not allocable family
Adriatic Sea	<i>Lepidorhombus spp</i>	Megrimms nei	LEZ	merge	<i>Lepidorhombus spp</i>	<i>Lepidorhombus boscii</i>	genus proportionally allocated to species
Adriatic Sea	<i>Arnoglossus spp</i>	Scaldfishes nei	RGX	merge	<i>Arnoglossus spp</i>	<i>Arnoglossus laterna</i>	genus proportionally allocated to species
Adriatic Sea	<i>Squalidae</i>	Dogfish sharks nei	DGX	remove	<i>Squalidae</i>		not allocable family
Adriatic Sea	<i>Mustelus spp</i>	Smooth-hounds nei	SDV	split	<i>Mustelus spp</i>	<i>Mustelus mustelus, Mustelus punctulatus, Mustelus asterias</i>	genus proportionally allocated to species
Adriatic Sea	<i>Veneridae</i>	Venus clams nei	CLV	remove	<i>Veneridae</i>		not allocable family
Adriatic Sea	<i>Trachinus spp</i>	Weevers nei	WEX	merge	<i>Trachinus spp</i>	<i>Trachinus draco</i>	genus proportionally allocated to species
Adriatic Sea	<i>Auxis thazard, A. rochei</i>	Frigate and bullet tunas	FRZ	remove	<i>Auxis thazard, A. rochei</i>		exclude due to taxonomy; <i>Auxis thazard</i> according to the literature live in Pacific
Adriatic Sea	<i>Pectinidae</i>	Scallops nei	SCX	remove	<i>Pectinidae</i>		not allocable family
Adriatic Sea	<i>Scorpaena spp</i>	Scorpionfishes, rockfishes nei	SCS	split	<i>Scorpaena spp</i>	<i>Scorpaena scrofa, Scorpaena porcus,</i>	genus proportionally allocated to species

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
						<i>Scorpaena notata</i>	
Adriatic Sea	<i>Phycis spp</i>	Forkbeards nei	FOX	split	<i>Phycis spp</i>	<i>Phycis phycis</i> , <i>Phycis blennoides</i>	genus proportionally allocated to species
Adriatic Sea	<i>Spongiidae</i>	Sponges	SPO	remove	<i>Spongiidae</i>		not relevant
Adriatic Sea	<i>Plesionika spp</i>	Plesionika shrimps nei	XKX	merge	<i>Plesionika spp</i>	<i>Plesionika edwardsii</i>	genus proportionally allocated to species
Adriatic Sea	<i>Actinopterygii</i>	Groundfishes nei	GRO	remove	<i>Actinopterygii</i>		not allocable family
Adriatic Sea	<i>Scyliorhinus spp</i>	Catsharks, nurse-hounds nei	SCL	merge	<i>Scyliorhinus spp</i>	<i>Scyliorhinus canicula</i>	genus proportionally allocated to species
Adriatic Sea	<i>Trachinidae</i>	Weeverfishes nei	TRA	remove	<i>Trachinidae</i>		not allocable family
Adriatic Sea	<i>Soleidae</i>	Soles nei	SOX	remove	<i>Soleidae</i>		not allocable family
Adriatic Sea	<i>Diplodus spp</i>	Sargo breams nei	SRG	split	<i>Diplodus spp</i>	<i>Diplodus sargus</i> , <i>Diplodus vulgaris</i> , <i>Diplodus annularis</i> , <i>Diplodus puntazzo</i>	genus proportionally allocated to species
Adriatic Sea	<i>Pleuronectidae</i>	Righteye flounders nei	PLZ	remove	<i>Pleuronectidae</i>		not allocable family
Adriatic Sea	<i>Cardiidae</i>	Cockles nei	COZ	remove	<i>Cardiidae</i>		not allocable family
Adriatic Sea	<i>Spicara spp</i>	Picarels nei	PIC	split	<i>Spicara spp</i>	<i>Spicara smaris</i> , <i>Spicara maena</i>	genus proportionally allocated to species
Adriatic Sea	<i>Scapharca spp</i>		FTX	remove	<i>Scapharca spp</i>	<i>Epinephelus marginatus</i>	genus not allocable
Adriatic Sea	<i>Pandalidae</i>	Pandalid shrimps nei	PDZ	remove	<i>Pandalidae</i>		possible misreporting
Adriatic Sea	<i>Auxis thazard</i>	Frigate tuna	FRI	remove	<i>Auxis thazard</i>		alien
Adriatic Sea	<i>Cassidae</i>	Helmets shells nei	XIX	remove	<i>Cassidae</i>		not allocable family
Adriatic Sea	<i>Gastropoda</i>	Gastropods nei	GAS	remove	<i>Gastropoda</i>		not allocable family
Adriatic Sea	<i>Bivalvia</i>	Clams, etc. nei	CLX	remove	<i>Bivalvia</i>		not allocable family

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Adriatic Sea	<i>Loligo spp</i>	Common squids nei	SQC	split	<i>Loligo spp</i>	<i>Loligo vulgaris</i> , <i>Loligo forbesii</i>	genus proportionally allocated to species
Adriatic Sea	<i>Solea spp</i>		SOO	merge	<i>Solea spp</i>	<i>Solea solea</i>	genus proportionally allocated to species
Adriatic Sea	<i>Squalus spp</i>	Dogfishes nei	DGZ	split	<i>Squalus spp</i>	<i>Squalus acanthias</i> , <i>Squalus blainville</i>	genus proportionally allocated to species
Adriatic Sea	<i>Gobius spp</i>	Atlantic gobies nei	GOB	merge	<i>Gobius spp</i>	<i>Gobius niger</i>	genus proportionally allocated to species
Adriatic Sea	<i>Rajiformes</i>	Rays, stingrays, mantas nei	SRX	remove	<i>Rajiformes</i>		not allocable family
Adriatic Sea	<i>Holothuroidea</i>	Sea cucumbers nei	CUX	remove	<i>Holothuroidea</i>		not allocable family
Adriatic Sea	<i>Sphyraenidae</i>	Barracudas, etc. nei	BAZ	remove	<i>Sphyraenidae</i>		not allocable family
Adriatic Sea	<i>Argentinidae</i>	Argentines nei	JXX	remove	<i>Argentinidae</i>		not allocable family
Adriatic Sea	<i>Polychaeta</i>	Marine worms	WOR	remove	<i>Polychaeta</i>		not relevant
Adriatic Sea	<i>Pagrus spp</i>	Pargo breams nei	SBP	merge	<i>Pagrus spp</i>	<i>Pagrus pagrus</i>	genus proportionally allocated to species
Adriatic Sea	<i>Alloteuthis spp</i>	Alloteuthis squids nei	Ouw	merge	<i>Alloteuthis spp</i>	<i>Alloteuthis media</i>	genus proportionally allocated to species
Adriatic Sea	<i>Epinephelus spp</i>	Groupers nei	GPX	merge	<i>Epinephelus spp</i>	<i>Epinephelus marginatus</i>	genus proportionally allocated to species
Adriatic Sea	<i>Eunice spp</i>	Eunice sea-worms	FXX	remove	<i>Eunice spp</i>	<i>Epinephelus marginatus</i>	genus not allocable
Adriatic Sea	<i>Cephalopoda</i>	Cephalopods nei	CEP	remove	<i>Cephalopoda</i>		not allocable family
Adriatic Sea	<i>Labridae</i>	Wrasses, hogfishes, etc. nei	WRA	remove	<i>Labridae</i>		not allocable family
Adriatic Sea	<i>Anthozoa</i>		AJH	remove	<i>Anthozoa</i>		not relevant
Adriatic Sea	<i>Corallium rubrum</i>	Sardinia coral	COL	remove	<i>Corallium rubrum</i>		not relevant

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Aegean-Levantine Sea	<i>Trachurus spp</i>	Jack and horse mackerels nei	JAX	split	<i>Trachurus spp</i>	<i>Trachurus trachurus</i> ; <i>T. mediterraneus</i>	Two individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Osteichthyes</i>	Marine fishes nei	MZZ	remove	<i>Osteichthyes</i>		high-level category
Aegean-Levantine Sea	<i>Mugilidae</i>	Mulletts nei	MUL	split	<i>Mugilidae</i>	<i>Mugil cephalus</i> ; <i>Liza aurata</i> ; <i>Liza ramada</i>	Three individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Raja spp</i>	Raja rays nei	SKA	split	<i>Raja spp</i>	<i>Raja clavata</i> ; <i>R. oxyrinchus</i> ; <i>R. batis</i> ; <i>R. miraletus</i>	Four individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Scorpaena spp</i>	Scorpionfishes, rockfishes nei	SCS	split	<i>Scorpaena spp</i>	<i>Scorpaena scrofa</i> ; <i>S. notata</i> ; <i>S. porcus</i>	Three individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Callinectes sapidus</i>	Blue crab	CRB	remove	<i>Callinectes sapidus</i>		Alien
Aegean-Levantine Sea	<i>Eledone spp</i>	Horned and musky octopuses	OCM	merge	<i>Eledone spp</i>	<i>Eledone moschata</i>	Only one species was present in the list; catches and value were added to the individual species' entries
Aegean-Levantine Sea	<i>Phycis spp</i>	Forkbeards nei	FOX	split	<i>Phycis spp</i>	<i>Phycis phycis</i> ; <i>P. blennoides</i>	Two individual species were present in the list; catches and value were split proportionally

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
							and added to the individual species' entries
Aegean-Levantine Sea	<i>Scomber spp</i>	Scomber mackerels nei	MAZ	split	<i>Scomber spp</i>	<i>Scomber scombrus</i> ; <i>S. colias</i>	Two individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Lophius spp</i>	Monkfishes nei	MNZ	split	<i>Lophius spp</i>	<i>Lophius budegassa</i> ; <i>L. piscatorius</i>	Two individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Spicara spp</i>	Picarels nei	PIC	split	<i>Spicara spp</i>	<i>Spicara smaris</i> ; <i>S. maena</i>	Two individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Etrumeus tere</i>	Red-eye round hering	RRH	remove	<i>Etrumeus tere</i>		Alien
Aegean-Levantine Sea	<i>Siganus spp</i>	Spinefeet(=Rabbitfishes) nei	SPI	remove	<i>Siganus spp</i>		Alien
Aegean-Levantine Sea	<i>Epinephelus spp</i>	Groupers nei	GPX	split	<i>Epinephelus spp</i>	<i>Epinephelus costae</i> ; <i>E. aeneus</i> ; <i>E. marginatus</i> ; <i>E. caninus</i>	Four individual species were present in the list; catches and value were split proportionally and added to the individual species' entries
Aegean-Levantine Sea	<i>Scyliorhinus spp</i>	Catsharks, nursehounds nei	SCL	merge	<i>Scyliorhinus spp</i>	<i>Scyliorhinus canicula</i>	Only one species was present in the list; catches and value were added to the individual species' entries

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Aegean-Levantine Sea	<i>Sparidae</i>	Porgies, seabreams nei	SBX	remove	<i>Sparidae</i>		high-level category
Aegean-Levantine Sea	<i>Siganus luridus</i>	Dusky spinefoot	IGU	remove	<i>Siganus luridus</i>		Alien
Aegean-Levantine Sea	<i>Siganus rivulatus</i>	Marbled spinefoot	SRI	remove	<i>Siganus rivulatus</i>		Alien
Aegean-Levantine Sea	<i>Sphyræna spp</i>	Barracudas nei	BAR	merge	<i>Sphyræna spp</i>	<i>Sphyræna sphyraena</i>	Only one species was present in the list; catches and value were added to the individual species' entries
Aegean-Levantine Sea	<i>Lagocephalus spp</i>		LFX	remove	<i>Lagocephalus spp</i>		Alien
Aegean-Levantine Sea	<i>Lepidorhombus spp</i>	Megrimms nei	LEZ	merge	<i>Lepidorhombus spp</i>	<i>Lepidorhombus boscii</i>	Only one species was present in the list; catches and value were added to the individual species' entries
Aegean-Levantine Sea	<i>Diplodus spp</i>	Sargo breams nei	SRG	ignore	<i>Diplodus spp</i>	<i>Diplodus spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Triglidae</i>	Gurnards, searobins nei	GUX	ignore	<i>Triglidae</i>	<i>Triglidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Holocentridae</i>	Squirrelfishes nei	HCZ	ignore	<i>Holocentridae</i>	<i>Holocentridae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Labridae</i>	Wrasses, hogfishes, etc. nei	WRA	ignore	<i>Labridae</i>	<i>Labridae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Serranus spp</i>	Combers nei	BAS	ignore	<i>Serranus spp</i>	<i>Serranus spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Trachinus spp</i>	Weevers nei	WEX	ignore	<i>Trachinus spp</i>	<i>Trachinus spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Caranx spp</i>	Jacks, crevalles nei	TRE	ignore	<i>Caranx spp</i>	<i>Caranx spp</i>	over the 99% threshold

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Aegean-Levantine Sea	<i>Crustacea</i>	Marine crustaceans nei	CRU	ignore	<i>Crustacea</i>	<i>Crustacea</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Tetraodontidae</i>	Puffers nei	PUX	remove	<i>Tetraodontidae</i>		Alien
Aegean-Levantine Sea	<i>Penaeus aztecus</i>	Northern brown shrimp	ABS	remove	<i>Penaeus aztecus</i>		Alien
Aegean-Levantine Sea	<i>Dasyatidae</i>	Stingrays, butterfly rays nei	STT	ignore	<i>Dasyatidae</i>	<i>Dasyatidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Sepia spp</i>	Cuttlefishes nei	IAX	ignore	<i>Sepia spp</i>	<i>Sepia spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Solea spp</i>		SOO	ignore	<i>Solea spp</i>	<i>Solea spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Loligo spp</i>	Common squids nei	SQC	ignore	<i>Loligo spp</i>	<i>Loligo spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Dasyatis spp</i>	Stingrays nei	STI	ignore	<i>Dasyatis spp</i>	<i>Dasyatis spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Macrurus magellanicus</i>	Patagonian grenadier	GRM	remove	<i>Macrurus magellanicus</i>		Alien/misidentification
Aegean-Levantine Sea	<i>Fistularia commersonii</i>	Bluespotted cornetfish	FIO	remove	<i>Fistularia commersonii</i>		Alien
Aegean-Levantine Sea	<i>Upeneus pori</i>	Por's goatfish	UPH	remove	<i>Upeneus pori</i>		Alien
Aegean-Levantine Sea	<i>Illex argentinus</i>	Argentine shortfin squid	SQA	remove	<i>Illex argentinus</i>		Alien/misidentification
Aegean-Levantine Sea	<i>Scarus spp</i>		USX	ignore	<i>Scarus spp</i>	<i>Scarus spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Clupeidae</i>	Herrings, sardines nei	CLP	ignore	<i>Clupeidae</i>	<i>Clupeidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Parupeneus forsskali</i>	Red Sea goatfish	RPF	remove	<i>Parupeneus forsskali</i>		Alien

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Aegean-Levantine Sea	<i>Lagocephalus sceleratus</i>	Silver-cheeked toadfish	LFZ	remove	<i>Lagocephalus sceleratus</i>		Alien
Aegean-Levantine Sea	<i>Mollusca</i>	Marine molluscs nei	MOL	ignore	<i>Mollusca</i>	<i>Mollusca</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Synodontidae</i>	Lizardfishes nei	LIX	ignore	<i>Synodontidae</i>	<i>Synodontidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Mugil spp</i>		MGS	ignore	<i>Mugil spp</i>	<i>Mugil spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Rajidae</i>	Rays and skates nei	RAJ	ignore	<i>Rajidae</i>	<i>Rajidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Octopodidae</i>	Octopuses, etc. nei	OCT	ignore	<i>Octopodidae</i>	<i>Octopodidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Dentex spp</i>	Dentex nei	DEX	ignore	<i>Dentex spp</i>	<i>Dentex spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Penaeidae</i>	Penaeid shrimps nei	PEZ	ignore	<i>Penaeidae</i>	<i>Penaeidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Scyllaridae</i>	Slipper lobsters nei	LOS	ignore	<i>Scyllaridae</i>	<i>Scyllaridae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Upeneus moluccensis</i>	Goldband goatfish	UPM	remove	<i>Upeneus moluccensis</i>		Alien
Aegean-Levantine Sea	<i>Torpedo spp</i>	Torpedo rays	TOE	ignore	<i>Torpedo spp</i>	<i>Torpedo spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Natantia</i>	Natantian decapods nei	DCP	ignore	<i>Natantia</i>	<i>Natantia</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Triakidae</i>	Houndsharks, smoothhound s nei	TRK	ignore	<i>Triakidae</i>	<i>Triakidae</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Palinurus spp</i>	Palinurid spiny lobsters nei	CRW	ignore	<i>Palinurus spp</i>	<i>Palinurus spp</i>	over the 99% threshold
Aegean-Levantine Sea	<i>Merluccius australis</i>	Southern hake	HKN	remove	<i>Merluccius australis</i>		Alien/misidentification

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Aegean-Levantine Sea	<i>Patagonotothen ramsayi</i>	Longtail Southern cod	PAT	remove	<i>Patagonotothen ramsayi</i>		Alien/misidentification
Aegean-Levantine Sea	<i>Merluccius hubbsi</i>	Argentine hake	HKP	remove	<i>Merluccius hubbsi</i>		Alien/misidentification
Aegean-Levantine Sea	<i>Penaeus monodon</i>	Giant tiger prawn	GIT	remove	<i>Penaeus monodon</i>		Alien
Baltic Sea	<i>Gobiidae</i>	Gobies nei	GPA	remove	<i>Gobiidae</i>		assuming round goby (non indigenous)
Baltic Sea	<i>Osteichthyes</i>	Pelagic fishes nei	PEL	remove	<i>Osteichthyes</i>		too broad to be meaningfully interpreted at species or genus level
Baltic Sea	<i>Osteichthyes</i>	Finfishes nei	FIN	remove	<i>Osteichthyes</i>		too broad to be meaningfully interpreted at species or genus level
Baltic Sea	<i>Osteichthyes</i>	Freshwater fishes nei	FRF	remove	<i>Osteichthyes</i>		too broad to be meaningfully interpreted at species or genus level
Baltic Sea	<i>Osteichthyes</i>	Marine fishes nei	MZZ	remove	<i>Osteichthyes</i>		too broad to be meaningfully interpreted at species or genus level
Baltic Sea	<i>Myoxocephalus spp</i>	Sculpins	SCU	remove	<i>Myoxocephalus spp</i>		minute landings, possibility of several species not included in the landings
Baltic Sea	<i>Neogobius melanostomus</i>	Round goby	NBU	remove	<i>Neogobius melanostomus</i>		non-indigenous
Baltic Sea	<i>Abramis spp</i>	Freshwater breams nei	FBR	merge	<i>Abramis spp</i>	<i>Abramis spp</i>	<i>Abramis spp</i> is assumed to aggregate <i>Abramis brama</i> and <i>Blicca bjoerkna</i> landings, which are often not distinguished during fishing

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Baltic Sea	<i>Abramis brama</i>	Freshwater bream	FBM	merge	<i>Abramis brama</i>	<i>Abramis spp</i>	merge with <i>Abramis spp</i> , which is assumed to aggregate <i>Abramis brama</i> and <i>Blicca bjoerkna</i> landings. These species are often not distinguished during fishing.
Baltic Sea	<i>Ammodytes tobianus</i>	Small sandeel	ABZ	merge	<i>Ammodytes tobianus</i>	<i>Ammodytes spp + Gymnoammodytes spp</i>	merge with <i>Ammodytes spp</i> , which is assumed to aggregate <i>Ammodytes tobianus</i> and <i>Ammodytes spp</i> , as well as <i>Gymnoammodytes spp</i> , as these taxa are not distinguished during fishing.
Baltic Sea	<i>Ammodytes spp</i>	Sandeels(=Sandlances) nei	SAN	merge	<i>Ammodytes spp</i>	<i>Ammodytes spp (including Gymnoammodytes spp)</i>	Assumed to aggregate <i>Ammodytes tobianus</i> , <i>Ammodytes spp</i> and <i>Gymnoammodytes spp</i> , which are not distinguished during fishing.
Baltic Sea	<i>Coregonus spp</i>	Whitefishes nei	WHF	merge	<i>Coregonus spp</i>	<i>Coregonus spp</i>	Whitefish landings (<i>Coregonus spp</i>) consist of <i>C. widegreni</i> and <i>C. maraena</i> which are not distinguished during fishing.
Baltic Sea	<i>Coregonus lavaretus</i>	European whitefish	PLN	merge	<i>Coregonus lavaretus</i>	<i>Coregonus spp</i>	merge with <i>Coregonus spp</i> . Whitefish landings consist of <i>C. widegreni</i> and <i>C. maraena</i> which are not distinguished during fishing.
Baltic Sea	<i>Gasterosteus spp</i>	Sticklebacks	SKB	merge	<i>Gasterosteus spp</i>	<i>Gasterosteus aculeatus</i>	(about 1-2% of landings may be <i>Pungitius pungitius</i>)

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
Baltic Sea	<i>Gasterosteus aculeatus</i>	Three-spined stickleback	GTA	merge	<i>Gasterosteus aculeatus</i>	<i>Gasterosteus aculeatus</i>	merge with <i>Gasterosteus</i> spp
Baltic Sea	<i>Mugilidae</i>	Mullets nei	MUL	keep	<i>Mugilidae</i>	<i>Mugilidae</i>	
Baltic Sea	<i>Brachyura</i>	Marine crabs nei	CRA	keep	<i>Brachyura</i>	<i>Brachyura</i>	
Biscay & Iberian Coast	<i>Acipenser nacarii</i>	Adriatic sturgeon	AAA	remove	<i>Acipenser nacarii</i>	-	Do not occur in ABI waters/misreported
Biscay & Iberian Coast	<i>Algae</i>	Algae	SWX	remove	<i>Algae</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Allotheuthis spp.</i>	Alleoteuthis ssp.	OJW	split	<i>Allotheuthis spp.</i>	<i>Allotheutis media, A. subulata</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Alosa spp.</i>	Allis and twaite shads	SHD	merge	<i>Alosa spp.</i>	<i>Alosa alosa, A. falax</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Anguilla spp.</i>	Rivers eel nei	ELX	merge	<i>Anguilla spp.</i>	<i>Anguilla anguilla</i>	Allocation to the only species in the list
Biscay & Iberian Coast	<i>Argentina spp.</i>	Argentines	ARG	split	<i>Argentina spp.</i>	<i>Argentina silus, A. sphyraena</i>	Proportional allocation to species level
Biscay & Iberian Coast	<i>Aspritrigla cuculus</i>	Red gunard	GUR	merge	<i>Aspritrigla cuculus</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Atherinidae</i>	Siver sides(=Sand smelts) nei	SIL	split	<i>Atherina spp.</i>	<i>Atherina boyeri, A. presbyter</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Auxis thazard, A. rochei</i>	Frigate an bullet tunas	FRZ	split	<i>Auxis thazard, A. rochei</i>	<i>Auxis thazard, A. rochei</i>	Proportional allocation to species of this group in the list
Biscay & Iberian Coast	<i>Bathyrja parmifera</i>	Alaska skate	BYF	remove	<i>Bathyrja parmifera</i>	-	Do not occur in ABI waters/misreported
Biscay & Iberian Coast	<i>Beryx spp</i>	Alfonsinos nei	ALF	merge	<i>Beryx spp</i>	<i>Beryx decadactylus, B. splendens</i>	Proportional allocation to species of this genus in the list

MSFD sub/re-region	Species	English name	FAO code	Action	Input	Output	Rationale
Biscay & Iberian Coast	<i>Brachio-teuthis spp</i>	-	BRC	merge	<i>Brachio-teuthis spp</i>	<i>Brachio-teuthis riisei</i>	Allocation to ABI species of the same genus
Biscay & Iberian Coast	<i>Caproidae</i>	Boarfishes nei	BOR	merge	<i>Caproidae</i>	<i>Capros aper</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Caranx spp.</i>	Jacks, crevalles nei	TRE	split	<i>Caranx spp.</i>	<i>Caranx hippos, C. rhonchus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Cerastoderma edule</i>	Common edible Cockle	COC	remove	<i>Cerastoderma edule</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Chelidonichthys capensis</i>	Cape gunard	GUC	merge	<i>Chelidonichthys capensis</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Chelidonichthys lastoviza</i>	Streak gunard	CTZ	merge	<i>Chelidonichthys lastoviza</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Chelidonichthys lucerna</i>	Tub gunard	GUU	merge	<i>Chelidonichthys lucerna</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Chelidonichthys obscurus</i>	Lonfin gunard	GUM	merge	<i>Chelidonichthys obscurus</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Chelidonichthys spp</i>	Indo-Pacific gunards	GUI	merge	<i>Chelidonichthys spp</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Chlorophyceae</i>		SWG	remove	<i>Chlorophyceae</i>	-	Not a target species of D3 (algae)
Biscay & Iberian Coast	<i>Citharidae</i>	Citharis nei	CIT	split	<i>Citharidae</i>	<i>Citharoides macrolepis, Citharus linguatula</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Conger spp.</i>	Conger eels nei	CGZ	merge	<i>Conger spp.</i>	<i>Conger conger</i>	Allocation to the only species of the same genus in the list

MSFD sub/re-region	Species	English name	FAO code	Action	Input	Output	Rationale
Biscay & Iberian Coast	<i>Crassostrea spp.</i>	Cupped oysters nei	OYC	remove	<i>Crassostrea spp.</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Dentex spp.</i>	Dentex nei	DEX	split	<i>Dentex spp.</i>	<i>Dentex canariensis, D. dentex, D. gibbosus, D. macrophthalmus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Dicentrarchus spp.</i>	Seabasses nei	BSE	split	<i>Dicentrarchus spp.</i>	<i>Dicentrarchus labrax, D. punctatus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Diplodus spp.</i>	Sargo breams nei	SRG	split	<i>Diplodus spp.</i>	<i>Diplodus annularis, D. cervinus, D. puntazzo, D. sargus, D. vulgaris</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Donax spp.</i>	Donax clams	DON	merge	<i>Donax spp.</i>	<i>Donax trunculus</i>	Allocation to the only species in the list
Biscay & Iberian Coast	<i>Eledone spp.</i>	Horned and musky octopuses	OCM	split	<i>Eledone spp.</i>	<i>Eledone cirrosa, E. moschata</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Eutrigla gurnardus</i>	Grey gurnard	GUG	merge	<i>Eutrigla gurnardus</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Gaidropsarus spp.</i>	Rocklings nei	ROL	merge	<i>Gaidropsarus spp.</i>	<i>Gaidropsarus mediterraneus</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Galeus spp.</i>	Crest-tail catsharks nei	GAU	merge	<i>Galeus spp.</i>	<i>Galeus melastomus</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Gelidium corneum</i>	Giant gelidium	GEQ	remove	<i>Gelidium corneum</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Gelidium spp.</i>	Gelidium seaweeds	GEL	remove	<i>Gelidium spp.</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Himanthalia elongata</i>	Sea tong	HLZ	remove	<i>Himanthalia elongata</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Homarus spp.</i>	-	LBS	merge	<i>Homarus spp.</i>	<i>Homarus gammarus</i>	Allocation to the only species in the list

MSFD sub/re-region	Species	English name	FAO code	Action	Input	Output	Rationale
Biscay & Iberian Coast	<i>Illex illecebrosus</i>	Northern shortfin squid	SQI	merge	<i>Illex illecebrosus</i>	<i>Illex spp.</i>	Allocation to higher level due to missidentification/misreporting among species
Biscay & Iberian Coast	<i>Isurus spp.</i>	Mako sharks	MAK	split	<i>Isurus spp.</i>	<i>Isurus oxyrinchus, I. paucus</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Laminaria digitata</i>	Tangle	LAH	remove	<i>Laminaria digitata</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Laminaria hyperborea</i>	North European kelp	LAZ	remove	<i>Laminaria hyperborea</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Laminariaceae</i>	Kelps nei	LEC	remove	<i>Laminariaceae</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Lepidorhombus spp</i>	Megrimms nei	LEZ	split	<i>Lepidorhombus spp</i>	<i>Lepidorhombus boscii and L. whiffiagonis</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Lepidotrigla cavillone</i>	Large-scale gunard	LDV	merge	<i>Lepidotrigla cavillone</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Lepidotrigla dieuzeidei</i>	Spiny gunard	LEP	merge	<i>Lepidotrigla dieuzeidei</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Loliginidae</i>	Inshore squids nei	SQZ	merge	<i>Loliginidae</i>	<i>Loligo spp</i>	Allocation to lower level
Biscay & Iberian Coast	<i>Loliginidae, Ommastrephidae</i>	Various squid nei	SQZ	merge	<i>Loliginidae, Ommastrephidae</i>	<i>Loligo spp</i>	Allocation to lower level
Biscay & Iberian Coast	<i>Loligo pealeii</i>	Lonfin squid	SQU	merge	<i>Loligo pealeii</i>	<i>Loligo spp</i>	Allocation to higher level due to missidentification/misreporting among species
Biscay & Iberian Coast	<i>Loligo reynaudi</i>	Cape hope squid	CHO	merge	<i>Loligo reynaudi</i>	<i>Loligo spp</i>	Allocation to higher level due to

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
							missidentifica- tion/misreport- ing among spe- cies
Biscay & Iberian Coast	<i>Loligo vulgaris</i>	European squid	SQR	merge	<i>Loligo vulgaris</i>	<i>Loligo spp</i>	Allocation to higher level due to missidentifica- tion/misreport- ing among species
Biscay & Iberian Coast	<i>Lophiidae</i>	Blackbellied angler	ANF	split	<i>Lophiidae</i>	<i>Lophius budegassa, L. piscatorius</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Lophius spp.</i>	Monkfishes nei	MNZ	split	<i>Lophius spp.</i>	<i>Lophius budegassa, L. piscatorius</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Microchirus spp.</i>	Thickback soles	MKG	split	<i>Microchirus spp.</i>	<i>Microchirus azevia, Microchirus variegatus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Mitella pollicipes</i>	Barnacle	PCB	rename	<i>Mitella pollicipes</i>	<i>Pollicipes pollicipes</i>	Taxonomy reviewed
Biscay & Iberian Coast	<i>Mugil spp</i>		MGS	merge	<i>Mugil spp</i>	<i>Mugil cephalus</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Mugilidae</i>	Mulletts nei	MUL	merge	<i>Mugilidae</i>	<i>Mugil cephalus</i>	Allocation to the only species of the same family in the list
Biscay & Iberian Coast	<i>Mullidae</i>	Goatfishes, red mullets nei	MUM	split	<i>Mullidae</i>	<i>Mullus barbatus, M. surmulletus</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Mullus spp.</i>	Surmulletts(=Red mullets) nei	MUX	split	<i>Mullus spp.</i>	<i>Mullus barbatus, M. surmulletus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Muraenidae</i>	Morais	MUI	merge	<i>Muraenidae</i>	<i>Muraena helena</i>	Allocation to the only species in the list
Biscay & Iberian Coast	<i>Mustelus spp</i>	Smooth-hounds nei	SDV	split	<i>Mustelus spp</i>	<i>Mustelus asterias, M. mustelus</i>	Proportional allocation to species of this genus in the list

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Biscay & Iberian Coast	<i>Mytilus edulis</i>	Blue mussel	MUS	remove	<i>Mytilus edulis</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Mytilus galloprovincialis</i>	Mediterranean mussel	MSM	remove	<i>Mytilus galloprovincialis</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Mytilus spp</i>	-	MYV	remove	<i>Mytilus spp</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Octopodidae</i>	Octopuses, etc. nei	OCT	merge	<i>Octopodidae</i>	<i>Octopus vulgaris</i>	Allocation to the only species of the same family in the list
Biscay & Iberian Coast	<i>Octopus spp</i>	Octopuses	OCZ	merge	<i>Octopus spp</i>	<i>Octopus vulgaris</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Ostrea edulis</i>	European flat oyster	OYF	remove	<i>Ostrea edulis</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Pagrus spp.</i>	Pargo breams nei	SBP	split	<i>Pagrus spp.</i>	<i>Pagrus auriga, Pagrus caeruleostictus, Pagrus pagrus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Pecten maximus</i>	Great Atlantic scallop	SCE	remove	<i>Pecten maximus</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Penaeus spp.</i>	Penaeus shrimp nei	PEN	merge	<i>Penaeus spp.</i>	<i>Penaeus kerathurus</i>	Allocation to the only species of the same genus in the list
Biscay & Iberian Coast	<i>Percophis brasiliensis</i>	Brazilian flat head	FLA	remove	<i>Percophis brasiliensis</i>	-	Do not occur in ABI waters/misreported
Biscay & Iberian Coast	<i>Phaeophyceae</i>	Brown seaweed	SWB	remove	<i>Phaeophyceae</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Phycis spp</i>	Forkbeards nei	FOX	split	<i>Phycis spp</i>	<i>Phycis blennoides and Phycis phycis</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Porphyra linearis</i>	Ribbonend nori	OFM	remove	<i>Porphyra linearis</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Pteromylaeus bovinus</i>	Bull ray	MPO	rename	<i>Pteromylaeus bovinus</i>	<i>Aetomylaeus bovinus</i>	Taxonomy reviewed

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Biscay & Iberian Coast	<i>Raja fullonica</i>	Shagreen ray	RJF	rename	<i>Raja fullonica</i>	<i>Leucoraja fullonica</i>	Taxonomy reviewed
Biscay & Iberian Coast	<i>Raja naevus</i>	Cuckoo ray	RJN	rename	<i>Raja naevus</i>	<i>Leucoraja naevus</i>	Taxonomy reviewed
Biscay & Iberian Coast	<i>Raja oxyrinchus</i>	Longnosed skate	RJO	rename	<i>Raja oxyrinchus</i>	<i>Dipturus oxyrinchus</i>	Taxonomy reviewed
Biscay & Iberian Coast	<i>Raja spp</i>	Raja rays nei	SKA	split	<i>Raja spp</i>	<i>Raja asterias</i> , <i>R. brachyura</i> , <i>R. circularis</i> , <i>R. clavata</i> , <i>Leucoraja fullonica</i> , <i>R. microocellata</i> , <i>R. montagui</i> , <i>Leucoraja naevus</i> , <i>Dipturus oxyrinchus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Rajidae</i>	Rays and skates nei	RAJ	split	<i>Rajidae</i>	<i>Raja asterias</i> , <i>R. brachyura</i> , <i>R. circularis</i> , <i>R. clavata</i> , <i>Leucoraja fullonica</i> , <i>R. microocellata</i> , <i>R. montagui</i> , <i>Leucoraja naevus</i> , <i>Dipturus oxyrinchus</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Rajiformes</i>	Ray, sting greys, manta nei	SRX	split	<i>Rajiformes</i>	<i>Raja asterias</i> , <i>R. brachyura</i> , <i>R. circularis</i> , <i>R. clavata</i> , <i>Leucoraja fullonica</i> , <i>R. microocellata</i> , <i>R. montagui</i> , <i>Leucoraja naevus</i> , <i>Dipturus oxyrinchus</i>	Proportional allocation to species of this order in the list
Biscay & Iberian Coast	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	GHL	remove	<i>Reinhardtius hippoglossoides</i>	-	Non indigenous species/misreported
Biscay & Iberian Coast	<i>Rhodophyceae</i>	Red seaweeds	SWR	remove	<i>Rhodophyceae</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Ruditapes decussatus</i>	Grooved carpet shell	CTG	remove	<i>Ruditapes decussatus</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Ruditapes philippinarum</i>	Japanese carpet shell	CLJ	remove	<i>Ruditapes philippinarum</i>	-	Non-indigenous species and aquaculture

MSFD sub/re-region	Species	English name	FAO code	Action	Input	Output	Rationale
Biscay & Iberian Coast	<i>Ruditapes spp</i>	Carpets shell nei	TPS	remove	<i>Ruditapes spp</i>	-	Aquaculture
Biscay & Iberian Coast	<i>Scomber japonicus</i>	Chub mackerel	MAS	rename	<i>Scomber japonicus</i>	<i>Scomber colias (VMA)</i>	New taxonomy with new code
Biscay & Iberian Coast	<i>Scomber spp.</i>	Scomber mackerel nei	MAZ	split	<i>Scomber spp.</i>	<i>Scomber colias and Scomber scombrus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Scomberoides spp</i>	Queenfishes	QUE	re-moved	<i>Scomberoides spp</i>	-	Do not occur in ABI waters/mis-reported
Biscay & Iberian Coast	<i>Scomberomorus spp</i>	Seerfishes nei	KGX	re-moved	<i>Scomberomorus spp</i>	-	Do not occur in ABI waters/mis-reported
Biscay & Iberian Coast	<i>Scomberidae</i>	Mackerels nei	MAX	split	<i>Scomberidae</i>	<i>Scomber colias and Scomber scombrus</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Scorpaena spp</i>	Scorpion fishes, rock fishes nei	SCO	split	<i>Scorpaena spp</i>	<i>Scorpaena scrofa, Scorpaena porcus and Scorpaena notata</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Scorpaenidae</i>	Scorpionfishes nei	SCO	split	<i>Scorpaenidae</i>	<i>Scorpaena scrofa, Scorpaena porcus and Scorpaena notata</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Scyliorhinidae</i>	Catsharks, etc. nei	SYX	split	<i>Scyliorhinidae</i>	<i>Scyliorhinus canicula and Scyliorhinus stellaris</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Scyliorhinus spp</i>	Catsharks, nurse horse nei	SCL	split	<i>Scyliorhinus spp</i>	<i>Scyliorhinus canicula and Scyliorhinus stellaris</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Serranus spp</i>	Combers nei	BAS	split	<i>Serranus spp</i>	<i>Serranus cabrilla and Serranus scriba</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Solea spp</i>	-	SOO	split	<i>Solea spp</i>	<i>Solea lascaris and Solea senegalensis and Solea solea</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Spicara spp</i>	Picarels nei	PIC	merge	<i>Spicara spp</i>	<i>Spicara maena</i>	Allocation to the only species in the list

MSFD sub/re-region	Species	English name	FAO code	Action	Input	Output	Rationale
Biscay & Iberian Coast	<i>Squillidae</i>	Squillids nei	SQY	merge	<i>Squillidae</i>	<i>Squilla mantis</i>	Proportional allocation to species of this family in the list
Biscay & Iberian Coast	<i>Torpedo spp</i>	Torpedos ray	TOE	merge	<i>Torpedo spp</i>	<i>Torpedo mar-morata</i>	Allocation to the only species in the list
Biscay & Iberian Coast	<i>Trachinus spp</i>	Weevers nei	WEX	merge	<i>Trachinus spp</i>	<i>Trachinus draco</i>	Allocation to the only species in the list
Biscay & Iberian Coast	<i>Trachurus delagoa</i>	African scad	TUD	remove	<i>Trachurus delagoa</i>	-	Do not occur in ABI waters/mis-reported
Biscay & Iberian Coast	<i>Trachurus spp</i>	Jack and horse mackerel nei	JAX	split	<i>Trachurus spp</i>	<i>Trachurus trachurus</i> , <i>T. mediterraneus</i> , <i>T. trecae</i> , <i>T. picturatus</i>	Proportional allocation to species of this genus in the list
Biscay & Iberian Coast	<i>Trigla lyra</i>	Piper gurnard	GUN	merge	<i>Trigla lyra</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Trigla spp</i>	Gurnards nei	GUY	merge	<i>Trigla spp</i>	<i>Triglidae</i>	Allocation to higher level due to missidentification among species
Biscay & Iberian Coast	<i>Undaria pin-natifida</i>	Wakame	UDP	remove	<i>Undaria pin-natifida</i>	-	Not a D3 target species (algae)
Biscay & Iberian Coast	<i>Urophycis tenuis</i>	White hake	HKW	remove	<i>Urophycis tenuis</i>	-	Do not occur in ABI waters/mis-reported
Biscay & Iberian Coast	<i>Venerupis pullastra</i>	Pullet carpet shell	CTS	remove	<i>Venerupis pullastra</i>	-	Aquaculture (actual name <i>V. corrugata</i> , code VUC)
Biscay & Iberian Coast	<i>Venerupis rhomboides</i>	Banded carpet shell	VNR	remove	<i>Venerupis rhomboides</i>	-	Aquaculture
Black Sea	<i>Atherinidae</i>	Silversides(=Sand smelts) nei	SIL	merge	<i>SIL</i>	<i>ATB</i>	It was added to <i>Atherina boyeri</i>
Black Sea	<i>Atherina boyeri</i>	Big-scale sand smelt	ATB	merge	<i>ATB</i>	<i>ATB</i>	<i>Atherinidae</i> was added and it was named as <i>Est. Atherina boyeri</i>

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
Celtic Seas	<i>Labridae</i>	Wrasses, hogfishes, etc. nei	WRA	split	<i>Labridae</i>	<i>Labrus bergylta</i> , <i>Ctenolabrus rupestris</i> , <i>Symphodus melops</i> , <i>Centrolabrus exoletus</i>	
Celtic Seas	<i>Loliginidae</i> , <i>Ommastrephidae</i>	Various squids nei	SQU	split	<i>Loliginidae</i> , <i>Ommastrephidae</i>	<i>Loligo spp</i> , <i>Illex spp</i>	
Celtic Seas	<i>Lophiidae</i>	Anglerfishes nei	ANF	split	<i>Lophiidae</i>	<i>Lophius budegassa</i> , <i>Lophius piscatorius</i>	
Celtic Seas	<i>Lophius spp</i>	Monkfishes nei	MNZ	split	<i>Lophius spp</i>	<i>Lophius budegassa</i> , <i>Lophius piscatorius</i>	
Celtic Seas	<i>Mustelus spp</i>	Smooth-hounds nei	SDV	split	<i>Mustelus spp</i>	<i>Mustelus mustelus</i> , <i>Mustelus asterias</i>	
Celtic Seas	<i>Octopodidae</i>	Octopuses, etc. nei	OCT	split	<i>Octopodidae</i>	<i>Octopus spp</i> , <i>Eledone spp</i>	
Celtic Seas	<i>Palinurus spp</i>	Palinurid spiny lobsters nei	CRW	split	<i>Palinurus spp</i>	<i>Palinurus elephas</i> , <i>Palinurus mauritanicus</i>	
Celtic Seas	<i>Rajidae</i>	Rays and skates nei	RAJ	split	<i>Rajidae</i>	<i>Raja clavata</i> , <i>Raja montagui</i> , <i>Raja naevus</i> , <i>Raja brachyura</i> , <i>Raja fullonica</i> , <i>Raja oxyrinchus</i> , <i>Raja circularis</i> , <i>Raja microocellata</i> , <i>Raja undulata</i> , <i>Amblyraja radiata</i> , <i>Raja hyperborea</i>	
Celtic Seas	<i>Rajiformes</i>	Rays, stingrays, mantas nei	SRX	split	<i>Rajiformes</i>	<i>Raja clavata</i> , <i>Raja montagui</i> , <i>Raja naevus</i> , <i>Raja brachyura</i> , <i>Raja fullonica</i> , <i>Raja oxyrinchus</i> , <i>Raja circularis</i> , <i>Raja microocellata</i> , <i>Raja undulata</i> , <i>Amblyraja radiata</i> , <i>Raja hyperborea</i>	
Celtic Seas	<i>Scyliorhinus spp</i>	Catsharks, nurse-hounds nei	SCL	split	<i>Scyliorhinus spp</i>	<i>Scyliorhinus canicula</i> , <i>Scyliorhinus stellaris</i>	

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Celtic Seas	<i>Solen spp</i>	Razor clams nei	RAZ	split	<i>Solen spp</i>	<i>Ensis ensis, Ensis siliqua</i>	
Celtic Seas	<i>Solenidae</i>	Razor clams, knife clams nei	SOI	split	<i>Solenidae</i>	<i>Ensis ensis, Ensis siliqua</i>	
Celtic Seas	<i>Trachurus spp</i>	Jack and horse mackerels nei	JAX	split	<i>Trachurus spp</i>	<i>Trachurus trachurus, Trachurus mediterraneus</i>	
Celtic Seas	<i>Triglidae</i>	Gurnards, searobins nei	GUX	split	<i>Triglidae</i>	<i>Eutrigla gurnardus, Chelidonichthys lucerna, Chelidonichthys lastoviza, Aspitrigla cuculus</i>	
Celtic Seas	<i>Laminaria digitata</i>	Tangle	LQD	remove	<i>Laminaria digitata</i>		algae not part of D3
Celtic Seas	<i>Laminaria hyperborea</i>	North European kelp	LAH	remove	<i>Laminaria hyperborea</i>		algae not part of D3
Celtic Seas	<i>Ruditapes philippinarum</i>	Japanese carpet shell	CLJ	remove	<i>Ruditapes philippinarum</i>		
Celtic Seas	<i>Ulva lactuca</i>	Sea lettuce	UVU	remove	<i>Ulva lactuca</i>		algae not part of D3
Celtic Seas	<i>Anarhichas lupus</i>	Atlantic wolffish	CAA	merge	<i>Anarhichas lupus</i>	<i>Anarhichas lupus</i>	
Celtic Seas	<i>Anarhichas spp</i>	Wolffishes(=Catfishes) nei	CAT	merge	<i>Anarhichas spp</i>	<i>Anarhichas lupus</i>	
Celtic Seas	<i>Caproidae</i>	Boarfishes nei	BOR	merge	<i>Caproidae</i>	<i>Capros aper</i>	
Celtic Seas	<i>Capros aper</i>	Boarfish	BOC	merge	<i>Capros aper</i>	<i>Capros aper</i>	
Celtic Seas	<i>Eledone cirrosa</i>	Horned octopus	EOI	merge	<i>Eledone cirrosa</i>	<i>Eledone spp</i>	
Celtic Seas	<i>Eledone spp</i>	Horned and musky octopuses	OCM	merge	<i>Eledone spp</i>	<i>Eledone spp</i>	
Celtic Seas	<i>Illex illecebrosus</i>	Northern shortfin squid	SQI	merge	<i>Illex illecebrosus</i>	<i>Illex spp</i>	
Celtic Seas	<i>Illex spp</i>	Shortfin squids nei	ILL	merge	<i>Illex spp</i>	<i>Illex spp</i>	
Celtic Seas	<i>Lepidorhombus spp</i>	Megrimms nei	LEZ	merge	<i>Lepidorhombus spp</i>	<i>Lepidorhombus whiffiagonis</i>	

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
Celtic Seas	<i>Lepidorhombus whiffiagonis</i>	Megrim	MEG	merge	<i>Lepidorhombus whiffiagonis</i>	<i>Lepidorhombus whiffiagonis</i>	
Celtic Seas	<i>Loliginidae</i>	Inshore squids nei	SQZ	merge	<i>Loliginidae</i>	<i>Loligo spp</i>	
Celtic Seas	<i>Loligo spp</i>	Common squids nei	SQC	merge	<i>Loligo spp</i>	<i>Loligo spp</i>	
Celtic Seas	<i>Loligo vulgaris</i>	European squid	SQR	merge	<i>Loligo vulgaris</i>	<i>Loligo spp</i>	
Celtic Seas	<i>Octopus spp</i>	Octopuses nei	OCZ	merge	<i>Octopus spp</i>	<i>Octopus spp</i>	
Celtic Seas	<i>Octopus vulgaris</i>	Common octopus	OCC	merge	<i>Octopus vulgaris</i>	<i>Octopus spp</i>	
Celtic Seas	<i>Palaemon serratus</i>	Common prawn	CPR	merge	<i>Palaemon serratus</i>	<i>Palaemonidae</i>	
Celtic Seas	<i>Palaemonidae</i>	Palaemonid shrimps nei	PAL	merge	<i>Palaemonidae</i>	<i>Palaemonidae</i>	
Celtic Seas	<i>Sepia officinalis</i>	Common cuttlefish	CTC	keep	<i>Sepia officinalis</i>	<i>Sepia officinalis</i>	
Celtic Seas	<i>Osteichthyes</i>	Marine fishes nei	MZZ	ignore	<i>Osteichthyes</i>	<i>Osteichthyes</i>	too generic
Greater North Sea	<i>Trachurus spp</i>	Jack and horse mackerels nei	JAX	split	<i>Trachurus spp</i>	<i>Trachurus trachurus</i> , <i>Trachurus mediterraneus</i>	
Greater North Sea	<i>Loliginidae</i> , <i>Ommastrephidae</i>	Various squids nei	SQU	split	<i>Loliginidae</i> , <i>Ommastrephidae</i>	<i>Loligo spp</i> , <i>Illex spp</i>	
Greater North Sea	<i>Triglidae</i>	Gurnards, searobins nei	GUX	split	<i>Triglidae</i>	<i>Chelidonichthys lucerna</i> , <i>Aspitrigla cuculus</i> , <i>Eutrigla gurnardus</i> , <i>Chelidonichthys lastoviza</i>	
Greater North Sea	<i>Cephalopoda</i>	Cephalopods nei	CEP	split	<i>Cephalopoda</i>	<i>Loligo spp</i> , <i>Octopus spp</i> , <i>Illex spp</i> , <i>Sepiidae</i> , <i>Sepiolidae</i>	
Greater North Sea	<i>Brachyura</i>	Marine crabs nei	CRA	split	<i>Brachyura</i>	<i>Cancer pagurus</i> , <i>Maja squinado</i> , <i>Necora puer</i> , <i>Carcinus maenas</i> , <i>Eriocheir sinensis</i>	

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Greater North Sea	<i>Scyliorhinus spp</i>	Catsharks, nurse-hounds nei	SCL	split	<i>Scyliorhinus spp</i>	<i>Scyliorhinus canicula</i> and <i>Scyliorhinus stellaris</i>	
Greater North Sea	<i>Raja spp</i>	Raja rays nei	SKA	split	<i>Raja spp</i>	<i>Raja clavata</i> , <i>Raja microocellata</i> , <i>Raja undulata</i> , <i>Raja batis</i> , <i>Raja naevus</i> , <i>Raja alba</i> , <i>Raja brachyura</i> , <i>Raja montagui</i> , <i>Raja circularis</i>	
Greater North Sea	<i>Mullus spp</i>	Surmulletts(=Red mullets) nei	MUX	split	<i>Mullus spp</i>	<i>Mullus surmuletus</i> , <i>Mullus barbatus</i>	
Greater North Sea	<i>Laminaria digitata</i>	Tangle	LQD	remove	<i>Laminaria digitata</i>		algae not part of D3
Greater North Sea	<i>Laminaria hyperborea</i>	North European kelp	LAH	remove	<i>Laminaria hyperborea</i>		algae not part of D3
Greater North Sea	<i>Osteichthyes</i>	Freshwater fishes nei	FRF	remove	<i>Osteichthyes</i>		category too broad
Greater North Sea	<i>Ruditapes philippinarum</i>	Japanese carpet shell	CLJ	remove	<i>Ruditapes philippinarum</i>		invasive species, neozoa
Greater North Sea	<i>Eriocheir sinensis</i>	Chinese mitten crab	ERS	remove	<i>Eriocheir sinensis</i>		invasive species, neozoa
Greater North Sea	<i>Perciformes</i>	Demersal percormorphs nei	DPX	remove	<i>Perciformes</i>		category too broad
Greater North Sea	<i>Ulva lactuca</i>	Sea lettuce	UVU	remove	<i>Ulva lactuca</i>		algae not part of D3
Greater North Sea	<i>Lophiidae</i>	Anglerfishes nei	ANF	merge	<i>Lophiidae</i>	<i>Lophius piscatorius</i>	
Greater North Sea	<i>Mytilus edulis</i>	Blue mussel	MUS	merge	<i>Mytilus edulis</i>	<i>Mytilus edulis</i>	
Greater North Sea	<i>Sepia officinalis</i>	Common cuttlefish	CTC	merge	<i>Sepia officinalis</i>	<i>Sepia officinalis</i>	

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
Greater North Sea	<i>Loliginidae</i>	Inshore squids nei	SQZ	merge	<i>Loliginidae</i>	<i>Loligo spp</i>	
Greater North Sea	<i>Sepiidae, Sepiolidae</i>	Cuttlefish, bobtail squids nei	CTL	merge	<i>Sepiidae, Sepiolidae</i>	<i>Sepia officinalis</i>	
Greater North Sea	<i>Loligo spp</i>	Common squids nei	SQC	merge	<i>Loligo spp</i>	<i>Loliginidae, Loligo vulgaris</i>	
Greater North Sea	<i>Lophius piscatorius</i>	Angler(=Monk)	MON	merge	<i>Lophius piscatorius</i>	<i>Lophiidae, Lophius spp</i>	
Greater North Sea	<i>Lophius spp</i>	Monkfishes nei	MNZ	merge	<i>Lophius spp</i>	<i>Lophius piscatorius, Lophiidae</i>	
Greater North Sea	<i>Ensis ensis</i>	Pod razor shell	EQE	merge	<i>Ensis ensis</i>	<i>Ensis ensis</i>	
Greater North Sea	<i>Lepidorhombus spp</i>	Megrims nei	LEZ	merge	<i>Lepidorhombus spp</i>	<i>Lepidorhombus whiffiagonis</i>	
Greater North Sea	<i>Loligo vulgaris</i>	European squid	SQR	merge	<i>Loligo vulgaris</i>	<i>Loligo spp</i>	
Greater North Sea	<i>Mustelus spp</i>	Smooth-hounds nei	SDV	merge	<i>Mustelus spp</i>	<i>Mustelus spp</i>	
Greater North Sea	<i>Anarhichas spp</i>	Wolffishes(=Catfishes) nei	CAT	merge	<i>Anarhichas spp</i>	<i>Anarhichas lupus</i>	
Greater North Sea	<i>Solen spp</i>	Razor clams nei	RAZ	merge	<i>Solen spp</i>	<i>Ensis ensis</i>	
Greater North Sea	<i>Lepidorhombus whiffiagonis</i>	Megrim	MEG	merge	<i>Lepidorhombus whiffiagonis</i>	<i>Lepidorhombus whiffiagonis</i>	
Greater North Sea	<i>Octopodidae</i>	Octopuses, etc. nei	OCT	merge	<i>Octopodidae</i>	<i>Octopodidae</i>	
Greater North Sea	<i>Mustelus mustelus</i>	Smooth-hound	SMD	merge	<i>Mustelus mustelus</i>	<i>Mustelus spp</i>	
Greater North Sea	<i>Anarhichas lupus</i>	Atlantic wolffish	CAA	merge	<i>Anarhichas lupus</i>	<i>Anarhichas lupus</i>	

MSFD sub/re-region	Species	English name	FAO code	Action	Input	Output	Rationale
Greater North Sea	<i>Palinurus elephas</i>	Common spiny lobster	SLO	merge	<i>Palinurus elephas</i>	<i>Palinurus spp</i>	
Greater North Sea	<i>Mytilus spp</i>		MYV	merge	<i>Mytilus spp</i>	<i>Mytilus edulis</i>	
Greater North Sea	<i>Palinurus spp</i>	Palinurid spiny lobsters nei	CRW	merge	<i>Palinurus spp</i>	<i>Palinurus spp</i>	
Greater North Sea	<i>Octopus vulgaris</i>	Common octopus	OCC	merge	<i>Octopus vulgaris</i>	<i>Octopodidae</i>	
Greater North Sea	<i>Octopus spp</i>	Octopuses nei	OCZ	merge	<i>Octopus spp</i>		
Greater North Sea	<i>Rajiformes</i>	Rays, stingrays, mantas nei	SRX	merge	<i>Rajiformes</i>	<i>Rajidae</i>	
Greater North Sea	<i>Mustelus asterias</i>	Starry smooth-hound	SDS	merge	<i>Mustelus asterias</i>	<i>Mustelus spp</i>	
Greater North Sea	<i>Rajidae</i>	Rays and skates nei	RAJ	merge	<i>Rajidae</i>		
Greater North Sea	<i>Ammodytes spp</i>	Sandeels(=Sandlances) nei	SAN	keep	<i>Ammodytes spp</i>	<i>Ammodytes spp</i>	
Greater North Sea	<i>Illex spp</i>	Shortfin squids nei	ILL	keep	<i>Illex spp</i>	<i>Illex spp</i>	
Greater North Sea	<i>Mugilidae</i>	Mulletts nei	MUL	ignore	<i>Mugilidae</i>	<i>Mugilidae</i>	too generic
Greater North Sea	<i>Osteichthyes</i>	Marine fishes nei	MZZ	ignore	<i>Osteichthyes</i>	<i>Osteichthyes</i>	too generic
Greater North Sea	<i>Bivalvia</i>	Clams, etc. nei	CLX	ignore	<i>Bivalvia</i>	<i>Bivalvia</i>	too generic
Greater North Sea	<i>Gaidropsarus spp</i>	Rocklings nei	ROL	ignore	<i>Gaidropsarus spp</i>	<i>Gaidropsarus spp</i>	outside of threshold, no other spp groups in list
Ionian & central Med.	<i>Trachurus spp</i>	Jack and horse mackerels nei	JAX	split	<i>Trachurus spp</i>	<i>Trachurus trachurus, Trachurus</i>	genus proportionally allocated to species

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
						<i>mediterraneus</i> , <i>Trachurus pictu-</i> <i>ratus</i>	
Ionian & central Med.	<i>Auxis thazardA-rochei</i>	Frigate and bullet tunas	FRZ	remove	<i>Auxis thazardA-rochei</i>		straddling stock; to be removed for taxonomic uncertainty
Ionian & central Med.	<i>Loligo spp</i>	Common squids nei	SQC	split	<i>Loligo spp</i>	<i>Loligo vulgaris</i> , <i>Loligo forbesi</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Scorpaena spp</i>	Scorpionfishes, rockfishes nei	SCS	split	<i>Scorpaena spp</i>	<i>Scorpaena scrofa</i> , <i>Scorpaena porcus</i> , <i>Scorpaena notata</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Spicara spp</i>	Picarels nei	PIC	split	<i>Spicara spp</i>	<i>Spicara smaris</i> , <i>Spicara maena</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Raja spp</i>	Raja rays nei	SKA	split	<i>Raja spp</i>	<i>Raja clavata</i> , <i>Raja miraletus</i> , <i>Raja alba</i> , <i>Raja montagui</i> , <i>Raja asterias</i> , <i>Raja radula</i> , <i>Raja batis</i> , <i>Raja oxyrinchus</i> , <i>Raja poly stigma</i> , <i>Raja brachyura</i> , <i>Raja circularis</i> , <i>Raja undulata</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Lophius spp</i>	Monkfishes nei	MNZ	split	<i>Lophius spp</i>	<i>Lophius budegassa</i> , <i>Lophius piscatorius</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Diplodus spp</i>	Sargo breams nei	SRG	split	<i>Diplodus spp</i>	<i>Diplodus sargus</i> , <i>Diplodus annularis</i> , <i>Diplodus vulgaris</i> , <i>Diplodus puntazzo</i> , <i>Diplodus cervinus</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Alloteuthis spp</i>		Ouw	merge	<i>Alloteuthis spp</i>	<i>Alloteuthis media</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Sepia spp</i>	Cuttlefishes nei	IAX	split	<i>Sepia spp</i>	<i>Sepia officinalis</i> , <i>Sepia orbignyana</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Sepiidae</i> , <i>Sepiolidae</i>	Cuttlefish, bobtail squids nei	CTL	remove	<i>Sepiidae</i> , <i>Sepiolidae</i>		not allocable family

MSFD sub/re-region	Species	English name	FAO code	Action	Input	Output	Rationale
Ionian & central Med.	<i>Solea spp</i>		SOO	merge	<i>Solea spp</i>	<i>Solea solea</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Squalus spp</i>	Dogfishes nei	DGZ	split	<i>Squalus spp</i>	<i>Squalus acanthias</i> , <i>Squalus blainvillei</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Scomber spp</i>	Scomber mackerels nei	MAZ	split	<i>Scomber spp</i>	<i>Scomber colias</i> , <i>Scomber scombrus</i> , <i>Scomberesox saurus</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Phycis spp</i>	Forkbeards nei	FOX	split	<i>Phycis spp</i>	<i>Phycis phycis</i> , <i>Phycis blennoides</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Argentina spp</i>	Argentines	ARG	merge	<i>Argentina spp</i>	<i>Argentina sphyraena</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Serranus spp</i>	Combers nei	BAS	split	<i>Serranus spp</i>	<i>Serranus cabrilla</i> , <i>Serranus scriba</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Mustelus spp</i>	Smooth-hounds nei	SDV	split	<i>Mustelus spp</i>	<i>Mustelus mustelus</i> , <i>Mustelus punctulatus</i> , <i>Mustelus asterias</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Pagrus spp</i>	Pargo breams nei	SBP	merge	<i>Pagrus spp</i>	<i>Pagrus pagrus</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Epinephelus spp</i>	Groupers nei	GPX	split	<i>Epinephelus spp</i>	<i>Epinephelus aeneus</i> , <i>Epinephelus marginatus</i> , <i>Epinephelus costae</i> , <i>Epinephelus caninus</i> , <i>Epinephelus haifensis</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Eledone spp</i>	Horned and musky octopuses	OCM	split	<i>Eledone spp</i>	<i>Eledone moschata</i> , <i>Eledone cirrosa</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Lepidorhombus spp</i>	Megrims nei	LEZ	split	<i>Lepidorhombus spp</i>	<i>Lepidorhombus bosci</i> , <i>Lepidorhombus whiffiagonis</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Sphyraena spp</i>	Barracudas nei	BAR	merge	<i>Sphyraena spp</i>	<i>Sphyraena sphyraena</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Siganus spp</i>	Spinefeet(=Rabbitfishes) nei	SPI	split	<i>Siganus spp</i>	<i>Siganus luridus</i> , <i>Siganus rivulatus</i>	genus proportionally allocated to species

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Ionian & central Med.	<i>Caranx spp</i>	Jacks, crevalles nei	TRE	split	<i>Caranx spp</i>	<i>Caranx rhotichus</i> , <i>Caranx crysos</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Trigla spp</i>	Gurnards nei	GUY	merge	<i>Trigla spp</i>	<i>Trigla lyra</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Dentex spp</i>	Dentex nei	DEX	split	<i>Dentex spp</i>	<i>Dentex dentex</i> , <i>Dentex macrophthalmus</i> , <i>Dentex gibbosus</i> , <i>Dentex maroccanus</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Mullus spp</i>	Surmulletts(=Red mullets) nei	MUX	split	<i>Mullus spp</i>	<i>Mullus surmuletus</i> , <i>Mullus barbatus</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Scyliorhinus spp</i>	Catsharks, nursehounds nei	SCL	split	<i>Scyliorhinus spp</i>	<i>Scyliorhinus canicula</i> , <i>Scyliorhinus stellaris</i>	genus proportionally allocated to species
Ionian & central Med.	<i>Siganus luridus</i>	Dusky spinefoot	IGU	remove	<i>Siganus luridus</i>		Alien
Ionian & central Med.	<i>Siganus rivulatus</i>	Marbled spinefoot	SRI	remove	<i>Siganus rivulatus</i>		Alien
Macaronesia	<i>Asparagopsis spp</i>	Harpoon seaweeds	ASR	remove	<i>Asparagopsis spp</i>	-	Not a D3 target species (algae)
Macaronesia	<i>Pterocladia capillacea</i>	Spanish agar	OKQ	remove	<i>Pterocladia capillacea</i>	-	Not a D3 target species (algae)
Macaronesia	<i>Aphanopus spp</i>		BOX	merge	<i>Aphanopus spp</i>	<i>Aphanopus carbo</i>	Allocation to the only species in the list
Macaronesia	<i>Patella spp</i>	Limpets nei	LPZ	merge	<i>Patella spp</i>	<i>Patella ulyssiponensis</i>	Allocation to the only species in the list
Macaronesia	<i>Trachurus spp</i>	Jack and horse mackerels nei	JAX	merge	<i>Trachurus spp</i>	<i>Trachurus picturatus</i>	Allocation to the majority spc in the area
Macaronesia	<i>Trachurus trachurus</i>	Atlantic horse mackerel	HOM	merge	<i>Trachurus trachurus</i>	<i>Trachurus picturatus</i>	Allocation to the majority spc in the area
Macaronesia	<i>Scomber japonicus</i>	Chub mackerel	MAS	rename	<i>Scomber japonicus</i>	<i>Scomber colias (VMA)</i>	New taxonomy with new code

MSFD sub/region	Species	English name	FAO code	Action	Input	Output	Rationale
Macaronesia	<i>Raja spp</i>	Raja rays nei	SKA	merge	<i>Raja spp</i>	<i>Raja clavata</i>	Allocation to the majority spc in the area
Macaronesia	<i>Seriola spp</i>	Amberjacks nei	AMX	split	<i>Seriola spp</i>	<i>Seriola dumerili, S. rivoli-ana, S. fasciata, S. carpenteri</i>	
Macaronesia	<i>Diplodus spp</i>	Sargo breams nei	SRG	split	<i>Diplodus spp</i>	<i>Diplodus sargus, D. vulgaris, D. cervinus, D. puntazzo</i>	
Western Med.	<i>Trachurus spp</i>	Jack and horse mackerels nei	JAX	split	JAX	HOM, HMM	
Western Med.	<i>Octopodidae</i>	Octopuses, etc. nei	OCT	split	OCT	OCC, EOI	proportional allocation
Western Med.	<i>Mullus spp</i>	Surmulletts(=Red mullets) nei	MUX	split	MUX	MUT, MUR	proportional allocation
Western Med.	<i>Rajidae</i>	Rays and skates nei	RAJ	split	RAJ	JRS, JRC	proportional allocation
Western Med.	<i>Lophiidae</i>	Anglerfishes nei	ANF	split	ANF	ANK, MON	proportional allocation
Western Med.	<i>Lophius spp</i>	Monkfishes nei	MNZ	split	MNZ	ANK, MON	proportional allocation
Western Med.	<i>Loliginidae</i>	Inshore squids nei	SQZ	merge	SQZ	SQR	
Western Med.	<i>Loligo spp</i>	Common squids nei	SQC	merge	SQC	SQR	
Western Med.	<i>Illex spp</i>	Shortfin squids nei	ILL	merge	ILL	SQM	
Western Med.	<i>Scorpaena spp</i>	Scorpionfishes, rockfishes nei	SCS	merge	SCS	RSE	
Western Med.	<i>Scomber spp</i>	Scomber mackerels nei	MAZ	split	MAZ	MAC, MAS	proportional allocation
Western Med.	<i>Auxis thazard, A. rochei</i>	Frigate and bullet tunas	FRZ	merge	FRZ	FRI	
Western Med.	<i>Mugilidae</i>	Mulletts nei	MUL	split	MUL	MLR, MGA, MGC, MUF	proportional allocation
Western Med.	<i>Mugil spp</i>		MGS	split	MGS	MLR, MGA, MGC, MUF	proportional allocation
Western Med.	<i>Triglidae</i>	Gurnards, searobins nei	GUX	split	GUX	GUR, GUU	proportional allocation

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
Western Med.	<i>Tellina spp</i>	Tellins nei	TWL	merge	<i>TWL</i>	<i>DXL</i>	
Western Med.	<i>Donax spp</i>	Donax clams	DON	merge	<i>DON</i>	<i>DXL</i>	
Western Med.	<i>Lepidorhombus spp</i>	Megrimms nei	LEZ	merge	<i>LEZ</i>	<i>LDB</i>	
Western Med.	<i>Phycis spp</i>	Forkbeards nei	FOX	merge	<i>FOX</i>	<i>GFB</i>	
Western Med.	<i>Palinuridae</i>	Spiny lobsters nei	VLO	merge	<i>VLO</i>	<i>SLO</i>	
Western Med.	<i>Sarda spp</i>	Bonitos nei	BZX	merge	<i>BZX</i>	<i>BON</i>	
Western Med.	<i>Sepia spp</i>	Cuttlefishes nei	IAX	merge	<i>IAX</i>	<i>CTC</i>	
Western Med.	<i>Serranidae</i>	Groupers, seabasses nei	BSX	re-moved			uncertain taxonomy
Western Med.	<i>Serranus spp</i>	Combers nei	BAS	re-moved			uncertain taxonomy
Western Med.	<i>Murex spp</i>	Murex	MUE	re-moved			uncertain taxonomy
Western Med.	<i>Ommastrephidae</i>	Squids nei	OMZ	re-moved			uncertain taxonomy
Western Med.	<i>Eledone spp</i>	Horned and musky octopuses	OCM	re-moved			uncertain taxonomy
Western Med.	<i>Sparidae</i>	Porgies, seabreams nei	SBX	re-moved			uncertain taxonomy
Western Med.	<i>Crustacea</i>	Marine crustaceans nei	CRU	re-moved			uncertain taxonomy
Western Med.	<i>Trachinidae</i>	Weeverfishes nei	TRA	re-moved			uncertain taxonomy
Western Med.	<i>Gobiidae</i>	Gobies nei	GPA	re-moved			uncertain taxonomy
Western Med.	<i>Gobius spp</i>	Atlantic gobies nei	GOB	re-moved			uncertain taxonomy
Western Med.	<i>Sepiidae, Sepiolidae</i>	Cuttlefish, bobtail squids nei	CTL	re-moved			uncertain taxonomy
Western Med.	<i>Squillidae</i>	Squillids nei	SQY	re-moved			uncertain taxonomy

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
Western Med.	<i>Diplodus spp</i>	Sargo breams nei	SRG	re-moved			uncertain taxonomy
Western Med.	<i>Brevoortia pectinata</i>	Argentine menhaden	MHP	re-moved			misreporting
Western Med.	<i>Labridae</i>	Wrasses, hogfishes, etc. nei	WRA	re-moved			uncertain taxonomy
Western Med.	<i>Stolephorus spp</i>	Stolephorus anchovies	STO	re-moved			misreporting
Western Med.	<i>Soleidae</i>	Soles nei	SOX	re-moved			uncertain taxonomy
Western Med.	<i>Scomber australasicus</i>	Blue mackerel	MAA	re-moved			uncertain taxonomy
Western Med.	<i>Alloteuthis spp</i>		OJW	re-moved			uncertain taxonomy
Western Med.	<i>Caranx rhonchus</i>	False scad	HMY	re-moved			uncertain taxonomy
Western Med.	<i>Brachyura</i>	Marine crabs nei	CRA	re-moved			uncertain taxonomy
Western Med.	<i>Pandalidae</i>	Pandalid shrimps nei	PDZ	re-moved			uncertain taxonomy
Western Med.	<i>Atherinidae</i>	Silversides(=Sand smelts) nei	SIL	re-moved			uncertain taxonomy
Western Med.	<i>Ammodytes spp</i>	Sandeels(=Sandlances) nei	SAN	re-moved			uncertain taxonomy
Western Med.	<i>Mollusca</i>	Marine molluscs nei	MOL	re-moved			uncertain taxonomy
Western Med.	<i>Perciformes</i>	Demersal percormorphs nei	DPX	re-moved			uncertain taxonomy
Western Med.	<i>Mytilus galloprovincialis</i>	Mediterranean mussel	MSM	re-moved			aquaculture
Western Med.	<i>Osteichthyes</i>	Marine fishes nei	MZZ	re-moved			uncertain taxonomy
Western Med.	<i>Gastropoda</i>	Gastropods nei	GAS	re-moved			uncertain taxonomy
Western Med.	<i>Bothidae</i>	Lefteye flounders nei	LEF	re-moved			uncertain taxonomy
Western Med.	<i>Trachinus spp</i>	Weevers nei	WEX	re-moved			uncertain taxonomy

MSFD sub/re-gion	Species	English name	FAO code	Action	Input	Output	Rationale
Western Med.	<i>Sphyraena spp</i>	Barracudas nei	BAR	re-moved			uncertain taxonomy
Western Med.	<i>Scophthalmidae</i>	Turbots nei	SCF	re-moved			uncertain taxonomy
Western Med.	<i>Solea spp</i>		SOO	re-moved			uncertain taxonomy
Western Med.	<i>Crangon spp</i>	Crangon shrimps nei	CNZ	re-moved			uncertain taxonomy
Western Med.	<i>Raja spp</i>	Raja rays nei	SKA	re-moved			uncertain taxonomy
Western Med.	<i>Littorina littorea</i>	Common periwinkle	PEE	re-moved			uncertain taxonomy
Western Med.	<i>Amblygaster clupeioides</i>	Bleeker smoothbelly sardinella	AGC	re-moved			uncertain taxonomy
Western Med.	<i>Gaidropsarus spp</i>	Rocklings nei	ROL	re-moved			uncertain taxonomy
Western Med.	<i>Upeneus spp</i>	Goatfishes	GOX	re-moved			uncertain taxonomy
Western Med.	<i>Spicara spp</i>	Picarels nei	PIC	re-moved			uncertain taxonomy
Western Med.	<i>Echinoidea</i>	Sea urchins, etc. nei	URX	re-moved			uncertain taxonomy