

Scheveningen Control Experts Group (CEG)

Evaluation of Compliance with the Landing Obligation

North Sea demersal species

2018 - 2020



Contents

Executive summary.....	4
1 Introduction.....	6
2 Evaluation Methodology.....	10
<i>Method 1: “Inspection data compared with official catch or landings statistics”</i>	11
<i>Method 2: “Considering the evaluation of scientific bodies”</i>	13
<i>Method 3: “Trends of infringements”</i>	15
3 Results.....	16
3.1 Estimation of a discard ratio using last haul data (Method 1).....	16
3.2 Discards estimates provided by scientific organisations (Method 2).....	25
3.2.1 Discard ratio estimates from STECF	25
3.2.2 Discard ratio estimates from ICES	29
3.3 Infringement Trends (Method 3).....	31
4 Compliance outcome.....	32
5 Conclusions and recommendations.....	56
Annex 1. 2022 North Sea Demersal Fleet Segmentation.....	61
* Partial correspondence since NS02 in 2015-2017 (≥ 70 and < 100 mm)	61
Annex 2. Survivability and <i>De minimis</i> exemptions for COD, PLE and SOL in the North Sea in 2018, 2019 and 2020.	62
Annex 3. Detailed description of the methodology used to estimate the discard ratio.....	68
Annex 4. Logbook information (2018-2020).....	69
Annex 5. North Sea fleet segments correspondence with area/ gear type/ mesh size range in FDI database.....	73
Annex 6. ICES discard estimates by stock	75
Annex 7. Catches of COD, PLE, SOL and PRA by fleet segment/area	76

List of Acronyms

BMS	Fish below the Minimum Conservation Reference Size
CCTV	Closed Circuit Television
CDR	Commission Delegated Regulation
CEG	Control Expert Group
CFP	Common Fisheries Policy
COD	Cod (<i>Gadus morhua</i>)
DCF	Data Collection Framework
EM	Electronic Monitoring
FDI	Fisheries Dependent Information
FS	Fleet Segment
ICES	International Council for the Exploration of the Sea
HAD	Haddock (<i>Melanogrammus aeglefinus</i>)
HKE	Hake (<i>Merluccius merluccius</i>)
LH	Last haul
LO	Landing obligation
LSC	Fish above the Minimum Conservation Reference Size
MAP	Multiannual Plan
MCRS	Minimum Conservation Reference Size
MCS	Monitoring, Control and Surveillance
MS	Member States
NEP	Norway lobster (<i>Nephrops norvegicus</i>)
NS	North Sea
PLE	Plaice (<i>Pleuronectes platessa</i>)
POK	Saithe (<i>Pollachius virens</i>)
PRA	Northern prawn (<i>Pandalus borealis</i>)
SD	ICES Subdivision
SOL	Sole (<i>Solea vulgaris</i>)
STECF	Scientific, Technical and Economic Committee for Fisheries
TCM	Technical Conservation Measures
WHG	Whiting (<i>Merlangius merlangus</i>)

Executive summary

The current report presents the results of an analysis of discards in the North Sea fisheries targeting demersal species during the period 2018-2020 with the aim to evaluate their compliance with the provisions of the Landing Obligation (LO). This analysis was carried out following the request for assistance of the Member State (MS) Control Expert Group for the North Sea. The methodology described in the present document has been streamlined in relation to the methodology used in previous analysis on compliance carried out for the North Sea fisheries for the period 2016 – 2017, to provide results on: (i) estimates of illegal discards based on the comparison of logbook and inspection information from the Last Haul (Method 1), (ii) discard estimates provided by scientific bodies (STECF and ICES) (Method 2) and (iii) the typology of the suspected infringements related to the non-compliance with the LO (Method 3). The current analysis includes PRA in addition to the species already included in the previous analysis (COD, SOL and PLE). The current analysis followed the segmentation of the fleet presently used by EFCA which considered some changes compared to the one used in the previous analysis. The description of the results, in relation to trends in compliance over time, takes these changes into account.

The discard estimates have been assessed using the LH when possible. Due to an insufficient number of LH for some FS and areas under consideration, scientific estimates have also been used to determine discard levels.

Results indicate that for COD and PLE, compliance with the LO has been low in trawls/seines targeting demersal species (NS04, NS05) in Skagerrak (ICES division 3.a) for the years considered (2018-2020). Compliance with the LO for these two species has also been low for division 4.b of the North Sea in trawls/seines with medium and smaller mesh sizes (NS02 and NS03, respectively). For the biggest mesh size trawls/seines (NS01), compliance has been assessed as medium for COD in division 4.b while no compliance issues were detected for PLE for the period considered under this evaluation. For division 4.a, compliance for COD has been assessed as low for 2018 and 2020 and as medium for 2019. For SOL, compliance has been assessed as medium for 2019 in otter trawls/seines operating in the Skagerrak with medium mesh sizes (NS05) and as low for trawls/seines with small mesh sizes (NS03) fishing in division 4.b (2019 and 2020) and 4.c (2019) of the North Sea.

For the biggest mesh size beam trawlers (NS08), compliance has been assessed as medium or low for PLE, depending on the year and division considered. For the smallest mesh size beam trawlers (NS09), compliance was estimated to be low for PLE in both divisions 4.b and 4.c for 2019 and 2020 while for SOL compliance has remained low in division 4.c and medium in division 4.b since 2019.

Compliance levels have fluctuated between medium and low for COD in this fleet segment over the years.

For PRA, compliance has been assessed as low in the smallest mesh size otter trawls/seines operating in Skagerrak (division 3.a, NS07) in 2019 and 2020, based on the comparison between the size classes declared in the sale notes and the LH information provided by SE, which indicated that high-grading occurred.

When results are compared with those of the previous evaluation (2016-2017), taking into consideration the changes in fleet segment denomination, a similar picture of compliance is obtained for both periods for most FS and areas for which the comparison can be made.

Lack of appropriate verified data for some fleet segments and areas has been a recurrent problem when evaluating compliance. The introduction of EM systems and/or control observers could facilitate the collection of reliable discard data while acting also as control tools for effective enforcing the LO.

1 Introduction

Regulation (EU) No. 1380/2013 of the European Parliament and of the Council on the Common Fisheries Policy (CFP) introduced a phased obligation to land all catches of species subject to catch limits and, in the Mediterranean, also catches of species which are subject to minimum sizes, the Landing Obligation (LO). From the perspective of the North Sea (NS), the phasing introduced the obligation to land all catches of small pelagic species from 1 January 2015 and '*species which define the fisheries*' from 1 January 2016.

The Member State Control Expert Group (CEG) for the North Sea region (the Scheveningen CEG) formally requested the assistance of EFCA to facilitate a compliance evaluation with the provisions of the LO in the NS for the fisheries exploiting four demersal species: cod (COD), sole (SOL), plaice (PLE) and Northern prawn (PRA) and one pelagic species, mackerel (MAC) for the period 2018-2020. This report presents the findings of this evaluation for the demersal species based on the fisheries segments (fleet segments, FS) used by EFCA currently (see Annex 1). Results from the previous evaluation (carried out for COD, SOL and PLE) for the period 2016-2017¹, under the same cooperation agreement between EFCA and Scheveningen CEG, are included for comparison taking into account the changes in FS definition. The evaluation of compliance of MAC fisheries is addressed in a separate report, which also includes MAC fisheries in the North Western Waters.

The precise details of the implementation of the LO in the North Sea region since 2015 were laid down in so-called '*discard plans*' adopted as delegated regulations by the European Commission for a period of no more than three years acting upon joint recommendations made by those Member States (MS) with interests in the fisheries. The applicable discard plans and other relevant legislation are briefly summarised below for the NS demersal species.

2016

For demersal species, the discard plan laying down the provisions applying during 2016 was adopted as Commission Delegated Regulation (CDR) (EU) No. 2015/2440. This regulation placed the following NS demersal species under the LO as '*species which define the fisheries*' under Article 15 (1) of the CFP regulation depending on the fishery (area, gear and mesh combination): PLE, haddock (HAD), PRA, saithe (POK), Norway lobster (*Nephrops*, NEP), hake (HKE) and SOL. A survivability exemption was granted for NEP caught by pots and other gears complying with certain Technical Conservation Measures (TCM) requirements. *De minimis* exemptions for certain fisheries were

¹ [Executive Summary NS LO Compliance Evaluation Report August 2019 \(europa.eu\)](https://european-council.europa.eu/media/e3000000/1/press/16082019/Executive_Summary_NS_LO_Compliance_Evaluation_Report_August_2019.pdf)

provided for SOL in trammel, gillnets and beam trawl fisheries, for SOL and HAD in NEP targeting fisheries and for NEP in demersal trawl.

2017

CDR (EU) No. 2016/2250 repealed and replaced the foregoing discard plan. For 2017, the demersal fisheries subject to the LO for the NS were the same as in previous year (with catches of PLE, HAD, PRA, POK, NEP, HKE and SOL), with the addition of fisheries targeting COD and whiting (WHG). Survivability exemptions were granted for SOL and continued for NEP, linked with specific TCM and other technical restrictions. *De minimis* exemptions were applied to catches of SOL, NEP, HAD previously but also WHG caught in combination with HAD and SOL for fisheries targeting NEP and PRA, and WHG for demersal trawl and other gears and under certain TCM restrictions.

2018

CDR (EU) No. 2018/45 repealed and replaced CDR EU 2016/2250. For 2018, the same fisheries as in 2017 were under the LO. As in previous years, survivability exemptions continued to be granted for SOL and NEP with the addition of survivability exemptions for catches of COD, HAD, WHG, PLE, SOL, HKE and POK with pots and fyke nets (FPO, FYK). *De minimis* exemptions continued to be granted to the 2017 fisheries, where catches of PLE, HAD, COD and POK were added, again when caught using certain gears and under certain TCM restrictions.

A new EU multiannual plan to manage the NS demersal stocks and the fisheries exploiting these stocks (Regulation (EU) 2018/973 of the European Parliament and of the Council of 4 July 2018) entered into force on 5 August 2018. In relation to the LO, it stated that for all stocks of species in the NS to which the LO applies, the Commission is empowered to adopt delegated acts to specify details of that obligation.

2019

From 2019, the LO provided for in Article 15(1) of Regulation (EU) No 1380/2013 applied to all demersal fisheries for all species which are subject to catch limits.

CDR (EU) No. 2018/2035 specified details of the implementation of the LO for the period 2019-2021 for certain demersal fisheries in the North Sea, listing the survivability (new for PLE and skates and rays) and *de minimis* exemptions available.

2020

CDR (EU) No. 2019/2238 repealed CDR (EU) No. 2018/2035 and specified the details of the implementation of the LO for certain demersal fisheries in the NS for the period 2020-2021. As before, a list of the survivability (new for turbot *Scophthalmus maximus*) and *de minimis* exemptions available was provided.

As it can be seen from the chronologic overview presented, due to the phasing-in of the LO and specific arrangements introduced by the discard plans, different FS became subject to the LO at different times, and for several species in particular FS, exemptions to the LO were granted. Table 1 summarises the process for the species which are the focus of this analysis (COD, PLE, PRA and SOL) which were the species selected by the Scheveningen CEG due to their economic importance. A list of the available exemptions for the species under consideration is presented in Annex 2 and the correspondence with the previous NS FS is provided in Annex 1. The results of the current evaluation are provided under the current (2022) FS definitions.

Table 1. Codification of the species subject (1) or not subject (0) to the Landing Obligation (LO). The code "X" represents a species subjected to the LO but with exemptions (de minimis or survivability) and it is also highlighted with a light grey background. For details on the available exemptions see Annex 2.

Period	Year	Old FS denomination	COD	PLE	PRA	SOL	Current FS denomination
Pre - 2019	2016	NS01	0	1	1	0	NS01
		NS02	0	0	1	1	NS03
		NS03	0	0	1	0	NS07
		NS04	0	1	1	X	NS04
		NS05	0	0	1	X	NS06
		NS06	0	1	1	0	NS08
		NS07	0	0	1	X	NS09
		NS08	0	0	1	X	NS10
		NS09	0	0	1	X	NS11
		NS10	0	0	1	X	NS12
		NS11	0	0	1	X	NS13
		NS12	0	0	1	0	NS14
	2017	NS01	1	1	1	1	NS01
		NS02	0	0	1	1	NS03
		NS03	0	0	1	X	NS07
		NS04	1	1	1	X	NS04
		NS05	0	0	1	X	NS06
		NS06	1	1	1	1	NS08
		NS07	0	0	1	X	NS09
		NS08	1	0	1	X	NS10
		NS09	1	0	1	X	NS11
		NS10	1	0	1	X	NS12
		NS11	1	0	1	X	NS13
		NS12	1	0	1	1	NS14
	2018	NS01	1	1	1	1	NS01
		NS02	X	0	1	1	NS03
		NS03	X	X	1	X	NS07
		NS04	X	X	1	X	NS04
		NS05	X	X	1	X	NS06
		NS06	1	1	1	1	NS08
		NS07	1	0	1	X	NS09
		NS08	1	0	1	X	NS10
		NS09	1	0	1	X	NS11

Period	Year	Old FS denomination	COD	PLE	PRA	SOL	Current FS denomination
		<i>NS10</i>	1	0	1	X	NS12
		<i>NS11</i>	1	0	1	X	NS13
		<i>NS12</i>	1	1	1	1	NS14

Table 1. Cont.

Period	Year	Current FS denomination	COD	PLE	PRA	SOL
After 2018	2019	NS01	1	X	1	1
		NS02	1	1	1	1
		NS03	X	X	1	X
		NS04	X	X	1	X
		NS05	X	X	1	X
		NS06	X	X	1	X
		NS07	X	X	1	X
		NS08	1	1	1	1
		NS09	1	X	1	X
		NS10	1	X	1	X
		NS11	1	X	1	X
		NS12	1	X	1	X
		NS13	X	X	1	X
		NS14	1	1	1	1
	2020	NS01	1	X	1	1
		NS02	1	1	1	1
		NS03	X	X	1	X
		NS04	X	X	1	X
		NS05	X	X	1	X
		NS06	X	X	1	X
		NS07	X	X	1	X
		NS08	1	1	1	1
		NS09	1	X	1	X
		NS10	1	X	1	X
		NS11	1	X	1	X
		NS12	1	X	1	X
		NS13	X	X	1	X
		NS14	1	1	1	1

2 Evaluation Methodology

EFCA's Administrative Board agreed in 2014 on a standard methodology for compliance evaluation with the LO. Given the specifics of the LO, the current evaluation exercise involved looking at compliance per species and FS exploiting the species selected from different perspectives (Table 2). The original methodology included two additional methods related with surveying of control and industry information and market study which, in agreement with the Scheveningen CEG, have not been used in the current evaluation. The reason for this has been that the experience from the previous evaluation indicated a high investment with a low return of valuable information to assess the compliance with the LO.




Table 2. Methods for evaluating compliance with the Landing Obligation (LO).

Evaluation Method	Applied to the LO
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1	Inspection data compared with official catch or landings statistics	Specifically, to attempt to estimate the unreported (illegal) discard ratio using last haul data
2	Considering the evaluation of scientific bodies (STECF, etc.)	Estimates of the catches which before the implementation of the LO were discarded and should now be landed
3	Trends of infringements	Suspected infringements (or lack of) issued for non-compliance with the LO

Both Methods 1 and 2 involve the estimation of discards, which are used as a quantitative approach to arrive at an assessment of compliance, following the benchmarking criteria endorsed by the Scheveningen CEG (see Table 3). These same criteria are used for the compliance evaluation carry out in other areas.

Table 3. Compliance benchmarking criteria endorsed by the Scheveningen Control Expert Group. The estimates of illegal discards are expressed as the percentage of the amount discarded in relation to the total catch.

Compliance Level	Estimates of illegal discard ratio	Benchmark Icon
High	< 5%	
Medium	≥5% and < 15%	
Low	≥ 15%	

Although there are 15 FS identified in the NS, the evaluation was carried out only for FS NS01-NS14. The FS NS15 (see Annex 1) was not included in the evaluation since it includes all gears not included in FS NS01-NS14, representing a variety of gears. Due to its heterogeneous pattern of activity and the lack of data, no evaluation of compliance with the LO was conducted for this FS.

Method 1: “Inspection data compared with official catch or landings statistics”

This is a quantitative method consisting of the estimation of an unreported discard ratio based on the comparison between the quantities of catches below minimum conservation reference size (B-MCRS) observed from last haul (LH) inspections carried out by MS and the quantities reported in the logbooks or at landing (see Figure 1 and further detailed method description in Annex 3). Information from the inspections is sent by MS to EFCA while the catch data by species and category (BMS, legal size catch LSC, *de minimis* DIM, discards DIS) reported in the logbooks are provided by the MS in reply to an annual data call sent by EFCA. This analysis has been conducted by ICES area for each FS and was undertaken by an external expert contracted by EFCA applying the methodology developed by EFCA².

²www.efca.europa.eu/sites/default/files/Guidelines%20on%20indicators%20to%20measure%20compliance%20in%20fisheries_1.pdf

Annex 4 lists, by FS and area, for each of the species under this evaluation, the percentage of the total catch represented by each catch category (BMS, DIS, DIM, LSC) reported in the logbooks. This information is presented since for some of the FS and areas, exemptions to the LO, in the form of *de minimis* and survivability, exist. *De minimis* exemptions are difficult to take under consideration for the evaluation of compliance since they are calculated based on a percentage of the total annual catch of a number of species. In the current report, following the process used in the previous NS evaluation, the difference of the BMS ratio in the LH and the ratio of DIM/DIS/BMS in the logbook has been used as an indicator of compliance. If there are exemptions, part (or all) the catch can be legally discarded but the provisions for the exemptions to the LO require that all amounts legally discarded are reported. The difference between both ratios calculated as part of Method 1 could result from illegal discarding and/or non-reporting of legal discards. To evaluate compliance as part of the current analysis, both cases (illegal discards and non-reporting of legal discards) have been considered as illegal discards. As it can be seen from the numbers in Annex 4, where amounts discarded under each category in the logbook for each species are expressed as a percentage of the total catch of that species in an area, discard reporting is very low in almost all cases when exemptions are in place.

Data limitations

Because the catch composition in the LH is split generally only between B-MCRS and A-MCRS for each species, and no length/size data are routinely available, Method 1 assumes that illegal discarding takes place only in the BMS portion of the catches. It should be noted that Method 1 assumes that illegal discarding takes place only in the BMS portion of the catches and therefore illegal discarding of fish above MCRS (to select larger individuals that attain a higher price, or due to quota restrictions), which was known to take place, at least for COD and PLE in some areas, is not taken into account. Discard estimates obtained using Method 1 are therefore underestimations of the true discard ratios if discarding of the LSC component of the catch is taking place.



Figure 1. Estimation of BMS discard ratio for Method 1. BMS = fish below the minimum conservation reference size (MCRS), LSC = fish above the MCRS.

In the case of **PRA**, although LH in which the species was listed were available for some FS (e.g. NS07), the lack of a MCRS made Method 1 not appropriate to determine illegal discards (since there is no BMS component). High-grading, reported to take place in this fishery (NAFO SCR Doc. 09/069), would not be detected using the LH without information on the length composition, as stated above. Therefore, a separate analysis has been carried out using information from LH performed by Swedish control authorities where inspectors have classified the catches between two PRA grade sizes (small and large). The average (and associated confidence intervals) of proportion of these grade sizes in the LH (available for 2019 and 2020) have been compared with the proportion of these grade sizes in sale notes (where the information of grade sizes is available) for the same years to look for evidence of discarding. Unfortunately, no LH data with grade sizes for PRA are available for DK for the period of the evaluation. The available information on the grade sizes in the sale notes from DK has not been joined with the one from SE due to differences in the grade sizes between both MS.

Method 2: “Considering the evaluation of scientific bodies”

This method consists of the analysis of the estimates of discards based on data made available by the Scientific, Technical and Economic Committee for Fisheries (STECF) of the European Commission and other scientific bodies such as the International Council for the Exploration of the Sea (ICES). The amounts of discards estimated by these organisations are presented in Tables 5 and 6. Where possible, the estimates are linked to the respective FS and area to allow comparison with the results of *Method 1*.

Discard ratio estimates from STECF

Annually, an Expert Working Group of the Scientific, Technical and Economic Committee for Fisheries (STECF) revises the data on landings and discards by area, gear and species made available by Member States in response to the official call by the EU for Fisheries Dependent Information (FDI) in the framework of the EU-MAP (EC No 2017/1004).

The data for 2018, 2019 and 2020 were downloaded from the STECF portal³ in February 2022. These data have been used to obtain estimates of discard ratios for COD, PLE, SOL, and PRA for

³ <https://stecf.jrc.ec.europa.eu/dd/fdi>

all FS catching these species, using the total live weight landed (in tonnes) and the total discard (in tonnes) provided in the FDI database. Discards are generally based on scientific estimations carried out at national level, based on the Data Collection Framework (DCF) sampling and include legal and illegal discards, as the focus of the sampling is not compliance but estimates of removals due to fishing. These estimates may also include discards of catches above MCRS (for example due to high-grading and/or when quota is exhausted). These data are aggregated at MS level and the information provided on sub-region, mesh size range and *métier* have been used to allocate the catch and discards to the FS that EFCA uses (Annex 5).

The estimation of the level of discards based on the FDI data was carried out by an external expert contracted by EFCA and are compared in this report with those estimates obtained from Method 1.

Data limitations

It should be noted that two factors may affect the data from Method 2 (STECF) presented in this report:

- because the FDI call request data at a detailed level, MS have the option of marking some data as confidential for data protection purposes and not provide the values of the variables (i.e., catches, discards, etc.). The STECF Expert Working Group on Fisheries Dependent Information (EWG 19-11) reviewed the data submitted by MS and reported that “a substantial part of the data submitted have been marked as confidential”⁴. The same conclusion was reached by STECF 21-12.
- as previously mentioned, discards are generally based on scientific estimations carried out at national level. These estimates of discards are then partitioned across the reporting categories (i.e., quarter, gear type, *métier*, etc.) by each MS, following different criteria. No information on the number of samples used to derived discard estimates is available and therefore it is not possible to determine the representativeness of the data. STECF, in its website, emphasises the risk of biases arising from this process with the following text, “discards amounts in the catches data are scientific discards estimates based on national sampling programmes that do not support the level of disaggregation requested by the FDI data call. The quality of discards estimates cannot be assured and should be used with caution, as these estimates might be uncertain and biased”.

⁴ <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC119066/kj-ax-19-019-en-n.pdf>

Discard ratio estimates from ICES

Data used in this analysis are obtained from the published *ICES Advice* for North Sea stocks for the years 2019, 2020 and 2021⁵, which presents for most of the stocks, data on catches, landings and discards taken in 2018, 2019 and 2020, respectively. Generally, the discard estimates provided in the ICES Advice are derived from the data collection programmes conducted by fisheries research institutes that, in the case of EU Member States, are based on the DCF sampling. These data collection programmes also provide the data for the discard estimations from STECF. It should be noted that ICES and STECF use the same data, derived from observer programmes but also self-sampling programmes, but arrive at different discard estimates due to different raising methodologies.

Data limitations

The information provided by ICES is on a stock basis (Annex 6), and therefore it was not possible to make the corresponding association of these estimates to the FS and areas used by EFCA since in almost all cases the stocks under analysis are exploited by several gears corresponding to more than one FS and area.

Method 3: “Trends of infringements”

This method involves an examination of the quantities and nature of any suspected infringement issued for non-compliance with the LO in the framework of the NS Joint Deployment Plan (JDP) for the applicable fisheries over the reported time series. The analysis uses those suspected infringements related with the LO which have been reported to EFCA by the MS as part of the NS JDP framework.

Overall evaluation

An overall compliance evaluation by species was carried out by pooling together the information on discard estimates obtained from the LH (method 1) and from scientific bodies (STECF and ICES, Method 2). Method 3 was not used to derive an overall evaluation due to the low number of suspected infringements recorded (see section 3.3). It is worth noting that the detectability of a suspected infringement related with the non-compliance with the LO is extremely low because of the likelihood of discarding in the presence of an inspector is very low and the low levels of monitoring.

⁵ <http://www.ices.dk/publications/library/Pages/default.aspx>

To estimate the overall compliance level, the process used was as follows:

- If the three sources of data (LH, STECF and ICES) provided a consistent picture of the compliance level, this level was used.
- If the three sources of data provided different compliance levels, the level obtained by Method 1 was chosen because this method is considered the most reliable to assess compliance for the reasons explained in the previous section. This was done except if: a) there were only a few LH available or b) the high variability in the estimates obtained from the LH indicated a low precision or c) there were indications of high-grading. In these cases, the estimated compliance level resulting from Method 2 were considered. Although a minimum number of LH has not been established in the previous compliance evaluations, those figures based on less than 5 LH and for which confidence intervals indicate low precision are given less weight in the final compliance result. The basis for the overall compliance given is explained in each case.
- STECF and ICES are both sources of discard information for Method 2. However, while the STECF discard ratio have been calculated for most FS/area combination, the ICES estimates are only available at stock level. Therefore, only the STECF estimates of discards have been used to assess compliance when no or a limited number of LH were available for a FS/area combination.

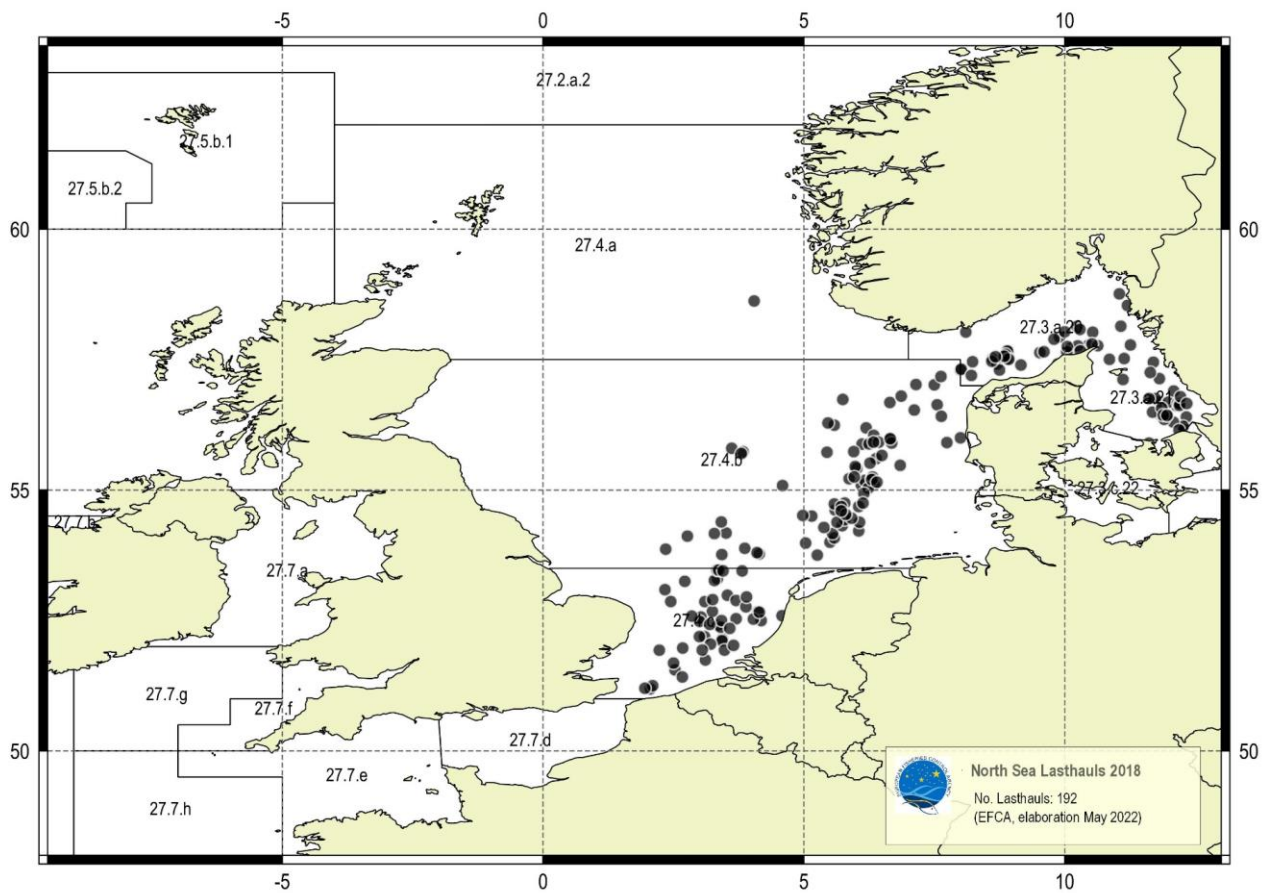
3 Results⁶

3.1 Estimation of a discard ratio using last haul data (Method 1)

Using LH data and reported logbook data for the defined FS, the estimated illegal discard ratios were calculated. Figure 2 shows the LH spatial coverage over the evaluation period while Table 4 shows the number of LH available by quarter and area for each year. Table 5 lists the discard ratio estimates obtained for 2018, 2019 and 2020 by FS. As it can be seen from Figure 2 and Table 4, in 2018 there were several LH in 4.b and 4.c but the values progressively decreased and in 2020 the LH conducted were concentrated mostly in 3.a. There has been more LH conducted in Q1, Q3 and Q4 than in Q2 for all areas and years with some differences between areas in the quarter of the year with more LH.

⁶ For ease of reading, results are described using the ICES subarea and division denomination, e.g., subarea 7. This corresponds to FAO area 27.7 as shown in Figure 2 and in the tables throughout the report.

In 2020, inspection activity was impacted by the COVID-19 pandemic and the number of LH was lower than in the previous years.



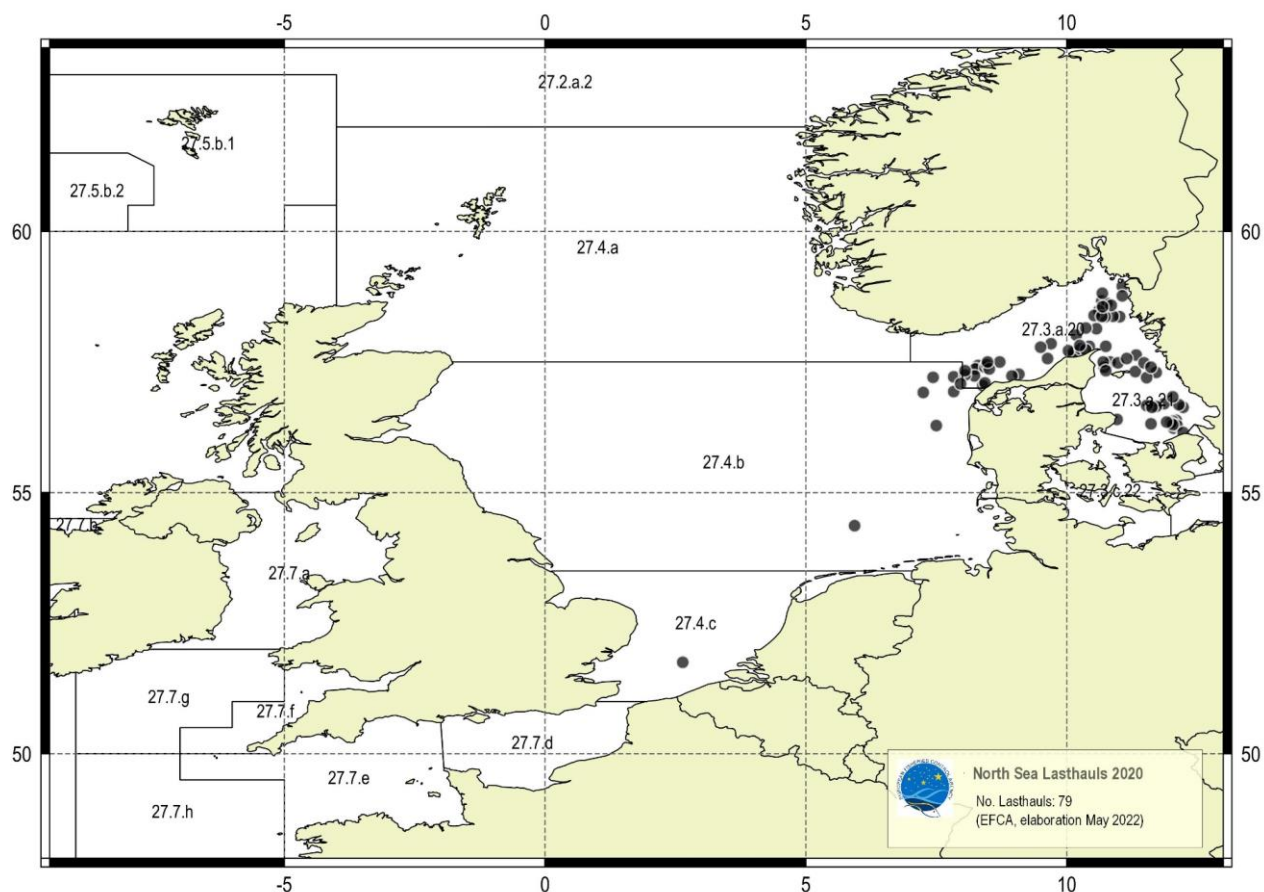
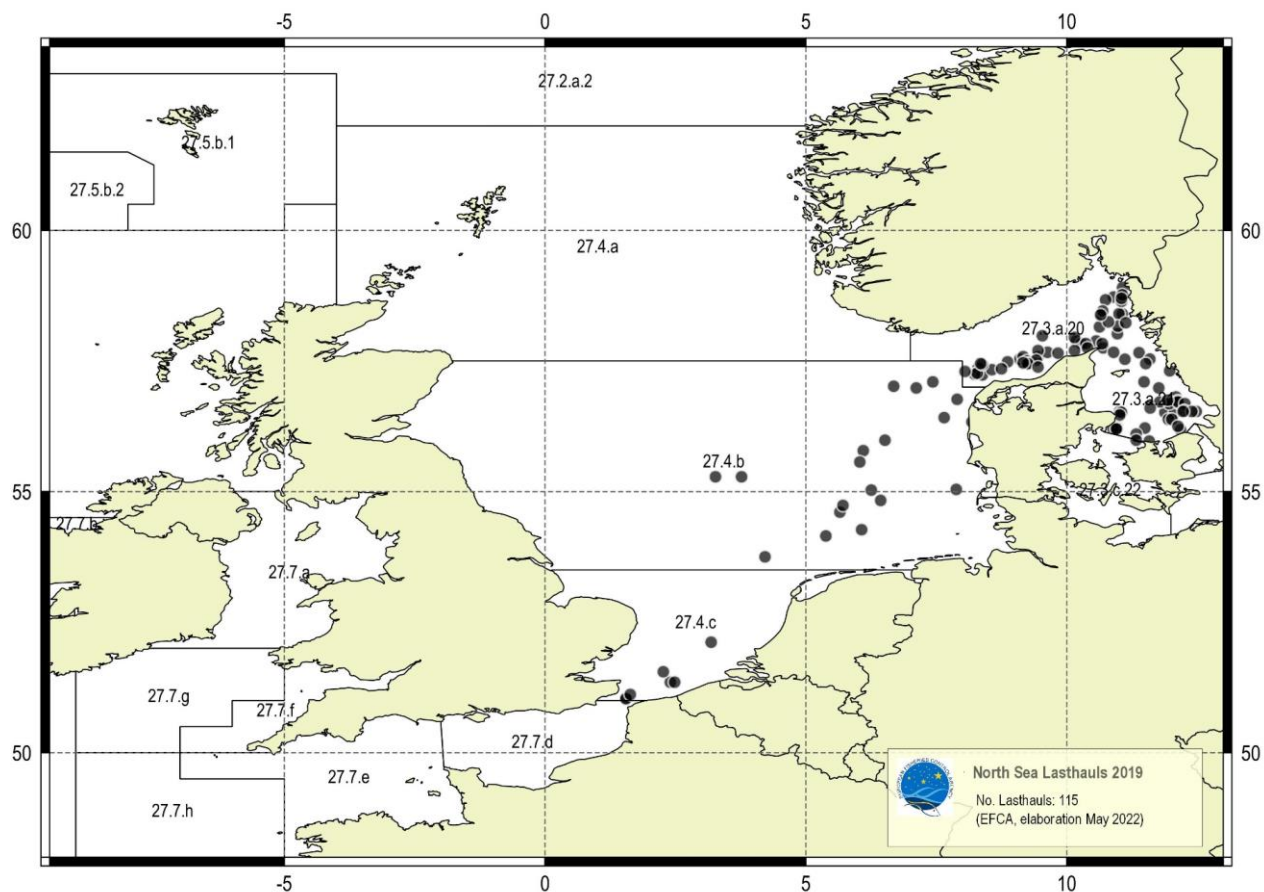


Figure 2. Last haul sampling coverage in 2018 (upper panel, $n = 192$), 2019 (middle panel, $n = 115$) and 2020 (lower panel, $n = 79$). Each dot represents one last haul (LH) inspection.

Table 4. Number of last haul (LH) inspections carried out in 2018, 2019 and 2020 by area and quarter. Q1= January-March, Q2= April-June, Q3= July-September, Q4= October-December.

Area	2018				2019				2020				2018-20
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	All
27.2.a	-	-	-	-	-	-	-	-	-	-	-	-	-
27.3.a	15	10	28	15	16	11	14	45	13	4	45	4	220
27.4.a	-	-	1	-	-	-	-	-	-	-	-	-	1
27.4.b	23	7	41	6	6	4	8	5	1	-	6	5	112
27.4.c	12	5	9	21	3	-	1	3	1	-	-	-	55
Total	50	22	79	42	25	15	23	53	15	4	51	9	388

Table 5. Summary of unreported discard ratios by species and area within each fleet segment (FS) after applying Method 1 for 2018, 2019 and 2020 in the North Sea. The table lists the number of last hauls available (N), the estimated mean unreported discard ratio (DR) and the associated 95% confidence intervals (95% CI).; A ‘-’ indicates that no last hauls with the species concerned were available. If the number of LH was lower than 5 no discard rates are provided (see the Methods section for an explanation). Shaded cells highlight those areas and FS where the species was not subject to the Landing Obligation.

FS	Species	Area	2018			2019			2020		
			N	DR	95% CI	N	DR	95% CI	N	DR	95% CI
NS01 Otter trawls/ seines ≥ 120 mm	COD	27.2.a	-			-			-	-	-
		27.4.a	-			-			-	-	-
		27.4.b	1	-	-	-			1	-	-
		27.4.c	-			-			-	-	-
	PLE	27.2.a	-			-			-	-	-
		27.4.a	-			-			-	-	-
		27.4.b	3	-	-	-			2	-	-
		27.4.c	-			-			-	-	-
	SOL	27.2.a	-			-			-	-	-
		27.4.a	-			-			-	-	-
		27.4.b	-			-			-	-	-
		27.4.c	-			-			-	-	-
NS02 Otter trawls/ seines ≥100 – <120 mm	COD	27.2.a	-			-			-	-	-
		27.4.a	-			-			-	-	-
		27.4.b	7	1.2	0.0-7.0	-			1	-	-
		27.4.c	-			-			-	-	-
	PLE	27.2.a	-			-			-	-	-
		27.4.a	1	-	-	-			-	-	-
		27.4.b	21	19.6	12.4-26.9	3	-	-	2	-	-
		27.4.c	-			-			-	-	-
	SOL	27.2.a	-			-			-	-	-
		27.4.a	-			-			-	-	-
		27.4.b	3	-	-	1	-	-	-	-	-
		27.4.c	-			-			-	-	-
NS03 Otter trawls/ seines ≥70 - <100 mm	COD	27.4.a	-			-			-	-	-
		27.4.b	4	-	-	1	-	-	-	-	-
		27.4.c	-			-			-	-	-
	PLE	27.4.a	-			-			-	-	-
		27.4.b	12	55.7	44.1-67.4	2	-	-	-	-	-
		27.4.c	-			-			-	-	-
	SOL	27.4.a	-			-			-	-	-
		27.4.b	3	-	-	1	-	-	-	-	-
		27.4.c	-			-			-	-	-

Table 5. Cont.

FS	Species	Area	2018			2019			2020		
			N	DR	95% CI	N	DR	95% CI	N	DR	95% CI
NS04 Otter trawls/ seines ≥ 120 mm	COD	27.3.a	11	0.7	0.0-2.2	3	-	-	7	10.1	0.0-31.7
	PLE	27.3.a	12	28.3	13.3-43.4	3	-	-	7	33.3	20.4-46.2
	SOL	27.3.a	1	-	-	-			1	-	-
NS05 Otter trawls/ seines ≥90 - <120	COD	27.3.a	41	5.9	1.5-10.4	34	15.5	6.0-25.1	33	49.5	37.0-62.1
	PLE	27.3.a	43	26.2	20.8-31.7	38	38.3	32.4-44.2	37	45.4	39.5-51.5
	SOL	27.3.a	17	2.8	1.0-4.7	19	9.5	1.4-17.6	10	3.1	0.0-6.7
NS06 Otter trawls/ seines ≥70 - <90 mm	COD	27.3.a	-			1	-	-	1	-	-
	PLE	27.3.a	-			2	-	9.0-67.5	1	-	-
	SOL	27.3.a	-			1	-	-	-		
NS07 Otter trawls/ seines ≥35 - <70	COD	27.3.a	-			6	1.6	0.0-14.8	4	-	-
	PLE	27.3.a	-			5	0.0	0.0-0.0	-		
	SOL	27.3.a	-			-	-	-	-		
NS08 Beam trawls ≥ 120 mm	COD	27.3.a	4	-	-	9	5.8	0.0-16.8	5	0.0	0.0-1.2
		27.4.a	-			-			-		
		27.4.b	4	-	-	3	-	-	3	-	-
	PLE	27.3.a	7	15.5	4.8-26.2	15	13.3	6.0-20.7	5	9.9	0.0-27.4
		27.4.a	-			-			-		
		27.4.b	7	6.9	0.5-13.3	6	6.1	0.0-13.2	3	-	-
	SOL	27.3.a	1	-	-	9	2.4	0.0-12.5	3	-	-
		27.4.a	-			-			-		
		27.4.b	3	-	-	1	-	-	-		
NS09 Beam trawls ≥80 - <120 mm	COD	27.4.b	1	-	-	1	-	-	-		
		27.4.c	3	-	-	-			-		
	PLE	27.4.b	28	46.0	37.8-54.2	8	54.8	27.2-82.4	1	-	-
		27.4.c	46	66.1	59.7-72.5	4	-	-	1	-	-
	SOL	27.4.b	26	3.6	0.0-7.4	6	6.3	3.1-9.5	1	-	-
NS10 Gillnets ≥ 120 mm	COD	27.3.a	2	-	-	4	-	-	-		
		27.4.a	-			-			-		
		27.4.b	2	-	-	-			1	-	-
		27.4.c	-			-			-		
	PLE	27.3.a	1	-	-	5	1.9	0.0-13.3	-		
		27.4.a	-	-	-	-			-		
		27.4.b	3	-	-	-			-		
		27.4.c	-	-	-	-			-		
	SOL	27.3.a	1	-	-	1	-	-	-		
		27.4.a	-			-			-		
		27.4.b	2	-	-	-			-		
		27.4.c	-			-			-		

Table 5. Cont.

FS	Species	Area	2018			2019			2020		
			N	DR	95% CI	N	DR	95% CI	N	DR	95% CI
NS11 Gillnets ≥90 - <120 mm	COD	27.3.a	-	-	-	-	-	-	-	-	-
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
	PLE	27.3.a	-	-	-	-	-	-	-	-	-
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
	SOL	27.3.a	-	-	-	-	-	-	-	-	-
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
NS12 Gillnets <90 mm	COD	27.3.a	-	-	-	-	-	-	-	-	-
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
	PLE	27.3.a	-	-	-	-	-	-	-	-	-
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
	SOL	27.3.a	-	-	-	-	-	-	-	-	-
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
NS13 Trammel nets	COD	27.3.a	-	-	-	1	-	1	1	-	1
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	1	-	1	-	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
	PLE	27.3.a	-	-	-	3	-	-	1	-	1
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	2	-	-	2	-	-
		27.4.c	-	-	-	-	-	-	-	-	-
	SOL	27.3.a	-	-	-	2	-	-	1	-	1
		27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	1	-	1	1	-	1
		27.4.c	-	-	-	-	-	-	-	-	-

Table 5. Cont.

FS	Species	Area	2018			2019			2020		
			N	DR	95% CI	N	DR	95% CI	N	DR	95% CI
NS14 Lines	COD	27.3.a	-			-			-		
		27.4.a	-			-			-		
		27.4.b	1	-	-	1	-	-	1	-	-
		27.4.c	-			-			-		
	PLE	27.3.a	-			-			-		
		27.4.a	-			-			-		
		27.4.b	-			-			-		
		27.4.c	-			-			-		
	SOL	27.3.a	-			-			-		
		27.4.a	-			-			-		
		27.4.b	-			-			-		
		27.4.c	-			-			-		

Table 5 highlights the lack of a sufficient number of LH to be able to calculate the illegal discard ratio for many FS and areas using method 1. For example, no, or almost no LH, are available in 2018, 2019 or 2020 for NS01, NS06 and for NS11-NS14. For some FS, there are only LH for one of the areas (e.g., in division 4.b for NS01-NS03). For some other areas and species, LH are not available for all the years of the period analysed (for example for COD in NS02 and NS03).

For **PRA**, Table 6 highlights the differences in the averages (and associated confidence intervals) of proportion of small and large grade sizes in the LH and the proportion of these grade sizes in sale notes for the same years (2019 and 2020). These differences indicate that small PRA are being discarded illegally.

Table 6. Summary of results from the analysis of the grade sizes of PRA (Size) in 2019 and 2020 in the North Sea for fleet segment (FS) NS07 based on information provided by SE. The table lists the number of last hauls available (N), the estimated proportion of each grade size in relation to total PRA catch in the inspections (%), the associated 95% confidence intervals (95% CI). In addition, the table also includes the percentage of each grade size (% in the catch) obtained from the sale notes of Swedish flag vessels fishing in Skagerrak for the same years.

PRA			2019				2020			
			LH			Sale notes	LH			Sale notes
FS	Size	Area	N	%	95% CI	% in catch	N	%	95% CI	% in catch
NS07 Otter trawls/ seines ≥35 - <70	Small	27.3.a	14	55.8	49.4-59.3	33.5	23	62.6	50.6-69.0	33.3
	Large			44.2	40.7-50.5	66.5		37.4	31.0-49.1	66.7

As explained before, only sale note information on grade sizes is available from DK for the period of the evaluation (Table 7).

Table 7. Summary of the grade sizes of PRA (Size) in 2018, 2019 and 2020 in the North Sea for fleet segment (FS) NS07 in percentage in relation to the total catch (% in the catch) obtained from the sale notes of Danish flag vessels fishing in Skagerrak.

PRA			Sale notes % in catch by grade size		
FS	Size	Area	2018	2019	2020
NS07 Otter trawls/ seines ≥35 - <70	Small	27.3.a	63	36	1
	Large		32	29	31
	Unsorted		5	35	68

In the case sale notes from DK, there appears to be an evolution in the landings of PRA, with mostly landings of unsorted PRA in the most recent years of the analysis (2019, 2020).

3.2 Discards estimates provided by scientific organisations (Method 2)

3.2.1 Discard ratio estimates from STECF

The discard ratios calculated from the catches and discards data of the FDI database are presented in Table 8 by ICES area of each FS and species. In those cases for which discard information available in the FDI database corresponds to landings that represent < 1% of the landing data declared in that fleet segment/area combination, no discard rates are provided in this report. This is done to avoid generating unrepresentative discard estimates due to the limited data. Table 8 also presents the discards reported in the logbooks as DIM and/or DIS since, as explained before, when exemptions are available, fishermen may legally discard the fish, but quantities need to be recorded in the logbooks. It should be noted that in a few cases, catches appeared reported in the logbooks as DIM or DIS even when no exemptions were not available for those FS and areas.

Table 8. Mean discard ratio (DR) estimated per species and area within each fleet segment (FS) in 2018, 2019 and 2020 calculated from the Fisheries Dependent Information data downloaded from the STECF portal on February 2022, percentage of the total catch represented by the DIM and DIS categories reported in the logbooks (DR_{DIM} , DR_{DIS}) in 2018 - 2020 (data sent in reply to EFCA data calls). Dash (-) in the DR, DR_{DIM} and DR_{DIS} columns corresponds to areas/FS with no information (no discard information available and therefore no discard ratios provided). Shaded cells highlight those areas and FS where the species was not subject to the Landing Obligation. * discard information available from landings that represent < 1% of the landing data declared in that FS/area combination and no discard ratios provided (see Methods section for an explanation).

FS	Species	Area	2018			2019			2020		
			DR	DR_{DIM}	DR_{DIS}	DR	DR_{DIM}	DR_{DIS}	DR	DR_{DIM}	DR_{DIS}
NS01 Otter trawls/ seines ≥ 120 mm	COD	27.2.a	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	15.9	0.0	0.0	10.6	0.0	0.0	9.0	0.0	0.0
		27.4.b	6.3	0.0	0.0	9.1	0.0	0.0	9.0	0.0	0.0
		27.4.c	-	0.0	0.0	-	-	-	-	0.0	0.0
	PLE	27.2.a	57.9	0.0	0.0	-	-	-	-	-	-
		27.4.a	2.4	0.0	0.0	4.0	0.0	0.0	2.1	0.4	0.0
		27.4.b	0.3	0.0	0.0	0.5	0.0	0.3	0.6	0.4	0.9
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
	SOL	27.2.a	-	-	-	-	-	-	-	-	-
		27.4.a	0.5	0.0	0.0	0.8	0.0	0.0	-	-	-
		27.4.b	*	0.0	0.0	*	0.0	0.0	*	0.0	0.0
		27.4.c	-	-	-	-	0.0	0.0	-	-	-
NS02 Otter trawls/ seines ≥100 - <120 mm	COD	27.2.a	-	0.0	0.0	-	-	-	-	-	-
		27.4.a	15.0	0.0	0.0	13.1	0.0	0.0	10.3	0.0	0.0
		27.4.b	23.1	0.0	0.4	47.0	0.0	0.0	42.4	0.0	0.0
		27.4.c	36.4	0.0	0.0	8.9	0.0	0.0	-	0.0	0.0
	PLE	27.2.a	-	-	-	-	-	-	-	-	-
		27.4.a	3.9	0.0	0.0	6.2	0.0	0.0	3.1	0.0	0.0
		27.4.b	32.6	0.0	0.8	28.8	0.0	0.1	34.3	0.0	0.4
		27.4.c	40.1	0.0	0.1	50.7	0.0	0.0	44.7	0.0	0.0
	SOL	27.2.a	-	-	-	-	-	-	-	-	-
		27.4.a	0.0	-	-	0.8	0.0	0.0	-	-	-
		27.4.b	24.0	4.3	0.0	0.6	0.0	0.0	1.9	0.0	0.0
		27.4.c	-	0.5	0.0	-	0.0	0.0	-	0.0	0.0
NS03 Otter trawls/ seines ≥70 - <100 mm	COD	27.4.a	96.1	0.0	0.0	84.9	0.0	0.0	96.0	0.0	0.0
		27.4.b	65.8	0.0	0.0	62.4	0.0	0.0	84.9	0.0	0.0
		27.4.c	52.5	0.0	0.0	44.6	0.0	0.0	93.2	0.0	0.0
	PLE	27.4.a	92.1	0.0	0.0	87.0	0.0	0.0	91.1	0.0	0.0
		27.4.b	67.4	0.0	5.0	67.6	0.0	0.6	77.5	0.0	0.3
		27.4.c	59.6	0.0	0.0	49.0	0.0	0.0	89.6	0.2	1.3
	SOL	27.4.a	-	-	-	-	-	-	-	-	-
		27.4.b	0.0	0.0	0.0	26.7	0.2	0.0	17.4	0.0	0.0
		27.4.c	*	0.0	0.0	18.9	0.0	0.0	*	0.0	0.0

Table 8. Cont.

FS	Species	Area	2018			2019			2020		
			DR	DR _{DIM}	DR _{DIS}	DR	DR _{DIM}	DR _{DIS}	DR	DR _{DIM}	DR _{DIS}
NS04 Otter trawls/ seines	COD	27.3.a	10.1	0.0	0.0	3.5	0.0	0.0	60.1	0.0	0.0
	PLE	27.3.a	16.0	0.0	0.0	46.3	0.0	2.8	24.2	0.0	4.5
	SOL	27.3.a	*	0.0	0.0	*	0.0	0.3	-	0.0	0.0
NS05 Otter trawls/ seines	COD	27.3.a	24.2	0.0	0.4	18.3	0.0	0.0	38.5	0.0	0.0
	PLE	27.3.a	47.3	0.0	1.2	46.0	0.0	1.5	34.7	0.1	3.2
	SOL	27.3.a	3.0	0.0	0.1	5.3	0.0	0.2	5.4	0.0	0.0
NS06 Otter trawls/ seines ≥70 -	COD	27.3.a	97.1	0.0	0.0	84.2	0.0	0.0	97.4	46.2	0.0
	PLE	27.3.a	97.7	0.0	0.0	95.3	0.0	4.7	96.5	0.2	0.6
	SOL	27.3.a	58.1	0.0	0.0	33.4	0.0	0.0	38.9	2.5	0.0
NS07 Otter trawls/ seines ≥35 - <70 mm	COD	27.3.a	1.4	0.0	0.0	2.5	0.0	0.0	3.8	0.0	0.0
	PLE	27.3.a	32.3	0.0	0.0	12.2	0.0	0.3	0.0	0.0	0.0
	PRA	27.3.a	6.0	0.0	0.0	5.9	0.0	0.0	2.4	0.0	0.0
	SOL	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
NS08 Beam trawls ≥ 120 mm	COD	27.3.a	-	0.0	0.0	-	0.0	0.0	-	0.0	0.1
		27.4.a	-	0.0	0.0	13.8	0.0	0.0	-		
		27.4.b	-	0.0	0.1	6.3	0.0	0.0	19.7	0.0	0.0
	PLE	27.3.a	-	0.0	0.6	-	0.0	0.0	-	0.0	0.1
		27.4.a	18.6	0.0	0.0	19.0	0.0	0.0	-		
		27.4.b	18.6	0.0	3.3	15.1	0.0	0.2	23.8	0.0	1.1
	SOL	27.3.a	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.a	-			-			-		
		27.4.b	1.1	1.8	0.4	0.7	0.0	0.1	0.3	0.0	0.4
NS09 Beam trawls ≥80 - <120 mm	COD	27.4.b	6.7	0.0	0.3	5.3	0.0	0.0	18.6	0.0	0.0
		27.4.c	6.0	0.5	-	16.0	0.6	-	13.3	-	-
	PLE	27.4.b	62.5	0.0	9.0	64.2	0.0	10.7	69.1	0.0	15.7
		27.4.c	70.6	0.0	14.5	71.1	0.0	15.6	72.4	0.0	14.7
	SOL	27.4.b	9.4	0.2	1.4	15.4	0.3	1.0	11.2	0.1	1.1
		27.4.c	9.9	0.0	1.2	20.4	0.0	1.0	15.8	0.0	0.6
NS10 Gillnets ≥ 120 mm	COD	27.3.a	0.3	0.0	0.0	2.3	0.0	0.0	*	0.0	0.0
		27.4.a	-	0.0	0.0	-	0.0	0.0	-		
		27.4.b	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
	PLE	27.3.a	0.4	0.0	0.0	1.3	0.0	0.0	*	0.0	0.0
		27.4.a	-	0.0	0.0	-	0.0	0.0	-		
		27.4.b	0.1	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
	SOL	27.3.a	-	0.0	0.0	23.7	0.0	0.0	18.0	0.0	0.4
		27.4.a	-	0.0	0.0	-			-		
		27.4.b	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0

Table 8. Cont.

FS	Species	Area	2018			2019			2020		
			DR	DR _{DIM}	DR _{DIS}	DR	DR _{DIM}	DR _{DIS}	DR	DR _{DIM}	DR _{DIS}
NS11 Gillnets ≥90 - <120 mm	COD	27.3.a	-	0.0	0.0	*	0.0	0.0	72.0	0.0	0.0
		27.4.a	-	0.0	0.0	-	0.0	0.0	-		
		27.4.b	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
	PLE	27.3.a	-	0.0	0.0	*	0.0	0.0	*	0.0	0.2
		27.4.a	-			-			-		
		27.4.b	-	0.0	0.0	-	0.0	0.2	-	0.0	0.8
		27.4.c	-	0.0	0.0	-	0.0	1.3	-	0.0	0.0
	SOL	27.3.a	-	0.0	0.0	7.3	0.0	0.0	*	0.0	0.0
		27.4.a	-			-			-		
		27.4.b	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
NS12 Gillnets <90 mm	COD	27.3.a	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.a	-	0.0	0.0	-	0.0	0.0	-		
		27.4.b	-			-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-		
	PLE	27.3.a	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.a	-			-			-		
		27.4.b	-			-			-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-		
	SOL	27.3.a	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.a	-			-			-		
		27.4.b	-			-			-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-		
NS13 Trammel nets	COD	27.3.a	-	0.0	0.0	56.3	0.0	0.0	70.2	0.0	0.0
		27.4.a	-			-			-		
		27.4.b	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
	PLE	27.3.a	-	0.0	0.0	21.8	0.0	0.0	*	0.0	0.1
		27.4.a	-	-	-	-			-		
		27.4.b	0.0	-	-	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
	SOL	27.3.a	-	0.0	0.0	11.7	0.0	0.0	9.8	0.0	0.5
		27.4.a	-			-			-		
		27.4.b	-			-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0

Table 8. Cont.

FS	Spec	Area	2018			2019			2020		
			DR	DR _{DI}	DR _{DIS}	DR	DR _{DIM}	DR _{DIS}	DR	DR _{DIM}	DR _{DIS}
NS14 Lines	COD	27.3.a	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.a	-	0.0	0.0	1.1	0.0	0.0	-	0.0	0.0
		27.4.b	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.1	-	0.0	0.0	-		
	PLE	27.3.a	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
		27.4.a	-			-	0.0	0.0	-		
		27.4.b	-			-	0.0	0.0	-	0.0	0.0
		27.4.c	-	0.0	0.0	-	0.0	0.0	-		
	SOL	27.3.a	-			-			-	0.0	0.0
		27.4.a	-			-			-		
		27.4.b	-			-	0.0	0.0	-		
		27.4.c	-	0.0	0.0	-	0.0	0.0	-		

3.2.2 Discard ratio estimates from ICES

Table 9 presents the estimated unwanted catch ratios or discard ratios in 2018, 2019 and 2020 for the North Sea stocks subject to the present compliance evaluation provided in the ICES advice. The overview of the information provided by ICES is presented in Annex 6. It should be noted that the unwanted catch ratio (presented for the COD stock in subarea 4, division 7.d, and SD 20 of division 3.a, for the year 2018) includes the illegal and legal discards, when exemptions are available, and in some cases (for example for the same COD stock for the years 2019 and 2020) include the BMS landings. Therefore, it could be an overestimate of the true discard ratio, although in the advice it is specified that “*the below minimum size (BMS) landings of cod reported to ICES are currently negligible, and are much lower than the discards below the minimum conservation reference size (MCRS) estimated by observer programmes*”. For the remaining COD stocks, in the case of COD in SD 21 of division 3.a, the advice specifies that “*discards are high and there is no reported below minimum size (BMS)*”; while for COD in subareas 1 and 2, it is mentioned that “*discarding is considered negligible in recent years (below 5%)*”. For SOL in subarea 4, the advice for 2020 states that “*MCRS, also known as BMS landings of sole reported to ICES are currently much lower than the estimates of discards, which in 2020 amounted to 15.7% of the total catch based on catch monitoring programmes, a value influenced by the large 2018 year class*”.

ICES provides, for some stocks, the proportion of landings for which a discard estimate is provided based on the observer discard programme. This coverage is generally high as shown in Table 9.

Table 9. 2018, 2019 and 2020 discard ratio (DR) or unwanted catch ratio (UCR) as estimated by ICES for the selected North Sea stocks (Method 2), and associated coverage level when available (% landings with associated discard estimates). SD = ICES subdivision. FS = fleet segment.

Stock	2018			2019			2020		
	DR	UCR	Coverage (% landings)	DR	UCR	Coverage (% landings)	DR	UCR	Coverage (% landings)
COD in subareas 1 and 2 (Northeast Arctic)	Discard ratio considered to be negligible. The fishery for this stock is mainly carried out by Norway and Russia with some catches reported by EU (assigned to NS01 and NS02 since these are the only FS which include division 2.a in their definition)								
	<5		-	<5		-	<5		-
COD in SD 21 (Kattegat)	Most landings (87-90%) correspond to active gears while passive gears land a much smaller proportion of the catches (10-13%)								
	25.4		87%	32.5		-	62.9		"data series for the majority of the fleets"
COD in subarea 4, division 7.d, and SD 20 (North Sea, eastern English Channel and Skagerrak)	Most landings (75% of the total) are from demersal trawls and seines >100 mm, followed by landings from gillnetters (10.5-10.7%), landings from demersal trawls 70–99 mm (5.5-6.7%) and landings from beam trawls (2.5-4.5%)								
		16.4	78%		11.2	-		19.4	57%
PLE in subarea 4 and SD 20 (Skagerrak)	52% of all landings are reported by beam trawlers and 34% by otter trawls. For the beam trawl FS (NS08, NS09) in 2018 PLE was not subject to the LO in NS09								
	45.4		75% in subarea 4 59% for SD 20	43.4		-	48.5		68% in subarea 4 43% for SD 20
SOL in SD 20-24	Most landings are reported by active gears (58-65% of all landings) than by passive gears (35-42% of all landings)								
	1.6		-	1.9		-	2.8		-
SOL in subarea 4	Most landings of this stock are reported by beam trawlers (between 90-94% of the total landings)								
	8.6		85%	18.4		89%	15.7		86%
PRA in divisions 3.a and 4.a east (Skagerrak and Kattegat and northern North Sea in the Norwegian Deep) ¹	100% of the landings are fished by trawls								
	3.7		-	5.6		-	5.3		-

[^] the value may be an overestimate because BMS landings are included under the discards category

¹ the discard rate has been calculated using the landings and discards from the Swedish and Danish solely

As mentioned above, the information presented is not directly comparable with the results from Method 1, as the estimates provided by ICES are on a stock basis and not by FS. Because of this, the level of discard presented per stock should be considered as supporting information to the other sources of data used in the current report. It should be also noted that some of the North Sea stocks

are shared with Norway and the UK for the last year of the study after the UK left the EU in January 2020. The data presented by ICES include information of all parties involved in the fisheries. This is not the case for the STECF data that include solely information from the EU fleet.

ICES defines '*negligible discards*' as those with a discard ratio less than 5% (in relation to the total catches). Therefore, for a given stock if ICES considers discarding as negligible and no estimate is provided, for the purposes of this exercise, a discard ratio of less than 5% was assumed.

3.3 Infringement Trends (Method 3)

In 2018, a total of 14 suspected infringements related to non-compliance with the LO were reported to EFCA, 7 of which were as a result of inspections at sea (see Table 10). Detected infringements were related to LH observations of BMS not recorded in logbooks and observed discarding of species. The species being discarded in contravention of the LO were primarily PLE, WHG and COD. The vessels concerned were fishing with gears TBB, OTB, SSC and LLS.

In 2019, of the 11 suspected infringements reported, 2 related to inspections at sea. In one case PLE was observed to be illegally discarded and in another there was a failure to record BMS. Ashore, all 8 infringements detected related to the sale of BMS for human consumption. The species concerned were primarily HKE, HAD, WHG and COD. Gear types involved included OTB and TBB.

In 2020, one suspected infringement was reported related with the illegal selling of BMS fish for human consumption while another vessel was found to have BMS included with the legal-size catch. The second infringement was also associated with the use of illegal gear to target BMS SOL. The gear types associated with the infringements were OTB and TBB.

In considering the decrease in detections of LO related infringements for 2020 it is worth mentioning that inspection activities were impacted greatly by the COVID-19 pandemic. Additionally, it is clear that the departure of the UK from the EU had an impact on reported activities from division 4.a and associated ports.

Table 10. 2018, 2019 and 2020 suspected infringements reported to EFCA that relate to non-compliance with the Landing Obligation (LO).

2018
<i>14 suspected infringements</i>

10 Discarding of fish subject to the LO, 4 Failure to land the BMS fish
<p style="text-align: center;">2019</p> <p style="text-align: center;">11 suspected infringements</p>
2 Discarding of fish subject to the LO. 9 Illegal sales of BMS 1 Failure to record BMS
<p style="text-align: center;">2020</p> <p style="text-align: center;">2 suspected infringements</p>
1 Failure to record BMS 1 Illegal sales of BMS

4 Compliance outcome

Noting the caveats regarding the correspondence between assessing discards at area and FS level and doing so at stock level, the following tables present a comparative overview of the benchmarked compliance situation for the years of the study period. The tables include an overall evaluation per species for each area of each FS, considering the discard information obtained applying methods 1 and 2 (for Method 3, there were insufficient infringements recorded to make a conclusive assessment). Details on the process to derive the overall compliance level are provided in the Methods section.

To help identify the areas where most catch is reported, Annex 7 presents the catch data, based on the data reported in the logbooks provided by the MS in reply to an annual data call sent by EFCA, for the years under consideration in this evaluation, 2018-2020.

It should be noted that this evaluation is done only for those FS/areas where information from the LH (Method 1) and/or the scientific sources (STECF, ICES, Method 2) is available.

For **COD**, for NS01 (otter trawls/seines ≥ 120 mm) in division 2.a, no LH are available (see Table 11a). STECF discard data available for this division of NS01 indicate that the level of discards is low. This is confirmed by the ICES estimates for the stock of COD in this area for the three years. Based on the scientific information no compliance issues are considered for this FS in division 2.a. For the

remaining areas of NS01, only 2 LH are available (one in 2018 and one in 2020, both in division 4.b). Therefore, the compliance evaluation takes into account the discard information provided by STECF. For division 4.a STECF data indicated high discard ratios in 2018 and medium in 2019 and 2020. Therefore, after taking into consideration the reported discard levels in the logbooks, the compliance level for this division was considered as low in 2018 and medium in 2019 and 2020. For division 4.b, the data from STECF indicate medium discard ratios in the three years under evaluation and therefore medium compliance levels for all years are considered. ICES provides unwanted catch ratios > 15% in 2018 and 2020 but below 15% in 2019, although these estimates are for the whole stock.

Table 11a. Overall compliance levels for COD by year (columns Overall) per fleet segment in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by the 3 sources of information (LH – method 1, STECF and ICES – method 2). N = number of LH available. The ICES discard estimates are solely available at stock level. Bold font highlights the source of information used to determine the overall compliance level (see main text for a detailed explanation on how the overall evaluation was obtained).

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS01	27.2.a	-	-	0.2	<5	✓	-	-	0.0	<5	✓	-	-	0.0	<5	✓
	27.4.a	-	-	15.9	16.4*	✗	-	-	10.6	11.2*	!	-	-	9.0	19.4*	!
	27.4.b	-	1	6.3		!	-	-	9.1		!	-	1	9.0		!

* unwanted catch ratio

For NS02 (otter trawls/seines ≥ 100 - <120 mm) in division 4.b, a low illegal discard rate for the species was estimated in 2018 based on the information provided by the LH available (n=7) while high discard ratios were obtained from the analysis of the STECF data. Because STECF values provide information on total discards of both above and below MCRS while the LH information using Method 1 estimates only the illegal discards of fish below MCRS since there is no additional reference data for the above MCRS component of the catch (e.g., grade sizes in the catch of inspected hauls or data derived from vessels equipped with REM), compliance has been assessed as low for this year following the STECF information since high-grading, known to have taken place (EFCA 2017a, b) would not be detected using Method 1. For 2019 and 2020, due to the lack of LH, the low compliance estimated was based on the STECF information on high levels of discards associated with the low quantities of discards reported in the logbooks. For division 4.a, and again based solely on the STECF information, low compliance levels were estimated in 2018 while medium compliance levels were estimated in 2019 and 2020. For division 4.c low and medium compliance levels in 2018 and 2019, respectively were estimated based solely on the STECF discard data and the comparison with the logbook information. As before, the ICES unwanted catch ratio estimates for the whole stock are included in the table but it was not possible to assign them to particular FS.

Table 11a. (cont.)

COD		2018					2019					2020				
FS	Area	1-LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS02	27.4.a	-	-	15.0	16.4*	✗	-	-	13.1	11.2*	!	-	-	10.3	19.4*	!
	27.4.b	1.2	7	18.3		✗	-	-	52.1		✗	-	1	42.4		✗
	27.4.c	-	-	36.4		✗	-	-	8.9		!	-	-	-		-

* unwanted catch ratio

For NS03 (otter trawls/seines 80 – 100) only 4 LH were available in 2018 in division 4.b while only 1 LH was available in 2019 and none in 2020 for this division (see Table 11b). No LH were available for divisions 4.a and 4.c. In all cases compliance has been estimated to be low based on the scientific estimates (with STECF showing high discard rates in all cases) in the three years under consideration.

Table 11b. Overall compliance levels for COD by year (columns Overall) per fleet segment in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by the 3 sources of information (LH – method 1, STECF and ICES – method 2). N = number of LH available. The ICES discard estimates are solely available at stock level. Bold font highlights the source of information used to determine the overall compliance level (see main text for a detailed explanation on how the overall evaluation was obtained). Blue shaded cells highlight those areas and FS where there are exemptions in place (see Annex 2 for details).

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS03	27.4.a	-	-	96.1	16.4*	✗	-	-	84.9	11.2*	✗	-	-	96.0	19.4^	✗
	27.4.b	-	4	65.8		✗	-	1	62.4		✗	-	-	84.9		✗
	27.4.c	-	-	52.5		✗	-	-	44.6		✗	-	-	93.2		✗

* unwanted catch ratio

^discard ratio includes BMS landings

For NS04 (otter trawls/seines ≥ 120), LH information indicated low illegal discard ratios for 2018 and medium illegal discard ratios in 2020. The number of LH available in 2019 was small ($n=3$). In 2018 STECF data indicated medium discard ratios, low in 2019 and high in 2020 while ICES advice reported high discard ratios for the stock for all three years. It is important to highlight that for all COD stocks, the discard ratio estimates provided by both STECF and ICES correspond to total discards (i.e., above and below MCRS) while the information on discards derived from the LH make reference to the discards of below MCRS (see the methodology section). High-grading (discarding of fish above the MCRS while quota is available) has been reported in the past for NS04 (and NS05) and therefore, in this case the overall compliance has been considered to be low following the information provided by the ICES advice since Method 1 would not, as explained in the methods section, account for illegal discarding in the component of the catch above MCRS. In this area (division 3.a) there is a separate COD stock and therefore, it was possible to assign the discard estimates from ICES to those FS operating in this division.

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS04	27.3.a	0.7	11	10.1	25.4	✗	-	3	3.5	32.5	✗	10.1	7	60.1	62.9	✗

For NS05 (otter trawls/seines 90 – 120) a much higher number of LH were available for all the years considered. Information from the LH indicated medium illegal discard ratios for 2018 but high illegal discard ratios for 2019 and 2020. Both STECF and ICES information also indicate high discard ratios. Overall compliance has been considered low for all years since, as it was the case for NS04, high-grading had been reported also for this FS in the past.

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS05	27.3.a	5.9	41	24.2	25.4	✗	15.5	34	18.3	32.5	✗	49.5	33	38.5	62.9	✗

For NS06 (otter trawls/seines 70 – 90), compliance was based on the STECF and ICES discard figures available that when compared with the reported discards in the logbooks indicated low compliance levels for the three years under consideration (only two LH were available for this FS, one in 2019 and one in 2020).

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS06	27.3.a	-	-	97.1	25.4	✗	-	1	84.2	32.5	✗	-	1	97.4	62.9	✗

For NS07 (otter trawls/seines 35 -70), LH were available in 2019 (n = 6) and 2020 (n = 4) while none was available in 2018. High compliance levels were considered for the 3 years under consideration based on the LH and STECF discard data in 2019 and based on the STECF discard data in 2018 and 2020. The ICES discard ratio estimates for the stock are included in the table but as explained before, it was not possible to assign them to a particular FS.

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS07	27.3.a	-	-	1.4	25.4	✓	1.6	6	2.5	32.5	✓	-	4	3.8	62.9	✓

For NS08 (beam trawls ≥ 120) in division 3.a, a medium compliance level was estimated in 2019 and a high compliance in 2020 based on the information provided by the LH available ($n = 9$ and $n = 5$, respectively, the latter estimate had narrow confidence intervals). STECF discard data were not available for any of the years considered. Information from only 4 LH was available in 2018 for this division but the estimate had wide confidence intervals and therefore compliance was not assessed for this year. For division 4.b STECF discard data were available for 2019 and 2020 indicating medium and high discard rates, respectively. Due to the limited number of LH available for both years ($n = 3$ in both cases) compliance has been assessed as medium and low, respectively based on the STECF discard data and the low reporting in the logbooks. For 2018 the only information available is the one obtained from the analysis of a limited number of LH ($n = 4$) with relatively wide confidence intervals and therefore compliance has not been assessed for this year. For division 4.a only STECF information was available and only in 2019 indicating medium discard rates. Based on the information on discards reported in the logbook in that year, a medium compliance level was considered for this division. As before, although the ICES discard estimates for the separate stocks are included in the table it is not possible to assign them to particular FS.

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS08	27.3.a	-	4	-	25.4	-	5.8	9	-	32.5	!	0.0	5	-	62.9	✓
	27.4.a	-	-	-	16.4*	-	-	-	13.8	11.2*	!	-	-	-	-	-
	27.4.b	-	4	-	-	-	-	3	6.3	-	!	-	3	19.7	19.4^	✗

* unwanted catch ratio

^discard ratio includes BMS landings

For NS09 (beam trawls 80- 120) in division 4.b, STECF discard data indicated medium discard ratios in 2018 and 2019 and high discard ratios in 2020. Based on the comparison of this information with the discards reported in the logbooks compliance was assessed as medium in 2018 and 2019 and as low in 2020. For division 4.c only a small number of LH ($n=3$) was available and therefore compliance was based on the STECF information, that indicated medium discard rates in 2018.

STECF information was also used to determine compliance levels as low and medium in 2019 and 2020, respectively since no LH were available.

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS09	27.4.b	-	1	6.7	16.4*	!	-	1	5.3	11.2*	!	-	-	18.6	19.4^	✗
	27.4.c	-	3	6.0		!	-	-	16.0		✗	-	-	13.3		!

* unwanted catch ratio

^discard ratio includes BMS landings

For the bigger mesh sizes of the gillnetters (NS10, gillnets ≥ 120) in division 3.a low numbers of LH were available (2 in 2018 and 4 in 2019) and therefore compliance was based on the STECF discard data in 2018 and 2019 that indicated low discard rates. Based on this information, compliance was assessed as high for both years. No STECF or LH discard data are available for 2020 and the ICES discard information is available for the whole stock but not by FS.

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS10	27.3.a	-	2	0.3	25.4	✓	-	4	2.3	32.5	✓	-	-	-	62.9	-

For the remaining fixed gear FS information available is much more limited with STECF discard data available for some years and with only three LH in NS13 (two in 2019 and one in 2020). Therefore, compliance was evaluated only for division 3.a of NS11 (gillnets 90-120) in 2020, for division 3.a. of NS13 (trammel nets) in 2019 and 2020 and for division 4.a of NS14 (lines) in 2019 based on the STECF discard data. In the cases of NS11 and NS13 compliance was evaluated as low while in the case of NS14 compliance was evaluated as high.

Table 11b. (cont.)

COD		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS11	27.3.a	-	-	-	25.4	-	-	-	32.5	-	-	-	-	72.0	62.9	✗
NS13	27.3.a	-	-	-		-	-	1			✗	-	1	70.2		✗
NS14	27.4.a	-	-	-	16.4*	-	-	-	1.1	11.2*	✓	-	-	-	19.4^	-

* unwanted catch ratio

^discard ratio includes BMS landings

For **PLE**, for NS01 in division 4.b, small numbers of LH were available (3 in 2018 and 2 in 2020) and therefore, compliance has been based on the STECF data for the years under consideration (see Table 12a). Analysis of these data indicated low discard ratios in 2018, 2019 and 2020 for this division and compliance has been estimated as high. There were no LHs with the species in division 4.a and therefore the high compliance considered was based on the STECF discard data that indicated low discard ratios for the three years under consideration. For division 2.a, discard data from STECF were only available for 2018 indicating high discard rates while discarding in the logbooks was low and therefore a low compliance level is considered for this division in 2018. As before, although the ICES discard estimates for the stock are included in the table it is not possible to assign them to a particular FS.

Table 12a. Overall compliance levels for PLE by year (columns Overall) per fleet segment in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by the 3 sources of information (LH – method 1, STECF and ICES – method 2). N = number of LH available. The ICES discard estimates are solely available at stock level. Bold font highlights the source of information used to determine the overall compliance level (see main text for a detailed explanation on how the overall evaluation was obtained). Blue shaded cells highlight those areas and FS where there are exemptions in place (see Annex 2 for details).

PLE		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS01	27.2.a	-	-	57.9		✖	-	-	-		-	-	-	-		-
	27.4.a	-	-	2.4	45.4	✔	-	-	4.0	43.4	✔	-	-	2.1	48.5	✔
	27.4.b	-	3	0.3		✔	-	-	0.5		✔	-	2	0.6		✔

For NS02 division 4.b, 21 LH were available in 2018 indicating low compliance. In 2019 only a few LH (n=3) were available, and compliance was therefore based on the analysis of the available STECF discard data that indicated high discard ratios for the three years. High discard ratios were also reported in the ICES advice for the stock, but it is not possible to assign these estimates to particular areas or FS. Compliance was considered low for the three years. For division 4.a compliance was based on the STECF data since there was only 1 LH available (in 2018). STECF data indicated low discard ratios in 2018 and 2020 and medium discard ratios in 2019. For division 4.c, STECF discard data indicated high discard ratios for the three years under consideration and based on the comparison with the reported discards in the logbooks, compliance was considered low for the three years.

Table 12a. (cont.)

PLE		2018				2019				2020			
FS	Area	LH	STECF	ICES	Overall	LH	STECF	ICES	Overall	LH	STECF	ICES	Overall

			N				N				N					
NS02	27.4.a	-	1	3.9	45.4	✓	-	-	6.2	43.4	!	-	-	3.1	48.5	✓
	27.4.b	19.6	21	32.6		✗	-	3	28.8		✗	-	2	34.3		✗
	27.4.c	-	-	40.1		✗	-	-	50.7		✗	-	-	44.7		✗

PLE was not subject to the LO in NS03 in 2018 (see Table 12b). Only 2 LH (in 2019) were available for this FS and therefore, compliance was based on the analysis of the STECF data that indicated high discard ratios in 2019 and 2020 for all divisions. High discard ratios and low reporting of discards in the logbooks resulted in compliance considered to be low for all divisions of NS03.

Table 12b. Overall compliance levels for PLE by year (columns Overall) per fleet segment in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by the 3 sources of information (LH – method 1, STECF and ICES – method 2). N = number of LH available. The ICES discard estimates are solely available at stock level. Grey shaded cells highlight those areas and FS where the stocks were not subject to the Landing Obligation. Bold font highlights the source of information used to determine the overall compliance level (see main text for a detailed explanation on how the overall evaluation was obtained). Blue shaded cells highlight those areas and FS where there are exemptions in place (see Annex 2 for details).

PLE		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS03	27.4.a		-				-	-	87.0	43.4	✗	-	-	91.1	48.5	✗
	27.4.b		12				-	2	67.6		✗	-	-	77.5		✗
	27.4.c		-				-		49.0		✗	-	-	89.6		✗

For NS04 and NS05, low compliance levels were estimated for the three years analysed based on the level of illegal discard ratios calculated using the LH in all cases except in NS04 in 2019 for which the number of LH available was very limited (n = 3). In this case, compliance was assessed as low based on the STECF discard information that indicated high discard rates and the comparison with the reporting of discard in the logbooks. STECF discard data available for the remaining years in NS04 and for NS05 corroborated the high discard rates obtained from the LH information.

Table 12b. (cont.)

PLE		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS04	27.3.a	28.3	12	16.0	45.4	✗	-	3	46.3	46.4	✗	33.3	7	24.2	48.5	✗
NS05	27.3.a	26.2	43	47.3		✗	38.3	38	46.0		✗	45.4	37	34.7		✗

PLE was not subject to the LO in NS06 in 2018. A limited number of LH were available with information on the species for this FS (two in 2019 and one in 2020). Low compliance levels were

estimated in 2019 and 2020 based on the comparison between the STECF discard data and the reported discards in the logbooks.

Table 12b. (cont.)

PLE		2018					2019				2020					
FS	Area	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall
NS06	27.3.a		-				-	2	95.3	46.4	✖	-	1	96.5	48.5	✖

For NS07, no LHs were available in 2018 but the STECF data indicated high discard ratios that, when compared with the low reporting of discards in the logbooks, have been considered to represent low compliance values. In 2019, high compliance levels were obtained for this FS based on the estimate of illegal discards obtained from the LH analysed (n=5). Although the number of LH is small the estimate has very narrow confidence intervals. In 2020, high compliance was considered based on the low discard ratios obtained by the analysis of the available STECF data. As before, although the ICES discard estimates for the stock are included in the table it is not possible to assign them to a particular FS and therefore, they have not been used to assess compliance in this case.

Table 12b. (cont.)

PLE		2018					2019				2020					
FS	Area	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall
NS07	27.3.a	-	-	32.2	45.4	✖	0.0	5	12.2	46.4	✔	-	-	0.0	48.5	✔

For NS08, low compliance levels were estimated for division 3.a and medium compliance levels for division 4.b based on the LH information in 2018, although the number of LH was low in both cases (n = 7). In 2019, compliance had improved (reaching a medium level) in division 3.a and remained stable, also at a medium level, in division 4.b. based again on the LH information although the number of LH was limited for division 4.b (n = 6). In 2020, a smaller number of LH was available for both divisions (5 and 3 in divisions 3.a and 4.b, respectively). No STECF discard data were available for division 3.a and therefore compliance in 2020 is assessed as medium based on the estimate provided by the limited number of LH available (n = 5) although it should be noted that the estimate had relatively wide confidence intervals. The STECF discard information available for division 4.b indicated high discard rates for all years under consideration. Due to the limited number of LH available for 2020 in this division compliance was assessed as low based on these scientific estimates of discards and the comparison with the discards reported in the logbooks. For division 4.a compliance was assessed as low in 2018 and 2019 based again on the discards ratios obtained

by the analysis of the STECF data and the comparison with the discards reported in the logbooks. In absence of LH or STECF estimates for 2020, no assessment was provided for that year.

Table 12b. (cont.)

PLE		2018					2019					2020				
FS	Area	LH	STECF	ICES	Overall	LH	STECF	ICES	Overall	LH	STECF	ICES	Overall			
NS08	27.3.a	15.5	7	-	45.4	✖	13.4	15	-	43.4	!	9.9	5	-	48.5	!
	27.4.a	-	-	18.6		✖	-	-	19.0		✖	-	-	-		-
	27.4.b	6.9	7	18.6		!	6.1	6	15.1		!	-	3	23.8		✖

In 2018, PLE was not subject to the LO in NS09. Low compliance levels were estimated in division 4.b in 2019 based on the LH (these low compliance levels were confirmed by the high discard ratios obtained when analysing the STECF data). For division 4.c only 4 LH were available in 2019 and therefore compliance was assessed as low following the STECF discard information. In 2020 only 1 LH was available in division 4.b and 1 in division 4.c and therefore, the STECF discard data (indicating high discard ratios) were compared with the discards reported in the logbooks and used to determine the low level of compliance in 2020.

Table 12b. (cont.)

PLE		2018					2019				2020					
FS	Area	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall
NS09	27.4.b		28				54.8	8	64.2	43.4	<div>✖</div>	-	1	69.1	48.5	<div>✖</div>
	27.4.c		46				-	4	71.1		<div>✖</div>	-	1	72.4		<div>✖</div>

Finally, for the fixed gears, PLE was not subject to the LO for these FS in 2018. For those FS and areas where there is information on LH or STECF discard data (NS10 and NS13) compliance was evaluated. For NS10 in division 3.a, five LH were available in 2019 indicating low illegal discard rates and therefore high compliance was considered. The STECF information confirmed the low discard rates. For NS13 in division 3.a, only three LH were available in 2019 and 1 in 2020 and therefore compliance was not evaluated using Method 1. STECF discard data were only available for 2019 for this division and based on this information and the comparison with the logbook data compliance was assessed as low for 2019. No overall compliance is provided for 2020 due to the lack of STECF or LH data.

Table 12b. (cont.)

PLE		2018					2019					2020				
FS	Area	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall
NS10	27.3.a		1				1.9	5	1.3	43.4	✓	-	-	-	48.5	-
NS13	27.3.a		-				-	3	21.8		✗	-	1	-		-

For **SOL**, for NS01 no LH information was available for any of the divisions of this FS (see Table 13a). Discard estimates obtained based on the STECF data were available for divisions 4.a indicating low discard ratios in 2018 and 2019 and therefore high compliance values were considered for these years. As before, although the ICES discard estimates for the stock are included in the table it is not possible to assign them to a particular FS.

Table 13a. Overall compliance levels for SOL by year (columns Overall) per fleet segment in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by the 3 sources of information (LH – method 1, STECF and ICES – method 2). N = number of LH available. The ICES discard estimates are solely available at stock level. Bold font highlights the source of information used to determine the overall compliance level (see main text for a detailed explanation on how the overall evaluation was obtained).

SOL		2018					2019					2020				
FS	Area	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall
			N					N					N			
NS01	27.4.a	-	-	0.5	8.6	✓	-	-	0.8	18.4	✓	-	-	-	15.7	-

For NS02 only three LH were available in division 4.b in 2018 and only one in 2019 and therefore compliance was based on the comparison between the discard ratios obtained from the STECF data and the discards reported in the logbooks. Compliance levels were estimated as low in 2018 and as high in 2019 and 2020. Compliance was estimated as high for division 4.a in 2018 and 2019 based also on the STECF discard data.

Table 13a. (cont.)

SOL		2018					2019					2020				
FS	Area	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall
			N					N					N			
NS02	27.4.a	-	-	0.0	8.6	✓	-	-	0.8	18.4	✓	-	-	-	15.7	-
	27.4.b	-	3	24.0		✗	-	1	0.6		✓	-	-	1.9		✓

For NS03 in division 4.b, a limited number of LH (n = 3) was available in 2018 while only one LH was available in 2019) and therefore compliance was based on the STECF discard data that indicated low discard rates in 2018 but high discard rates in 2019 and 2020 (see Table 13b). Comparing this information with the discard reported in the logbooks, high compliance levels were

considered for 2018 but low compliance levels were considered for 2019 and 2020. For division 4.c, low compliance levels were considered for 2019 based again on the comparison between the discard ratios obtained from the STECF data and the reporting of discard in the logbooks.

Table 13b. Overall compliance levels for SOL by year (columns Overall) per fleet segment in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by the 3 sources of information (LH – method 1, STECF and ICES – method 2). N = number of LH available. The ICES discard estimates are solely available at stock level. Bold font highlights the source of information used to determine the overall compliance level (see main text for a detailed explanation on how the overall evaluation was obtained). Blue shaded cells highlight those areas and FS where there are exemptions in place (see Annex 2 for details).

SOL		2018					2019					2020				
FS	Area	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall	LH		STECF	ICES	Overall
		-	N				-	N				-	N			
NS03	27.4.b	-	3	0.0	8.6	✓	-	1	26.7	18.4	✗	-	-	17.4	15.7	✗
	27.4.c	-	-	-		-	-	-	18.9		✗	-	-	-		-

For **SOL** for NS05, 17 LH were available and information from these data indicated high compliance levels in 2018, which was supported by both the STECF estimates of low discards for the stock. However, results in 2019 seem to indicate a worsening of the situation with illegal discards estimates calculated using the LH corresponding to medium compliance levels in agreement with the STECF discard data for this year. For 2020, the analysis of the available LH indicated high compliance levels, although this time the STECF discard estimate provided medium discard rates. Following the methodology explained in the methods section, the overall compliance level was assessed as medium in 2019 and high in 2020.

Table 13b. (cont.)

SOL		2018					2019				2020			
FS	Area	LH N	STECF	ICES	Overall	LH N	STECF	ICES	Overall	LH N	STECF	ICES	Overall	
NS05	27.3.a	2.817	3.0	1.6	✔	9.519	5.3	1.9	⚠	3.110	5.4	2.8	✔	

For NS06 there was only 1 LH available in 2019 and therefore compliance has been based in the STECF discard estimates that indicate high discard levels for the three years under consideration. Based on the comparison with the reported discards in the logbooks, compliance has been assessed as low for the three years.

Table 13b. (cont.)

SOL	2018	2019	2020
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FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS06	27.3.a	-	-	58.1	1.6	✗	-	1	33.4	1.9	✗	-	-	38.9	2.8	✗

For NS07 no LH were available and therefore compliance has been based in the STECF discard estimates that indicate low discard levels for 2018 and 2019. Based on this information compliance has been assessed as high for both years.

Table 13b. (cont.)

SOL		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS07	27.3.a	-	-	0.0	1.6	✓	-	-	0.0	1.9	✓	-	-	-	2.8	-

For NS08, there was only 1 LH available in 2018 and 3 in 2020 in division 3.a and no STECF discard data therefore compliance was not assessed for those 2 years. High compliance levels were estimated in 2019 in this division based on the LH data (n = 9). For division 4.b, a limited number of LH was available for 2018 and 2019 (n = 3 and n = 1, respectively) while none were available for 2020. Based on the STECF data that indicated low discard rates for all years under consideration compliance was assessed as high for the three years.

Table 13b. (cont.)

SOL		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS08	27.3.a	-	1	-	1.6		2.4	9	-	1.9	✓	-	3	-	2.8	
	27.4.b	-	3	1.1	8.6	✓	-	1	0.7	18.4	✓	-	-	0.3	15.7	✓

For NS09 a good number of LH was available in 2018 for division 4.c. The estimated illegal discard ratios based on this information corresponded to medium compliance levels. The STECF based discard estimate indicated also medium discard levels which is also supported by the information provided on the ICES advice that allocates most catches of the stock to the beam trawlers (NS09 and NS08). For 2019 and 2020, the number of LH available in this division has been reduced greatly (n = 4 and n = 1, respectively). The information provided by STECF indicate high discard rates and therefore, after comparing with the discards reported in the logbooks, the compliance was assessed as low in both years. For division 4.b, analysis of the LH available in 2018 provided illegal discard

estimates corresponding to high compliance levels, while medium levels were obtained for 2019, although for this last year the number of LH was much smaller (n=6). STECF information indicated medium discard ratios in 2018 and 2020 but high discard estimates in 2019. Because only 1 LH with the species was available for 2020 compliance was assessed as medium in 2020 based on the STECF discard estimate.

Table 13b. (cont.)

SOL		2018					2019				2020					
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS09	27.4.b	3.6	26	9.4	8.6	✓	6.3	6	15.4	18.4	!	-	1	11.2	15.7	!
	27.4.c	12.1	46	9.9		!	-	4	20.4		✗	-	1	15.8		✗

For fixed gears information on discards is very scarce with only a very limited number of LH available for some FS and areas. The available STECF discard data have therefore been used to assess compliance. Compliance was considered low for division 3.a of NS10 in 2019 and 2020, and as medium for division 3.a of NS11 in 2019 and for the same division of NS13 in 2019 and 2020. For the remaining areas and FS no STECF discard data are available. Therefore, compliance was not assessed due to the lack of information.

Table 13b. (cont.)

SOL		2018					2019					2020				
FS	Area	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall	LH	N	STECF	ICES	Overall
NS10	27.3.a	-	1	-	1.6	-	-	1	23.7	1.9	✖	-	-	18.0	2.8	✖
NS11	27.3.a	-	-	-		-	-	-	7.3		!	-	-	-		-
NS13	27.3.a	-	-	-		-	-	2	11.7		!	-	1	9.8		!

For **PRA** for NS07, the FS targeting the stock, overall compliance was considered at low levels in 2019 and 2020 based on the analysis of the grade sizes in the LH and in the sale notes (see Table 14). Compliance was assessed as medium in 2018 based on the STECF discard data since information on the grade sizes of both LH and sale notes were not available for that year. STECF discard data indicated also medium discard levels in 2019 while the ICES advice indicated low discard ratios for the stock in 2018 but medium discard rates in 2019 and 2020, highlighting that most catches are taken by trawlers.

Table 14. Overall compliance levels for PRA by year (columns Overall) per fleet segment in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by STECF and ICES discard rates (method 2) and by the comparison between the grade sizes in the LH and the sale notes. N = number of LH available. The ICES discard estimates are solely available at stock level. Bold font in 2018 highlights the source of information used to determine the overall compliance level, for 2019 and 2020 compliance was based on the “LH vs Sale notes” column results (see main text for a detailed explanation on how the overall evaluation was obtained).

PRA		2018				2019				2020			
FS	Area	LH vs Sale notes	STECF	ICES	Overall	LH vs Sale notes	STECF	ICES	Overall	LH vs Sale notes	STECF	ICES	Overall
NS07	27.3.a	-	6.0	3.7	!	×	5.9	5.6	×	×	2.4	5.3	×

In summary for all species and FS, in many cases it has been necessary to base the compliance levels on the STECF or ICES discard data due to the low number of LH available for some FS/area combinations. There is not always a concordance between the STECF discard estimates and the ICES ones for the same years. However, when interpreting these differences, it has been attempted to take into consideration the difficulties in assigning FS and areas to the discard ratios provided by ICES for individual stocks as explained before. Additionally, some North Sea stocks are shared with Norway. The data presented by ICES include information of all parties involved in the fisheries, while the data from STECF only concerns the EU fisheries.

Table 15 presents the overview of the benchmarked compliance situation for the years of the study period for each species as before but listing all the species evaluated for each FS.

Table 15. Overall compliance levels by species (columns Overall) per fleet segment (FS) in the North Sea in 2018, 2019 and 2020 derived from the discard ratios obtained by the 3 sources of information (LH – method 1, STECF and ICES – method 2). See main text for the explanation on how the overall evaluation was obtained. Shaded cells highlight those areas and FS where the species was not subject to the Landing Obligation.

FS	Sp	Area	2018					2019					2020				
			1-LH	N	2a- STECF	2b- ICES	Overall	1-LH	N	2a- STECF	2b- ICES	Overall	1-LH	N	2a- STECF	2b- ICES	Overall
NS01 Otter trawls/seines ≥ 120 mm	COD	27.2.a	-	-	0.2	<5	✓	-	-	0.0	<5	✓	-	-	0.0	<5	✓
		27.4.a	-	-	15.9	16.4*	✗	-	-	10.6	11.2*	!	-	-	9.0	19.4*	!
		27.4.b	-	1	6.3		!	-	-	9.1		!	-	1	9.0		!
	PLE	27.2.a	-	-	57.9	45.4	✗	-	-	-	43.4	-	-	-	-	48.5	-
		27.4.a	-	-	2.4		✓	-	-	4.0		✓	-	-	2.1		✓
		27.4.b	-	3	0.3		✓	-	-	0.5		✓	-	2	0.6		✓
	SOL	27.4.a	-	-	0.5	8.6	✓	-	-	0.8	18.4	✓	-	-	-	15.7	-
NS02 Otter trawls/seines ≥100 – <120 mm	COD	27.4.a	-	-	15.0	16.4*	✗	-	-	13.1	11.2*	!	-	-	10.3	19.4*	!
		27.4.b	1.2	7	18.3		✗	-	-	52.1		!	-	1	42.4		✗
		27.4.c	-	-	36.4		✗	-	-	8.9		!	-	-	-		-
	PLE	27.4.a	-	1	3.9	45.4	✓	-	-	6.2	43.4	!	-	-	3.1	48.5	✓
		27.4.b	19.6	21	32.6		✗	-	3	28.8		✗	-	2	34.3		✗
		27.4.c	-	-	40.1		✗	-	-	50.7		✗	-	-	44.7		✗
	SOL	27.4.a	-	-	0.0	8.6	✓	-	-	0.8	18.4	✓	-	-	-	15.7	-
		27.4.b	-	3	24.0		✗	-	1	0.6		✓	-	-	1.9		✓

* unwanted catch ratio

Table 15. Cont.

			2018					2019					2020				
FS	Sp	Area	1-LH		2a- STECF	2b- ICES	Overall Sp	1-LH		2a- STECF	2b- ICES	Overall Sp	1-LH		2a- STECF	2b- ICES	Overall Sp
NS03 Otter trawls/seines ≥70 - <100 mm	COD	27.4.a	-	-	96.1	16.4*	✖	-	-	84.9	11.2*	✖	-	-	96.0	19.4*	✖
		27.4.b	-	4	65.8		✖	-	1	62.4		✖	-	-	84.9		✖
		27.4.c	-	-	52.5		✖	-	-	44.6			-	-	93.2		✖
	PLE	27.4.a		-				-	-	87.0	43.4	✖	-	-	91.1	48.5	✖
		27.4.b		12				-	2	67.6		✖	-	-	77.5		✖
		27.4.c		-				-	-	49.0		✖	-	-	89.6		✖
	SOL	27.4.b	-	3	0.0	8.6	✔	-	1	26.7	18.4	✖	-	-	17.4	15.7	✖
		27.4.c	-	-	-		-	-	-	18.9		✖	-	-	-		-
NS04 Otter trawls/seines ≥ 120 mm	COD	27.3.a	0.7	11	10.1	25.4	✖	-	3	3.5	32.5	✖	10.1	7	60.1	62.9	✖
	PLE	27.3.a	28.3	12	16.0		✖	-	3	46.3		✖	33.3	7	24.2		✖
NS05 Otter trawls/seines ≥90 - <120 mm	COD	27.3.a	5.9	41	24.2	25.4	✖	15.5	34	18.3	32.5	✖	49.5	33	38.5	62.9	✖
	PLE	27.3.a	26.2	43	47.3		✖	38.3	38	46.0		✖	45.4	37	34.7		✖
	SOL	27.3.a	2.8	17	3.0	1.6	✔	9.5	19	5.3	1.9	!	3.1	10	5.4	2.8	✔
NS06 Otter trawls/seines ≥70 - <90 mm	COD	27.3.a	-	-	97.1	25.4	✖	-	1	84.2	32.5	✖	-	1	97.4	62.9	✖
	PLE	27.3.a		1				-	2	95.3		✖	-	1	96.5		✖
	SOL	27.3.a	-	-	58.1	1.6	✖	-	1	33.4	1.9	✖	-	-	38.9	2.8	✖
NS07 Otter trawls/seines ≥35 - <70 mm	COD	27.3.a	-	-	1.4	25.4	✔	1.6	6	2.5	32.5	✔	-	4	3.8	62.9	✔
	PLE	27.3.a	-	-	32.2		✖	0.0	5	12.2		✔	-	-	0.0		✔
	SOL	27.3.a	-	-	0.0	1.6	✔	-	-	0.0	1.9	✔	-	-	-	2.8	-
	PRA*	27.3.a			5.1	3.7	!	-		5.9	5.6	✖	-			5.3	✖

* Based on 2019 and 2020 on the comparison between the grade sizes in the LH and those in the sale notes.

Table 15. Cont.

FS	Sp	Area	2018					2019					2020				
			1-LH	N	2a- STECF	2b- ICES	Overall Sp	1-LH	N	2a- STECF	2b- ICES	Overall Sp	1-LH	N	2a- STECF	2b- ICES	Overall Sp
NS08 Beam trawls ≥ 120 mm	COD	27.3.a	-	4	-	25.4	-	5.8	9	-	32.5	!	0.0	5	-	62.9	✓
		27.4.a	-	-	-	16.4*	-	-	-	13.8	11.2*	!	-	-	-	19.4*	-
		27.4.b	-	4	-		-	-	3	6.3		!	-	3	19.7		✗
	PLE	27.3.a	15.5	7	-	45.4	✗	13.4	15	-	43.4	!	9.9	5	-	48.5	!
		27.4.a	-	-	18.6		✗	-	-	19.0		✗	-	-	-		-
		27.4.b	6.9	7	18.6		!	6.1	6	15.1		!	-	3	23.8		✗
	SOL	27.3.a	-	1	-	1.6		2.4	9	-	1.9	✓	-	3	-	2.8	
		27.4.b	-	3	1.1	8.6	✓	-	1	0.7	18.4	✓	-	-	0.3	15.7	✓
NS09 Beam trawls ≥80-<120 mm	COD	27.4.b	-	1	6.7	16.4*	!	-	1	5.3	11.2*	!	-	-	18.6	19.4*	✗
		27.4.c	-	3	6.0		!	-	-	16.0		✗	-	-	13.3		!
	PLE	27.4.b		28				54.8	8	64.2	43.4	✗	-	1	69.1	48.5	✗
		27.4.c		46				-	4	71.1		✗	-	1	72.4		✗
	SOL	27.4.b	3.6	28	9.4	8.6	✓	6.3	6	15.4	18.4	!	-	1	11.2	15.7	!
		27.4.c	12.1	46	9.6		!	-	4	20.4		✗	-	1	15.8		✗
	SOL	27.4.c	12.1	46	9.6												
NS10 Gillnets ≥ 120 mm	COD	27.3.a	-	2	0.3	25.4	✓	-	4	2.3	32.5	✓	-	-	-	62.9	-
	PLE	27.3.a		1				1.9	5	1.3		✓	-	-	-		-
	SOL	27.3.a	-	1	-	1.6	-	-	1	23.7	1.9	✗	-	-	18.0	2.8	✗

Table 15. Cont.

FS	Sp	Area	2018					2019					2020				
			1-LH		2a- STECF	2b- ICES	Overall Sp	1-LH		2a- STECF	2b- ICES	Overall Sp	1-LH		2a- STECF	2b- ICES	Overall Sp
NS11 Gillnets ≥90 - <120 mm	COD	27.3.a	-	-	-	25.4	-	-	-		32.5	-	-	-	72.0	62.9	✖
	SOL	27.3.a	-	-	-	1.6	-	-	-	7.3	2.9	!	-	-	-	2.8	-
NS13 Trammel nets	COD	27.3.a	-	-	-	25.4	-	-	1	56.3	32.5	✖	-	-	70.2	62.9	✖
	PLE	27.3.a		-				-	3	21.8		✖	-	1	-		-
	SOL	27.3.a	-	-	-	1.6	-	-	2	11.7	2.9	!	-	1	9.8	2.8	!
NS14 Lines	COD	27.4.a	-	-	-	16.4*	-	-	-	1.1	11.2*	✓	-	-	-	19.4*	-

Comparison with the previous evaluation

In the previous evaluation of compliance, carried out for the years 2016 and 2017, the evaluation only considered those FS in which the species under study were subject to the LO, as it has been done with the current evaluation. For COD this meant that the evaluation of compliance was not carried out for the species in 2016. In addition, STECF data were only available for 2016 and for this reason the 2017 compliance evaluation was based mainly on the LH and the ICES discard estimates. The STECF data for gillnetters did not provide information on mesh sizes and therefore it was not possible to separate between FS from NS10 to NS12.

For **COD**, compliance was evaluated in 2017 for the otter trawls/seines ≥ 100 mm (corresponding to the current FS NS01 and NS02), the beam trawls ≥ 120 mm (corresponding to the current FS NS08) and the passive gears (corresponding to the current FS NS10-NS14). Compliance was estimated to be low for NS01/NS02 in division 4.a. For assigning this level of compliance the estimates of discards of both BMS and LSC components of the catch were considered. This was possible since reference data, in the form of sale notes from vessels equipped with EM systems, were available for 2016 and it was used to compare with the sale notes from 2017. No analysis of the sale notes was carried out in the following years since it was decided that the 2016 reference data might not be any longer representative of the fishing situation after 2017, although it was noted that the high-grading may continue to take place. For 2018, the compliance level considered for NS01 in 4.a was estimated based solely on the information on discards provided by the STECF data and data for the stock provided by the ICES advice that incorporate both components of the catch (BMS and LSC). Both sources of information indicated high discard ratios and therefore a low compliance was estimated. For 2019, again the compliance level was based on both STECF and ICES discard information that suggested an improvement of the level of discards, with compliance considered to be at medium level. For 2020, compliance was considered medium based on the STECF discard estimates (see Table 15). For NS02 in 4.a the compliance levels were again based solely on the scientific discard data and were considered low in 2018 and medium in 2019 and 2020.

For beam trawlers, the previous compliance evaluation indicated high compliance levels for NS08 (previously under the code “NS06”, beam trawlers with mesh sizes ≥ 120 mm) in 2017 based on LH information. In 2018 there was insufficient information to assess compliance. In 2019 the discard ratios estimated for these divisions indicated a medium compliance level although the estimate for division 3.a was based on the analysis of a limited number of LH. The estimate for division 4.b was based on the STECF discard data. For 2020, compliance appeared to have improved in 3.a, again

based on the information provided by the LH while compliance decreased to a low level in 4.b based on the information provided by the STECF data (see Table 16).

For passive gears, the previous compliance evaluation indicated high compliance levels in 2017 for all the gillnetters (current FS NS10, NS11, NS12), for trammel nets (current FS NS13) and for lines (current FS NS14) based on the STECF information from the year before since no STECF data for 2017 were available at the time of finalising the previous compliance evaluation. High compliance levels were estimated for division 3.a of NS10 in 2018 and 2019 based on the information provided by the STECF data. No information is available for 2020. For NS13 and based on the STECF discard data compliance was assessed as low in division 3.a for both 2019 and 2020. Compliance was assessed as high in 2019 for division 4.a of NS14 based on STECF information.

For **PLE**, the previous evaluation considered those FS where the species was subject to the LO at the time: the otter trawls/seines ≥ 100 mm (current FS NS01 and FS NS02) and the beam trawlers ≥ 120 mm (current FS NS08) for both 2016 and 2017. For the otter trawls/seines low compliance levels were estimated in divisions 4.a and 4.b in 2016 and in division 4.b in 2017 based on LH information. In 2018, 2019 and 2020 high compliance levels were estimated in both divisions (4.a and 4.b) for NS01 (otter trawls/seines ≥ 120 mm) based on the STECF information. For NS02 (otter trawls/seines $\geq 100 - < 120$ mm) division 4.a information on discards based on STECF data indicated high compliance levels in 2018 and 2020 and medium compliance levels in 2019. For division 4.b information was available from STECF and ICES indicating low compliance levels in 2018, 2019 and 2020. For the beam trawlers operating with the bigger mesh sizes (current FS NS08), high compliance levels were estimated in 2016 based on the STECF data. In 2018, 2019 and 2020 compliance was evaluated based on LH information in division 3.a indicating a low compliance level in 2018 and medium compliance levels in 2019 and 2020. In division 4.b compliance was assessed as medium in 2018 and 2019 based on the LH and STECF information while compliance was assessed as low in 2020 based on the STECF and ICES discard information. In division 4.a compliance was also assessed as low for 2018 and 2019 based on the STECF and ICES discard information (see Table 16).

For **SOL**, the previous evaluation highlighted low compliance levels for the otter trawls/seines with mesh sizes between ≥ 70 and < 100 mm (current FS NS03) in 2016 based on STECF data and in 2017 based on LH information. For this FS high compliance was estimated in 2018 in division 4.b while low compliance was estimated in 2019 and 2020. Low compliance was also estimated for division 4.c in 2019. In all these cases compliance was assessed using STECF data. Low compliance levels were also considered for the otter trawls/seines with mesh sizes > 100 mm in

2017 (current FS NS01 and NS02) based on the STECF data from the year before and no LH were available. In 2018 and 2019 compliance was estimated to be high in division 4.a of both NS01 and NS02 based on STECF data while compliance was estimated to be low in 2018 but high in 2019 and 2020 for division 4.b of this FS (again based on the STECF data).

High compliance levels were obtained for the otter trawls/seines with mesh sizes ≥ 90 mm operating in division 3.a (current FS NS04 and NS05) in 2016 while medium compliance levels were obtained in 2017 based in both cases on LH data. In 2018 and 2020 compliance was estimated to be high in NS05 based on the analysis of the LH information while compliance was estimated to be medium in 2019, also based on LH information. In the previous compliance evaluation, medium compliance levels were estimated for the beam trawlers with the smallest mesh sizes (current FS NS09) in both 2016 and 2017 based on LH data. In 2018 medium compliance levels were considered for this FS only in division 4.c while high compliance levels were obtained in division 4.b based also on LH information. Medium compliance levels were again obtained in 2019 for division 4.b based on LH information but low compliance levels were assessed for division 4.c. based on the STECF and ICES discard information. Compliance in 2020 was based on the discard ratios provided by the STECF in division 4.b and 4.c and based on those figures, compliance was estimated as low in 4.c and medium in 4.b taking into account the low discards of SOL reported in the logbooks (see Table 16).

Finally, for the passive gears, the previous compliance evaluation estimated high compliance levels for SOL in gillnetters and trammel nets (current FS NS10-NS13) based mainly on STECF data, because very few LH were available. However, when available these LH confirmed the low discard ratios obtained using the STECF data. In 2019 and 2020 low compliance levels were estimated for division 3.a of NS10 while medium compliance levels were considered in 2019 or 2020 for division 3.a of NS11 and NS13 based on STECF data.

PRA was not included in the previous compliance evaluation exercise.

Table 16. Comparison of the compliance levels obtained by species per area and fleet segment (FS) in the North Sea in 2016-2020. The evaluation on the years 2016-2017 has been reproduced from the results of the previous evaluation report of the North Sea carried out by EFCA under the same agreement with the Scheveningen CEG as the current one⁷. FS denomination has changed over time, but results are presented following the current (2022) definition. See main text for the explanation on how the compliance evaluation was obtained. A “-” indicate where lack of data prevented the evaluation of compliance. Shaded cells highlight those areas and FS where the species was not subject to the LO and therefore no compliance evaluation was conducted.

FS	Old FS	Old FS Area	COD						PLE						SOL							
			2016	2017	Area	2018	2019	2020	2016	2017	Area	2018	2019	2020	2016	2017	Area	2018	2019	2020		
NS01 Otter trawls/seines ≥ 120mm	NS01	2.a		-	2.a	✔	✔	✔	-	-	2.a	✘	-	-		✘	2.a	-	-	-		
			4.a	✘	!	!	4.a	✔			✔	✔	4.a	✔			✔	-				
		4.a		✘	4.b	!	!	!	✘	-	4.b	✔	✔	✔			4.b	-	-	-		
					4.c	-	-	-			4.c	-	-	-			4.c	-	-	-		
NS02 Otter trawls/seines ≥100–<120mm		4.b		-	2.a	-	-	-	✘	✘	2.a	-	-	-					2.a	-	-	-
					4.a	✘	!	!			4.a	✔	!	✔					4.a	✔	✔	-
		4.c		-	4.b	✘	✘	✘	-	-	4.b	✘	✘	✘					4.b	✘	✔	✔
					4.c	✘	!	-			4.c	✘	✘	✘					4.c	-	-	-
NS03 Otter trawls/ seines ≥70-<100mm	NS02	4.a			4.a	✘	✘	✘			4.a		✘	✘	✘	✘	4.a	-	-	-		
		4.b			4.b	✘	✘	✘			4.b		✘	✘			✘	4.b	✔	✘	✘	
		4.c			4.c	✘	-	✘			4.c		✘	✘			✘	4.c	-	✘	-	
NS04 Otter trawls/seines ≥ 120mm	NS04	3.a			3.a	✘	✘	✘			3.a	✘	✘	✘	✔	!	3.a	-	-	-		
NS05 Otter trawls/seines ≥90-<120mm		3.a				3.a	✘	✘			✘			3.a	✘	✘	✘	✔	!	3.a	✔	!
NS06 Otter trawls/seines ≥70 - <90mm	NS05	3.a				3.a	✘	✘	✘					3.a		✘	✘	-	-	3.a	✘	✘

⁷ [Executive Summary NS LO Compliance Evaluation Report August 2019 \(europa.eu\)](https://europa.eu)

Table 16. Cont.

FS	Old FS	Area	COD					PLE					SOL				
			2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
NS07 Otter trawls/seines ≥35 - <70mm	NS03	3.a			✓	✓	✓			✗	✓	✓		✗	✓	✓	-
NS08 Beam trawls ≥ 120mm	NS06	3.a			-	!	✓			✗	!	!			-	✓	-
		4.a		✓	-	!	-	✓	✓	✗	✗	-		-	-	-	-
		4.b			-	!	✗			!	!	✗			✓	✓	✓
NS09 Beam trawls ≥80-<120mm	NS07	4.b			!	!	✗				✗	✗		!	✓	!	!
		4.c			!	✗	!				✗	✗		!	!	✗	✗
NS10 Gillnets ≥ 120mm	NS08	3.a			✓	✓	-				✓	-		✓	-	✗	✗
		4.a		✓	-	-	-				-	-			-	-	-
		4.b			-	-	-				-	-			-	-	-
		4.c			-	-	-				-	-			-	-	-
NS11 Gillnets ≥90-<120mm	NS9	3.a			-	-	✗				-	-		✓	-	!	-
		4.a		✓	-	-	-				-	-			-	-	-
		4.b			-	-	-				-	-			-	-	-
		4.c			-	-	-				-	-			-	-	-
NS12 Gillnets <90mm	NS10	3.a			-	-	-				-	-		✓	-	-	-
		4.a		✓	-	-	-				-	-			-	-	-
		4.b			-	-	-				-	-			-	-	-
		4.c			-	-	-				-	-			-	-	-
NS13 Trammel nets	NS11	3.a			-	✗	✗				✗	-			-	!	!
		4.a		✓	-	-	-				-	-		✓	-	-	-
		4.b			-	-	-				-	-			-	-	-
		4.c			-	-	-				-	-			-	-	-
NS14 Lines	NS12	3.a			-	-	-			-	-	-			-	-	-
		4.a		✓	-	✓	-			-	-	-			-	-	-
		4.b			-	-	-			-	-	-			-	-	-
		4.c			-	-	-			-	-	-			-	-	-

5 Conclusions and recommendations

Three different sources of data have been used to estimate discard levels in this evaluation. Information from the LH (Method 1) is prioritised over that obtained from Method 2 because of the difficulties encountered with the accurate allocation of catches (and discards) to a given FS when conducting the analysis of the STECF data or when using the discard information provided in the ICES advice which is given at stock level. Information from the LH is also prioritised because it has been collected specifically to evaluate compliance, which is not the case for the scientific estimates of discards. Given this constraint and the lack of information on the number of samples used to infer the precision of the given estimates, Method 2 has been used, when possible, only to support the estimates obtained by Method 1. However, the number of LHs available for this evaluation has decreased over the study period (from 193 in 2018, to 115 in 2019 to 79 in 2020), so that in some FS/areas it was not possible to evaluate compliance based solely on the LH. In addition, when only less than five LH were available or the estimates obtained were imprecise, the evaluation of compliance also takes into account the information from Method 2.

Additional differences between both methods are related with the consideration of the discarding of fish above the MCRS which is not taken into account in Method 1 but could be considered in Method 2 since STECF and ICES report total discard figures. High-grading had been considered an important issue for COD in the North Sea (EFCA 2017a, b) and for PRA, and could also affect other stocks, such as those of PLE. Quantifying this component of the catch requires access to appropriate reference data (for example, LH with information on grade sizes in the catch to compare with sale notes) as it has been done for PRA in the present report. Other sources of reference data used in the past were the sale notes from vessels equipped with EM systems. The possible availability of this information in the future could allow the estimation of this component of the discards.

An additional issue, which had already been discussed in the previous evaluation of compliance for the NS, is the difficulty of incorporating into the calculations of illegal discarding over and beyond the provisions of the different exemptions available for the species of interest. These exemptions, in the form of *de minimis* or survivability allow that some proportion of the fish caught (in some cases, the BMS part of the catch, in others, all catches) can be legally discarded. In the present report, reported discards in the logbooks (as DIM, DIS or BMS) have been considered when calculating the illegal discard ratios, both in reporting the results of Method 1 as when interpreting the results of Method 2. Those discards which have not been reported have been considered illegal since there is the requirement to report all discards even if the fisheries had exemptions available.

These issues mentioned above should be considered when interpreting the results on the current compliance evaluation and when comparing the results with those obtained by the previous evaluation which incorporated estimates of high-grading for COD for those areas and FS for which reference data were available (NS01 in division 4.a and NS04).

For **COD**, in NS01 (otter trawls/seines ≥ 120 mm) in division 4.a, data available indicate that compliance have improved in 2019 and 2020 in relation to 2018. Although it should be noted that the lack of LH implies that the compliance evaluation given to this division is based on the scientific information. For NS02 (otter trawls/seines ≥ 100 - <120 mm) in division 4.a, compliance in 2019 and 2020 has again improved in relation to 2018 and it is now assessed at medium levels based only on the STECF information, for which the information on the sample representativeness is unknown. For both NS04 (otter trawls/seines ≥ 120 mm) and NS05 (otter trawls/seines ≥ 90 - <120 mm), it appears that compliance has remained stable at low levels since 2018. The same low compliance values were considered for all divisions of NS03 (to note that the species was not subject to the LO in these FS before 2018). For the remaining FS for which compliance could be evaluated, good compliance was considered for NS07 (otter trawls/seines ≥ 35 - <70 mm) in all years while medium compliance levels were considered for division 4.b of NS09 in 2018 and 2019 and low compliance levels in 2020. Medium compliance levels were also considered for division 4.c of this FS in 2018 and 2020 while in 2019 compliance was assessed as low.

For **PLE**, and for the main FS exploiting it (NS09, beam trawls ≥ 80 - <120 mm and NS08, beam trawls ≥ 120 mm) compliance remained at low levels in 2019 and 2020 for NS09 (PLE was not subject to the LO in this FS before 2019). For NS08 division 4.b compliance appeared to have worsened in 2020 when compared with 2018 and 2019 although it should be noted that the evaluation of compliance of 2020 is based on the scientific estimates due to the low number of LH available. For division 3.a compliance remains at medium levels since 2019 while in 2018 the compliance was low. The previous evaluation had provided high compliance levels for this FS. For other active gears such as NS02 (otter trawls/seines ≥ 100 - <120 mm), information for division 4.b indicate low compliance levels for the 3 years for which data are available (2018-2020), with information on discards being only available from the STECF. For NS01 (otter trawls/seines ≥ 120 mm), and for divisions 4.a and 4.b, compliance has remained stable at good levels since 2018. For NS04 (otter trawls/seines ≥ 120 mm) and NS05 (otter trawls/seines ≥ 90 - <120 mm), low compliance levels were estimated for 2018-2020 (the species was not subject to the LO in these FS before 2018). For the remaining FS no information on compliance is available for the whole period to determine trends.

For **SOL** and for the main FS exploiting it (NS05 otter trawls/seines ≥ 90 - < 120 mm, NS08 beam trawls ≥ 120 mm and NS09 beam trawls ≥ 80 - < 120 mm), compliance appeared to have remained stable at good levels in NS08 in division 4.b during the period analysed (2018-2020). For NS05 (otter trawls/seines ≥ 90 - < 120 mm), compliance has fluctuated between high (in 2016, 2018 and 2020) and medium levels (in 2017 and 2019). For NS09, compliance seemed to have worsened in 2019 and 2020 when compared with previous years for division 4.c, where most of the catches were reported. However, it should be noted that the 2019 and 2020 compliance estimates were derived from the scientific estimates of discards and not from the LH, as it was the case for the previous years. For division 4.b compliance has been stable at medium levels over the period analysed, with the exception of 2018 when compliance was assessed as high. For the remaining FS where catches are reported (although at lower levels), no information on compliance is available for the whole period to determine trends.

For **PRA**, discards calculated when using the information provided by the STECF data appeared to remain stable at medium levels for the FS reporting most catches (NS07 otter trawls/seines ≥ 35 - < 70 mm). However, high-grading is evident when looking at the difference in sizes between the LH carried out in SE and the sale notes and compliance, based on these high-grading figures, has been assessed as low for the years 2019 and 2020.

Final remarks

1. This evaluation has been made using three methods as agreed with the CEG. Method 1, which uses discard data derived from direct observations in the form of LH inspections, is the preferred method to determine compliance but there were not enough last haul inspections carried out for all the areas and fleet segments under consideration. This was also the case in the previous evaluation and reflects the difficulty of performing inspections at sea, a problem that has been made worse in 2020 due to the restrictions imposed by the COVID-19 pandemic.
2. Method 2, the use of scientific discard estimates, has been used in those cases where no, or very few LH were available instead. However, determining compliance using this information, which was collected to meet a different objective, is problematic.
3. Method 3, which uses the trends in suspected infringements (or lack of) issued for non-compliance with the LO, provided very little additional information on compliance. This is due

to the difficulties in detecting illegal discarding during an inspection at sea because of the variability in discard patterns and the limited tools for monitoring.

Recommendations

Lack of appropriate verified data has and continues to be a recurrent problem when evaluating compliance, matched with the lack of proper control tools and systems to detect infringements related with the LO. To solve the lack of verified data, the introduction of EM systems and/or control observers in some of these segments would facilitate the collection of reliable reference data. EM systems would also serve a dual purpose, not only as a tool to improve the reference data available but also as a control and monitoring tool for effective enforcing the LO, especially since traditional control tools have proven to be inefficient in enforcing the LO.

In addition, the level of LH sampling needs to be increased, in order to obtain sufficient numbers of LH to be able to evaluate compliance more accurately. Where LH inspections occurred, an analysis of the verified catches, ideally from a follow up land inspection or, if not possible, by the cross-check of the logbook vs. sales notes / landing declaration of trips, should also be systematically carried out.

The use of other control and monitoring tools, such as RPAS combined with documentary checks, could also help, in some cases, obtaining a better picture of compliance.

Additional recommendations related with the gathering of data are:

1. In the short term, a more detailed look into the STECF data could offer additional insights into discarding patterns, for example by comparing the sampled length frequencies and the data collected as part of the control procedures (i.e., the length frequencies in sale notes) to determine if discarding of some length classes could be taking place.
2. Another possible source of valuable information would be obtaining the catch data based on haul-by-haul recording. This will facilitate the gathering of discard and other catch data. In addition, it could have a deterrence effect. It should be noted that some MS already have this requirement at national level (e.g., DK). Noting that haul-by-haul reporting will become compulsory for all EU catching vessels > 12 m two years from the entry into force of the revised EU Control Regulation.

Finally, given the important role of the fishing industry in improving compliance, it is appropriate to present the results of this compliance evaluation exercise to the fishing sector and relevant stakeholders. The organisation of a joint workshop on LO control, monitoring, and compliance to

present and discuss the results of this compliance evaluation and exchange views with the industry is the final step of this process, as included in the multiannual workplan of MS regional group.

References

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EFCA. 2017b. Composition of grade-size as an indicator of high-grading - Analysis on grade-size of cod, haddock, hake, saithe, and whiting in sales notes in the North Sea in 2016. European Fisheries Control Agency.

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Annex 1. 2022 North Sea Demersal Fleet Segmentation

Fleet segment definition and equivalence with segment codes used in previous years

Main Group	Segment Code	Segment name	Gears	Mesh size	Areas	2015	2016	2017
Active	NS01	Otter trawls/Seines ≥ 120	OTB, OTT, TBN, PTB, SDN, SSC, SPR, OT, TBS, OTM, PTM, TMS, TM, TX, TB, SX, SV	≥ 120 mm	2a, 4a, 4b, 4c	NS01		
	NS02	Otter trawls/Seines 100-120		≥ 100 and < 120 mm				
	NS03	Otter trawls/Seines 80 – 100		≥ 80 and < 100 mm	4a, 4b, 4c	NS02*		
	NS04	Otter trawls/Seines ≥ 120		≥ 120 mm	3a	NS04		
	NS05	Otter trawls/Seines 90 – 120		≥ 90 and < 120 mm				
	NS06	Otter trawls/Seines 70 – 90		≥ 70 and < 90 mm	3a	NS05		
	NS07	Otter trawls/Seines 35 -70		≥ 35 and < 70 mm	3a	NS03		
	NS08	BT1 Beam trawls ≥ 120	TBB	≥ 120 mm	3a, 4a, 4b	NS06	NS07	
	NS09	BT2 Beam trawls 80- 120		≥ 80 and <120 mm	4b, 4c	NS07	NS08	
Passive	NS10	GN1 Gillnets ≥ 120	GN, GNS, GND, GNC, GTN, GNF, GEN	≥ 120 mm	3a, 4a, 4b, 4c	NS08	NS09	
	NS11	GN2 Gillnets 90-120		≥ 90 and <120 mm	3a, 4a, 4b, 4c	NS09	NS10	
	NS12	GN3 Gillnets < 90		<90 mm	3a, 4a, 4b, 4c	NS10	NS11	
	NS13	GTR1 Trammel nets	GTR	All	3a, 4a, 4b, 4c	NS11	NS12	
	NS14	LL Lines	LL, LLS, LLD, LTL, LX, LHP, LHM	All	3a, 4a, 4b, 4c	NS12	NS13	
Others	NS15	Others gear not included in segments 1-14		All	2a, 3a, 4a, 4b, 4c	NS13	NS14	

* Partial correspondence since NS02 in 2015-2017 (≥ 70 and < 100 mm)

Annex 2. Survivability and *De minimis* exemptions for COD, PLE and SOL in the North Sea in 2018, 2019 and 2020.

An * indicates partial correspondence with a EFCA 2022 FS

Species	Year	Exemption Conditions			
		Survivability	Corresponding fleet segments	<i>De Minimis</i>	Corresponding fleet segments
COD	2018	Nil		ICES Division 3.a: gear OTB, TBN fishing for Norway lobster, mesh size ≥ 70 mm equipped with a species-selective grid with bar spacing of maximum 35 mm <i>"a combined quantity of common sole, haddock, whiting, cod and saithe below minimum conservation reference sizes, which shall not exceed 4% of the total annual catches of Norway lobster, common sole, haddock, whiting and Northern prawn, cod and saithe"</i>	NS04, NS05, NS06
				ICES Division 3.a: gear OTB, fishing for Northern prawn, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>"a combined quantity of common sole, haddock, whiting, cod, plaice and saithe below minimum conservation reference sizes, which shall not exceed 1% of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe and plaice and Northern prawn"</i>	NS04, NS05, NS06, NS07
				ICES Division 4.c: gear OTB, OTT, SDN, SSC in mixed demersal fishery, mesh size 70-99 mm <i>"a combined quantity of whiting and cod below minimum conservation reference sizes, which shall not exceed 6% of the total annual catches of Norway lobster, haddock, sole, Northern prawn, whiting, plaice, saithe and cod; the maximum amount of cod that may be discarded shall be limited to 2% of those total annual catches"</i>	NS03
	2019	Nil		ICES Division 3.a: gear OTB, TBN fishing for Norway lobster, mesh size ≥ 70 mm equipped with a species-selective grid with bar spacing of maximum 35 mm <i>"a combined quantity of common sole, haddock, whiting, cod and saithe below minimum conservation reference sizes, which shall not exceed 4% of the total annual catches of Norway lobster, common sole, haddock, whiting and Northern prawn, cod and saithe"</i>	NS04, NS05, NS06

				ICES Division 3.a: gear OTB, fishing for Northern prawn, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>"a combined quantity of common sole, haddock, whiting, cod, plaice, saithe, herring, Norway pout, greater silver smelt and blue whiting below minimum conservation reference size, which shall not exceed 5 % of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe, plaice, Northern prawn, hake, Norway pout, greater silver smelt, herring and blue whiting"</i>	NS04, NS05, NS06, NS07
				ICES Division 4.c: gear OTB, OTT, SDN, SSC in mixed demersal fishery, mesh size 70-99 mm <i>"a combined quantity of whiting and cod below minimum conservation reference sizes, which shall not exceed 6% of the total annual catches of Norway lobster, haddock, sole, Northern prawn, whiting, plaice, saithe and cod; the maximum amount of cod that may be discarded shall be limited to 2% of those total annual catches"</i>	NS03*
	2020	Nil		ICES Division 3.a: gear OTB, OTT, TBN fishing for Norway lobster, mesh size ≥ 70 mm equipped with a species-selective grid with bar spacing of maximum 35 mm <i>"a combined quantity of common sole, haddock, whiting, cod and saithe below minimum conservation reference sizes, which shall not exceed 4% of the total annual catches of Norway lobster, common sole, haddock, whiting and Northern prawn, cod and saithe"</i>	NS04, NS05, NS06
				ICES Division 3.a: gear OTB, OTT fishing for Northern prawn, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>"a combined quantity of common sole, haddock, whiting, cod, plaice, saithe, herring, Norway pout, greater silver smelt and blue whiting below the minimum conservation reference size, which shall not exceed 5% of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe, plaice, Northern prawn, hake, Norway pout, greater silver smelt, herring and blue whiting"</i>	NS04, NS05, NS06, NS07
				ICES Division 4.c: gear OTB, OTT, SDN, SSC in mixed demersal fishery, mesh size 70-99 mm <i>"a combined quantity of whiting and cod below the MCRS, which shall not exceed 5% in 2020 and 2021 of the total annual catches of whiting and cod; the maximum amount of cod that may be discarded shall be limited to 2% of those total annual catches"</i>	NS03*

				ICES Divisions 4.a and 4.b: gear OTB, OTT, SDN, SSC in mixed demersal fishery, mesh size 70-99 mm <i>"a combined quantity of whiting and cod below the MCRS, which shall not exceed 6 % in 2020 of the total annual catches of whiting and cod; the maximum amount of cod that may be discarded shall be limited to 2% of those total annual catches"</i>	NS03*
PLE	2018	Nil		ICES Division 3.a: gear OTB, fishing for PRA, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>"a combined quantity of common sole, haddock, whiting, cod, plaice and saithe below MCRS, which shall not exceed 1% of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe and plaice and Northern prawn"</i>	NS04, NS05, NS06, NS07
	2019	ICES Division 3.a and Subarea 4: - PLE caught by GNS, GTR, GTN, GEN; - PLE caught by Danish seines; - PLE caught by OTB, PTB with mesh size ≥ 120 mm when targeting flatfish or roundfish in winter months (1 st November-30 th April)	NS10, NS11, NS12, NS13, NS01, NS04,	ICES Division 3.a: gear OTB, fishing for PRA, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>"a combined quantity of common sole, haddock, whiting, cod, plaice, saithe, herring, Norway pout, greater silver smelt and blue whiting below minimum conservation reference size, which shall not exceed 5 % of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe, plaice, Northern prawn, hake, Norway pout, greater silver smelt, herring and blue whiting"</i>	NS04, NS05, NS06, NS07
		Union waters of Division 2.a and Subarea 4, PLE catches below MCRS made with 80-119 mm TBB	NS09	ICES Subarea 4: bottom trawls with mesh size 80-99 mm fishing for NEP equipped with a SepNep <i>"a quantity of plaice below the MCRS, which shall not exceed 3% of the total annual catches of saithe, plaice, haddock, whiting, cod, Northern prawn, common sole and Norway lobster"</i>	NS03
	2020	Division 3.a and Subarea 4: - PLE caught by GNS, GTR, GTN, GEN; - PLE caught by Danish seines; - PLE caught by OTB, PTB with mesh size ≥ 120 mm when targeting flatfish or roundfish	NS10, NS11, NS12, NS13, NS01, NS04,	Union waters of ICES Division 3.a: gear OTB, OTT fishing for PRA, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>"a combined quantity of common sole, haddock, whiting, cod, plaice, saithe, herring, Norway pout, greater silver smelt and blue whiting below the MCRS, which shall not exceed 5% of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe, plaice, Northern prawn, hake, Norway pout, greater silver smelt, herring and blue whiting"</i>	NS04, NS05, NS06, NS07
		Union waters of Division 3.a PLE caught by OTB, PTB with a mesh size ≥ 90 -99 mm equipped with Seltra panel targeting flatfish or roundfish	NS05* (90-119 mm)	Subarea 4: bottom trawls with mesh size 80-99 mm fishing for NEP equipped with a SepNep	NS03

				<i>"a quantity of plaice below the MCRS, which shall not exceed 3% of the total annual catches of saithe, plaice, haddock, whiting, cod, Northern prawn, common sole and Norway lobster"</i>	
		Subarea 4 PLE caught by OTB, PTB with a mesh size \geq 80-99 targeting flatfish or roundfish	NS03* (70-99 mm)	Union waters of Divisions 4.b and 4.c in fisheries for brown shrimp by vessels using beam trawls	
		<p>Subarea 4, PLE catches below MCRS made with 80-119 mm TBB:</p> <ul style="list-style-type: none"> - for gears equipped with the flip-up rope or Benthos release panel and caught by vessels with an engine power $>$ 221 kW; or - by the vessels of MS implementing the roadmap for the Fully Documented Fisheries <p>The exemption shall also apply for flatfish caught TBB by vessels with an engine power \leq 221 kw or $<$ 24 m in length overall, which are constructed to fish in the 12 miles zone, if the average trawl duration is $<$ 90 minutes</p>	NS09	<i>"a quantity of all species subject to catch limits, which shall not exceed 7% in 2020 and 6 % in 2021 of the total annual catches of all species subject to catch limits made in those fisheries"</i>	
SOL	2018	ICES Division 4.c: SOL below MCRS caught with OTB with mesh size 80 – 99 mm; within 6 miles of the coast, but outside nursery areas, by vessels of max length 10 m and 221 kW maximum power, in depths of 30 m or less and towing gear for no longer than 1.30 hours	NS03	ICES Division 3.a: gear OTB, TBN, fishing for NEP, mesh size \geq 70 mm, equipped with a species-selective grid with bar spacing maximum 35 mm <i>"a combined quantity of common sole, haddock, whiting, cod and saithe below MCRS, which shall not exceed 4% of the total annual catches of Norway lobster, common sole, haddock, whiting and Northern prawn, cod and saithe"</i>	NS04, NS05, NS06
				ICES Subarea 4, Division 3.a and Union waters of Division 2.a: fisheries by vessels using GN, GNS, GND, GNC, GTN, GTR, GEN, GNF <i>"a quantity of common sole which shall not exceed 3% of the total annual catches of that species"</i>	NS10, NS11, NS12, NS13
				ICES Division 3.a: gear OTB, fishing for PRA, mesh size \geq 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>"a combined quantity of common sole, haddock, whiting, cod, plaice and saithe below MCRS, which shall not exceed 1% of the total"</i>	NS04, NS05, NS06, NS07

				<i>annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe and plaice and Northern prawn</i>	
				ICES Subarea 4: fisheries by vessels using TBB mesh size 80 – 119 mm with increased mesh size in the extension of the beam trawl, Flemish panel <i>“a quantity of common sole below MCRS, which shall not exceed 6% of the total annual catches of that species”</i>	NS09
	2019	Union waters of ICES Division 4.c: SOL below MCRS caught with OTB with mesh size 80 – 99 mm; within 6 miles of the coast, but outside nursery areas, by vessels of max length 10 m and 221 kW maximum power, in depths of 30 m or less and towing gear for no longer than 1.30 hours	NS03	Union waters of Division 3.a: gear OTB, TBN, fishing for NEP, mesh size ≥70 mm, equipped with a species-selective grid with bar spacing maximum 35 mm <i>“a combined quantity of common sole, haddock, whiting, cod and saithe below MCRS, which shall not exceed 4% of the total annual catches of Norway lobster, common sole, haddock, whiting and Northern prawn, cod and saithe”</i>	NS04, NS05, NS06
				Union waters of Divisions 2.a and 3.a and Subarea 4: fisheries for SOL using GN, GNS, GND, GNC, GTN, GTR, GEN, GNF <i>“a quantity of common sole which shall not exceed 3% of the total annual catches of that species”</i>	NS10, NS11, NS12, NS13
				Union waters of Division 3.a: gear OTB, fishing for PRA, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet <i>“a combined quantity of common sole, haddock, whiting, cod, plaice and saithe below MCRS, which shall not exceed 1 % of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe and plaice and Northern prawn”</i>	NS04, NS05, NS06, NS07
				Union waters of Subarea 4: fishing for SOL with TBB, mesh size 80 – 119 mm equipped with a Flemish panel <i>“a quantity of common sole below MCRS, which shall not exceed 6 % of the total annual catches of that species in 2019 and 5 % the rest of the period”</i>	NS09
	2020	Union waters of ICES Division 4.c: SOL below MCRS caught with OTB with a cod-end mesh size of 80-99 mm within 6 nautical miles of the coast but outside identified nursery areas, by vessels of max length 10 m and 221 kW maximum power, in depths of 30 m or less and towing gear for no longer than 1.30 hours	NS03	Union waters of Division 3.a: gear OTB, OTT, TBN, fishing for NEP, mesh size ≥70 mm, equipped with a species-selective grid with bar spacing maximum 35 mm <i>“a combined quantity of common sole, haddock, whiting, cod, saithe and hake below the MCRS, which shall not exceed 4% of the total annual catches of Norway lobster, common sole, haddock, whiting and Northern prawn, cod, saithe and hake”</i>	NS04, NS05, NS06

			<p>Union waters of Divisions 2.a and 3.a and Subarea 4: fisheries for SOL using GN, GNS, GND, GNC, GTN, GTR, GEN, GNF</p> <p><i>“a quantity of common sole which shall not exceed 3% of the total annual catches of that species”</i></p>	NS10, NS11, NS12, NS13
			<p>Union waters of Division 3.a: gear OTB, OTT fishing for PRA, mesh size ≥ 35 mm equipped with a species selective grid with bar spacing of maximum 19 mm, with unblocked fish outlet</p> <p><i>“a combined quantity of common sole, haddock, whiting, cod, plaice, saithe, herring, Norway pout, greater silver smelt and blue whiting below the MCRS, which shall not exceed 5% of the total annual catches of Norway lobster, common sole, haddock, whiting, cod, saithe, plaice, Northern prawn, hake, Norway pout, greater silver smelt, herring and blue whiting”</i></p>	NS04, NS05, NS06, NS07
			<p>Union waters of Subarea 4: fishing for SOL with TBB, mesh size 80 – 119 mm equipped with a Flemish panel</p> <p><i>“a quantity of common sole below MCRS, which shall not exceed 5% of the total annual catches of that species”</i></p>	NS09

Annex 3. Detailed description of the methodology used to estimate the discard ratio

BMS discards ratio

The generic calculations are presented below, where f denotes reference data and n denotes non-reference. Considering the BMS ratio, $bmsR_f$, of the reference data as:

$$\text{Equation 1} \quad bmsR_f = \frac{BMS_f}{BMS_f + LSC_f}$$

The catch categories ratios (the BMS ratio and the LSC) of the reference data are assumed to be representative of the fleet segment. The ratio of LSC on non-reference data ($lscR_n$), is assumed to be equal to the LSC ratio of the reference data ($lscR_f$).

$$\text{Equation 2} \quad lscR_f = lscR_n = \frac{LSC_n}{LSC_n + BMS_n}$$

Considering that:

$$\text{Equation 3} \quad lscR_f = 1 - bmsR_f$$

Expanding the right term of Equation 3 and also using Equation 2:

$$\text{Equation 4} \quad 1 - bmsR_f = \frac{LSC_n}{LSC_n + BMS_n}$$

Note that the BMS_n in the denominator of the second term of Equation 4 has two components: i) the BMS that is declared (i.e., retained, landed and reported, $rBMS_n$) and ii) the BMS that is not declared (unreported and not landed, $uBMS_n$). The latter is unknown. Equation 4 can be re-written so that BMS_n is split in the two components mentioned above, as:

$$\text{Equation 5} \quad 1 - bmsR_f = \frac{LSC_n}{LSC_n + (rBMS_n + uBMS_n)}$$

which corresponds to:

$$\text{Equation 6} \quad uBMS_n = \frac{bmsR_f \cdot LSC_n}{(1 - bmsR_f)} - rBMS_n$$

Having an estimate of the discarded component, the discard ratio, uDR_n , is then calculated as:

$$\text{Equation 7} \quad uDR_n = \frac{uBMS_n}{uBMS_n + rBMS_n + LSC_n}$$

Equation 7 can be written directly as a function of the BMS discard ratio of reference data as:

$$\text{Equation 8} \quad uDR_n = \left(\frac{DR_f \cdot LSC_n}{1 - DR_f} - rBMS_n \right) \cdot \left(\frac{1 - DR_f}{LSC_n} \right)$$

Annex 4. Logbook information (2018-2020)

Percentage of the total catch represented by each discard category (BMS, DIS, DIM) in relation to the total catch reported in the logbooks by fleet segment (FS) and area, for each of the species under this evaluation.

rBMS=BMS reported divided by the total catch and expressed as a %; rDIM and rDIS were similarly calculated; rTot= sum of reported BMS+DIM+DIS divided by the total catch as expressed as a %.

			2018				2019				2020			
Species	FS	AREA	rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot
COD	NS01	27.2.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.2	0.1	0.0	0.0	0.1
		27.4.b	0.3	0.0	0.0	0.3	0.4	0.0	0.0	0.4	0.3	0.0	0.0	0.3
		27.4.c	0.0	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0
	NS02	27.2.a	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-	-
		27.4.a	0.6	0.0	0.0	0.6	0.3	0.0	0.0	0.3	0.2	0.0	0.0	0.2
		27.4.b	0.0	0.0	0.4	0.5	0.1	0.0	0.0	0.1	0.4	0.0	0.0	0.4
		27.4.c	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS03	27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.b	0.2	0.0	0.0	0.3	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS04	27.3.a	0.3	0.0	0.0	0.3	0.2	0.0	0.0	0.2	0.6	0.0	0.0	0.6
	NS05	27.3.a	0.3	0.0	0.4	0.7	0.4	0.0	0.0	0.4	1.3	0.0	0.0	1.4
	NS06	27.3.a	0.1	0.0	0.0	0.1	1.7	0.0	0.0	1.7	0.3	46.2	0.0	46.5
	NS07	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS08	27.3.a	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.8	0.0	0.1	0.8
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	0.0	0.0	0.1	0.1	0.5	0.0	0.0	0.5	0.5	0.0	0.0	0.5
	NS09	27.4.b	0.0	0.0	0.3	0.3	0.6	0.0	0.0	0.6	0.2	0.0	0.0	0.2
		27.4.c	0.2	0.0	0.3	0.5	0.0	0.0	0.6	0.6	0.0	0.0	0.1	0.1
	NS10	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS11	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS12	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	-	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
	NS13	27.3.a	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.6	0.7	0.0	0.0	0.7
		27.4.b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS14	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.b	0.9	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	-	-	-	-

Annex 4 (Cont.)

Species	FS	AREA	2018				2019				2020			
			rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot
PLE	NS01	27.2.a	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-	-
		27.4.a	1.4	0.0	0.0	1.4	1.3	0.0	0.0	1.3	0.1	0.4	0.0	0.5
		27.4.b	0.2	0.0	0.0	0.2	0.3	0.0	0.3	0.5	0.3	0.4	0.9	1.6
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS02	27.2.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.a	0.6	0.0	0.0	0.6	0.1	0.0	0.0	0.1	0.4	0.0	0.0	0.4
		27.4.b	0.5	0.0	0.8	1.3	0.7	0.0	0.1	0.8	0.5	0.0	0.4	0.9
		27.4.c	0.5	0.0	0.1	0.6	0.7	0.0	0.0	0.7	1.0	0.0	0.0	1.0
	NS03	27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.b	0.5	0.0	5.0	5.5	1.8	0.0	0.6	2.3	0.6	0.0	0.3	0.9
		27.4.c	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.2	1.3	1.4
	NS04	27.3.a	0.5	0.0	0.0	0.5	0.5	0.0	2.8	3.3	0.2	0.0	4.5	4.7
	NS05	27.3.a	0.6	0.0	1.2	1.7	1.7	0.0	1.5	3.3	0.6	0.1	3.2	4.0
	NS06	27.3.a	0.1	0.0	0.0	0.1	29.4	0.0	4.7	34.0	5.3	0.2	0.6	6.1
	NS07	27.3.a	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.4	0.0	0.0	0.0	0.0
	NS08	27.3.a	0.6	0.0	0.6	1.2	0.8	0.0	0.0	0.8	0.7	0.0	0.1	0.8
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	0.2	0.0	3.3	3.5	0.6	0.0	0.2	0.7	0.5	0.0	1.1	1.6
	NS09	27.4.b	0.2	0.0	9.0	9.2	0.3	0.0	10.7	11.1	0.4	0.0	15.7	16.1
		27.4.c	0.2	0.0	14.5	14.7	0.3	0.0	15.6	15.9	0.6	0.0	14.7	15.3
	NS10	27.3.a	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS11	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
		27.4.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.b	0.0	0.0	0.0	0.0	0.5	0.0	0.2	0.7	0.0	0.0	0.8	0.8
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	0.0	0.0	0.0	0.0
	NS12	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
	NS13	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
		27.4.b	-	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS14	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	-	-	-	-	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	-	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-

Annex 4 (Cont.)

Species	FS	AREA	2018				2019				2020			
			rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot
SOL	NS01	27.2.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	-	-	-	-	0.0	0.0	0.0	0.0	-	-	-	-
	NS02	27.2.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.a	-	-	-	-	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.b	0.9	4.3	0.0	5.2	0.2	0.0	0.0	0.2	0.3	0.0	0.0	0.3
		27.4.c	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS03	27.4.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.b	0.3	0.0	0.0	0.3	0.2	0.2	0.0	0.4	0.2	0.0	0.0	0.2
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.0	0.0	0.8
	NS04	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0
	NS05	27.3.a	0.1	0.0	0.1	0.2	0.3	0.0	0.2	0.5	0.4	0.0	0.0	0.4
	NS06	27.3.a	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.0	2.5	0.0	2.6
	NS07	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS08	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
		27.4.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.b	0.0	1.8	0.4	2.2	0.0	0.0	0.1	0.1	0.0	0.0	0.4	0.4
	NS09	27.4.b	0.3	0.2	1.4	1.8	0.6	0.3	1.0	1.9	0.4	0.1	1.1	1.6
		27.4.c	0.6	0.0	1.2	1.8	0.5	0.0	1.0	1.5	0.5	0.0	0.6	1.2
	NS10	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
		27.4.a	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-	-
		27.4.b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS11	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS12	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		27.4.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-
	NS13	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.6
		27.4.b	-	-	-	-	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NS14	27.3.a	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.0
		27.4.a	-	-	-	-	-	-	-	-	-	-	-	-
		27.4.b	-	-	-	-	0.0	0.0	0.0	0.0	-	-	-	-
		27.4.c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-

Annex 4 (Cont.)

			2018				2019				2020			
Species	FS	AREA	rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot	rBMS	rDIM	rDIS	rTot
PRA	NS07	27.3.a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1

Annex 5. North Sea fleet segments correspondence with area/ gear type/ mesh size range in FDI database

NK = Not known mesh size range.

Combination of gear code “Gear_NS” (Table A), area “Area_NS” (Table B) and mesh size range “Mesh size” and assignation to EFCA fleet segments (FS).

Gear_NS	Area_NS	Mesh size	FS	Gear_NS	Area_NS	Mesh size	FS
GN	27.2.a	00D50	NS15	GT	27.3.a	220D250	NS13
GN	27.2.a	100D120	NS15	GT	27.3.a	250DXX	NS13
GN	27.2.a	120D220	NS15	GT	27.3.a	50D71	NS13
GN	27.2.a	150D220	NS15	GT	27.3.a	71D100	NS13
GN	27.2.a	250DXX	NS15	GT	27.4.a	120D220	NS13
GN	27.2.a	50D90	NS15	GT	27.4.a	71D100	NS13
GN	27.3.a	100D120	NS11	GT	27.4.a	NK	NS13
GN	27.3.a	10D31	NS12	GT	27.4.b	100D120	NS13
GN	27.3.a	120D220	NS10	GT	27.4.b	120D220	NS13
GN	27.3.a	220D250	NS10	GT	27.4.b	220D250	NS13
GN	27.3.a	250DXX	NS10	GT	27.4.b	250DXX	NS13
GN	27.3.a	31D50	NS12	GT	27.4.b	50D71	NS13
GN	27.3.a	50D71	NS12	GT	27.4.b	71D100	NS13
GN	27.3.a	71D100	NS11	GT	27.4.c	100D120	NS13
GN	27.3.a	NK	NS15	GT	27.4.c	120D220	NS13
GN	27.4.a	00D10	NS12	GT	27.4.c	220D250	NS13
GN	27.4.a	100D120	NS11	GT	27.4.c	250DXX	NS13
GN	27.4.a	10D31	NS12	GT	27.4.c	50D71	NS13
GN	27.4.a	120D220	NS10	GT	27.4.c	71D100	NS13
GN	27.4.a	220D250	NS10	GT	27.4.c	NK	NS13
GN	27.4.a	250DXX	NS10	LL	27.2.a	NA	NS15
GN	27.4.a	71D100	NS12	LL	27.2.a	NK	NS15
GN	27.4.b	00D10	NS12	LL	27.3.a	NA	NS14
GN	27.4.b	100D120	NS11	LL	27.4.a	NA	NS14
GN	27.4.b	10D31	NS12	LL	27.4.a	NK	NS14
GN	27.4.b	120D220	NS10	LL	27.4.b	NA	NS14
GN	27.4.b	220D250	NS10	LL	27.4.c	NA	NS14
GN	27.4.b	250DXX	NS10	LL	27.4.c	NK	NS14
GN	27.4.b	31D50	NS12	MIX	27.2.a	16D32	NS15
GN	27.4.b	50D71	NS12	MIX	27.2.a	32D80	NS15
GN	27.4.b	71D100	NS11	MIX	27.2.a	NA	NS15
GN	27.4.b	NK	NS15	MIX	27.2.a	NK	NS15
GN	27.4.c	100D120	NS11	MIX	27.3.a	00D16	NS15
GN	27.4.c	10D31	NS12	MIX	27.3.a	100D120	NS15
GN	27.4.c	120D220	NS10	MIX	27.3.a	10D31	NS15
GN	27.4.c	220D250	NS10	MIX	27.3.a	16D32	NS15
GN	27.4.c	250DXX	NS10	MIX	27.3.a	250DXX	NS15
GN	27.4.c	31D50	NS12	MIX	27.3.a	32D80	NS15
GN	27.4.c	50D71	NS12	MIX	27.3.a	NA	NS15
GN	27.4.c	71D100	NS11	MIX	27.3.a	NK	NS15
GT	27.2.a	100D120	NS15	MIX	27.4.a	16D32	NS15
GT	27.2.a	150D220	NS15	MIX	27.4.a	32D80	NS15
GT	27.3.a	100D120	NS13	MIX	27.4.a	NA	NS15
GT	27.3.a	10D31	NS13	MIX	27.4.a	NK	NS15
GT	27.3.a	120D220	NS13	MIX	27.4.b	00D10	NS15

Annex 5 (Cont.)

Gear_NS	Area_NS	Mesh size	FS
MIX	27.4.b	00D16	NS15
MIX	27.4.b	100D120	NS15
MIX	27.4.b	10D31	NS15
MIX	27.4.b	120D220	NS15
MIX	27.4.b	250DXX	NS15
MIX	27.4.b	31D50	NS15
MIX	27.4.b	32D80	NS15
MIX	27.4.b	50D71	NS15
MIX	27.4.b	71D100	NS15
MIX	27.4.b	NA	NS15
MIX	27.4.b	NK	NS15
MIX	27.4.c	NA	NS15
MIX	27.4.c	NK	NS15
OT	27.2.a	00D16	NS15
OT	27.2.a	100D110	NS02
OT	27.2.a	100DXX	NS01
OT	27.2.a	110D120	NS02
OT	27.2.a	120DXX	NS01
OT	27.2.a	32D70	NS15
OT	27.2.a	32D80	NS15
OT	27.2.a	80D100	NS15
OT	27.2.a	NK	NS15
OT	27.3.a	00D16	NS15
OT	27.3.a	100D110	NS05
OT	27.3.a	100D120	NS05
OT	27.3.a	110D120	NS05
OT	27.3.a	120DXX	NS04
OT	27.3.a	16D32	NS15
OT	27.3.a	32D80	NS07
OT	27.3.a	70S90	NS06
OT	27.3.a	80D100	NS05
OT	27.3.a	NK	NS15
OT	27.4.a	00D16	NS15
OT	27.4.a	100D110	NS02
OT	27.4.a	100DXX	NS01
OT	27.4.a	100D120	NS02
OT	27.4.a	110D120	NS02
OT	27.4.a	120DXX	NS01
OT	27.4.a	16D32	NS15
OT	27.4.a	32D80	NS15
OT	27.4.a	70D80	NS03
OT	27.4.a	80D100	NS03
OT	27.4.a	NK	NS15
OT	27.4.b	00D16	NS15

Gear_NS	Area_NS	Mesh size	FS
OT	27.4.b	100D110	NS02
OT	27.4.b	100D120	NS02
OT	27.4.b	110D120	NS02
OT	27.4.b	120DXX	NS01
OT	27.4.b	16D32	NS15
OT	27.4.b	32D80	NS15
OT	27.4.b	80D100	NS03
OT	27.4.b	NK	NS15
OT	27.4.c	00D16	NS15
OT	27.4.c	100D110	NS02
OT	27.4.c	100D120	NS02
OT	27.4.c	110D120	NS02
OT	27.4.c	120DXX	NS01
OT	27.4.c	16D32	NS15
OT	27.4.c	32D80	NS03
OT	27.4.c	80D100	NS03
OT	27.4.c	NK	NS15
TBB	27.2.a	16D32	NS15
TBB	27.3.a	00D16	NS15
TBB	27.3.a	100D110	NS15
TBB	27.3.a	100D120	NS15
TBB	27.3.a	120DXX	NS08
TBB	27.3.a	16D32	NS15
TBB	27.4.a	00D16	NS15
TBB	27.4.a	100D110	NS15
TBB	27.4.a	120DXX	NS08
TBB	27.4.a	16D32	NS15
TBB	27.4.a	32D80	NS15
TBB	27.4.a	80D100	NS15
TBB	27.4.b	00D16	NS15
TBB	27.4.b	100D110	NS09
TBB	27.4.b	100D120	NS09
TBB	27.4.b	110D120	NS09
TBB	27.4.b	120DXX	NS08
TBB	27.4.b	16D32	NS15
TBB	27.4.b	32D80	NS15
TBB	27.4.b	80D100	NS09
TBB	27.4.c	00D16	NS15
TBB	27.4.c	100D110	NS09
TBB	27.4.c	100D120	NS09
TBB	27.4.c	120DXX	NS15
TBB	27.4.c	16D32	NS15
TBB	27.4.c	32D80	NS15
TBB	27.4.c	80D100	NS09

Annex 6. ICES discard estimates by stock

Stock	Source	Comments	2018				2019				2020			
			Total catch (t)	Discards (t)	Official BMS landings	Discard ratio (%)	Total catch (t)	Discards (t)	BMS landings	Discard ratio (%)	Total catch (t)	Discards (t)	BMS landings	Discard ratio (%)
Cod in subareas 1 and 2 (NE Arctic)	cod.27.1-2 (ices.dk)	Proportion of landings: 71-74% (demersal trawls) and 26-29% (other gear types)	778627	Negligible	-	<5	692609	Negligible	-	<5	692903	Negligible	-	<5
Cod in SD 21 (Kattegat)	cod.27.21 (ices.dk)	Proportion of landings: 87-90% (active gears) and 10-13% (passive gears)	284	72	-	25.4	123	40	-	32.5	97	61	-	62.9
Cod in subarea 4, division 7.d, and SD 20 (North Sea, eastern English Channel and Skagerrak)	cod.27.47d20 (ices.dk)	Proportion of landings: 75% (demersal trawls and seines >100 mm), 5.5-6.7% (demersal trawls 70-99 mm), 10.5-10.7% (gillnets), 2.5-4.5% (beam trawls), 4.5-4.6% (other gears)	48620	7988*	12	Unwanted catch ratio (%): 16.4	32072	3613*	44	Unwanted catch ratio (%): 11.2	24224	4701^	36	19.4
Plaice in Subarea 4 (North Sea) and SD 20 (Skagerrak)	ple.27.420 (ices.dk)	Proportion of landings: 52% (beam trawl), 34% (otter trawl), 14% (other)	105786	47877	109	45.4	86091	37126	220	43.4	40562	38110	190	48.5
Sole in SD 20-24	sol.27.20-24 (ices.dk)	Proportion of landings: 58-65% (active gears) and 35-42% (passive gears)	441	7	-	1.6	427	8	-	1.9	436	12	-	2.8
Sole in subarea 4	sol.27.4 (ices.dk)	Proportion of landings: 90-94% (beam trawlers), 2.5-8.4% (gillnets & trammel nets), 1.5-2.5% (other gears)	12265	999	57	8.6	10607	1901	47	18.4	10515	1652	5	15.7
Northern shrimp in divisions 3.a and 4.a east (Skagerrak and Kattegat and northern NS in the Norwegian Deep)¹	pra.27.3a4a (ices.dk)	Proportion of landings: 100% trawls	3363	126	-	3.7	3352	189	-	5.6	3794	202	-	5.3

*Unwanted catch (includes discards minus the BMS landings from EU fleets officially reported in the logbooks);

^Discards include BMS landings;

¹the discard rate has been calculated using the landings and discards from the Swedish and Danish fleet solely.

Annex 7. Catches of COD, PLE, SOL and PRA by fleet segment/area

Data obtained from the logbook information submitted by MS in reply to the EFCA data calls.

Amount of COD, PLE, SOL and PRA reported caught (Catch, tons) by fleet segment (FS) and area and percentage of the total catch of the species reported that year (% of TC).

COD		2018		2019		2020	
FS	Area	Catch	% of TC	Catch	% of TC	Catch	% of TC
NS01 Otter trawls/seines ≥ 120 mm	27.2.a	3	0.0	7	0.03	3	0.1
	27.4.a	34450	80.4	15407	73.0	705	16.9
	27.4.b	709	1.7	492	2.3	281	6.8
	27.4.c	3	0.0	-	-	<1	0.0
NS02 Otter trawls/seines ≥100 - <120 mm	27.2.a	<1	0.0	-	-	-	-
	27.4.a	915	2.1	688	3.3	27	0.65
	27.4.b	127	0.3	51	0.2	117	2.8
	27.4.c	5	0.0	1	0.0	0.4	0.0
NS03 Otter trawls/seines ≥70 - <100 mm	27.4.a	106	0.3	90	0.4	8	0.2
	27.4.b	86	0.2	76	0.4	47	1.1
	27.4.c	29	0.1	17	0.1	15	0.4
NS04 Otter trawls/seines ≥ 120 mm	27.3.a	1378	3.2	907	4.3	547	13.1
NS05 Otter trawls/seines ≥90 - <120 mm	27.3.a	2280	5.3	1278	6.1	833	20.0
NS06 Otter trawls/seines ≥70 - <90 mm	27.3.a	3	0.0	1	0.0	1	0.0
NS07 Otter trawls/seines ≥35 - <70 mm	27.3.a	336	0.8	182	0.9	146	3.5
NS08 Beam trawls ≥ 120 mm	27.3.a	164	0.4	196	0.9	367	8.8
	27.4.a	11	0.0	1	0.0	-	-
	27.4.b	641	1.5	579	2.7	375	9.0
NS09 Beam trawls ≥80 - <120 mm	27.4.b	83	0.2	89	0.4	50	1.2
	27.4.c	99	0.2	51	0.2	31	0.8
NS10 Gillnets ≥ 120 mm	27.3.a	590	1.4	412	2.0	126	3.0
	27.4.a	56	0.1	22	0.1	-	-
	27.4.b	304	0.7	138	0.7	282	6.8
	27.4.c	3	0.0	1	0.0	<1	0.0
NS11 Gillnets ≥90 - <120 mm	27.3.a	3	0.0	<1	0.0	<1	0.0
	27.4.a	<1	0.0	3	0.0	-	-
	27.4.b	3	0.0	2	0.0	2.3	0.1
	27.4.c	10	0.0	2	0.0	<1	0.0
NS12 Gillnets <90 mm	27.3.a	4	0.0	4	0.0	1	0.0
	27.4.a	1	0.0	2	0.0	-	-
	27.4.b	-	-	<1	0.0	<1	0.0
	27.4.c	<1	0.0	<1	0.0	-	-
NS13 Trammel nets	27.3.a	121	0.3	53	0.3	25	0.6
	27.4.a	-	-	-	-	-	-
	27.4.b	107	0.3	67	0.3	110	2.7
	27.4.c	7	0.0	2	0.0	1	0.0
NS14 Lines	27.3.a	14	0.0	119	0.6	2	0.0
	27.4.a	167	0.4	151	0.7	20	0.5
	27.4.b	8	0.0	25	0.1	44	1.1
	27.4.c	1	0.0	<1	0.0	-	-
Total catch under evaluation		42827		21116		4169	

PLE		2018		2019		2020	
FS	Area	Catch	% of TC	Catch	% of TC	Catch	% of TC
NS01 Otter trawls/seines ≥ 120 mm	27.2.a	-	-	-	-	-	-
	27.4.a	3236	6.2	1325	3.4	30	0.1
	27.4.b	3085	5.9	1540	4.0	909	3.3
	27.4.c	<1	0.0	1	0.0	<1	0.0
NS02 Otter trawls/seines ≥100 - <120 mm	27.2.a	-	-	-	-	-	-
	27.4.a	179	0.3	113	0.3	<1	0.0
	27.4.b	11155	21.4	5917	15.3	3466	12.6
	27.4.c	45	0.1	11	0.0	10	0.0
NS03 Otter trawls/seines ≥70 - <100 mm	27.4.a	31	0.1	21	0.1	<1	0.0
	27.4.b	1558	3.0	2294	5.9	1478	5.4
	27.4.c	54	0.1	38	0.1	30	0.1
NS04 Otter trawls/seines ≥ 120 mm	27.3.a	1710	3.3	1806	4.7	1965	7.1
NS05 Otter trawls/seines ≥90 - <120 mm	27.3.a	2136	4.1	2042	5.3	2148	7.8
NS06 Otter trawls/seines ≥70 - <90 mm	27.3.a	2	0.0	1	0.0	2	0.0
NS07 Otter trawls/seines ≥35 - <70 mm	27.3.a	6	0.0	5	0.0	7	0.0
NS08 Beam trawls ≥ 120 mm	27.3.a	2007	3.9	3488	9.0	4092	14.8
	27.4.a	7	0.01	5	0.0	-	-
	27.4.b	5474	10.5	5161	13.4	2621	9.5
NS09 Beam trawls ≥80 - <120 mm	27.4.b	11240	21.6	7464	19.3	4170	15.1
	27.4.c	7183	13.8	5451	14.1	4213	15.3
NS10 Gillnets ≥ 120 mm	27.3.a	288	0.6	288	0.8	15	0.1
	27.4.a	<1	0.0	<1	0.0	-	-
	27.4.b	577	1.1	122	0.3	862	3.1
	27.4.c	3	0.0	2	0.0	<1	0.0
NS11 Gillnets ≥90 - <120 mm	27.3.a	10	0.0	2	0.0	1.3	0.0
	27.4.a	-	-	-	-	-	-
	27.4.b	87	0.2	19	0.1	68.1	0.3
	27.4.c	8	0.0	8	0.0	<1	0.0
NS12 Gillnets <90 mm	27.3.a	6	0.0	23	0.1	<1	0.0
	27.4.a	-	-	-	-	-	-
	27.4.b	<1	0.0	-	-	9.70	0.0
	27.4.c	1	0.0	<1	0.0	-	-
NS13 Trammel nets	27.3.a	121	0.2	211	0.6	31	0.1
	27.4.a	-	-	-	-	-	-
	27.4.b	1816	3.5	1279	3.3	1487	5.4
	27.4.c	8	0.0	26	0.1	8	0.0
NS14 Lines	27.3.a	<1	0.0	<1	0.0	<1	0.0
	27.4.a	-	-	1	0.0	-	-
	27.4.b	-	-	<1	0.0	<1	0.0
	27.4.c	<1	0.0	<1	0.0	-	-
Total catch under evaluation		52033		38666		27627	

SOL		2018		2019		2020	
FS	Area	Catch	% of TC	Catch	% of TC	Catch	% of TC
NS01 Otter trawls/seines ≥ 120 mm	27.2.a	-	-	-	-	-	-
	27.4.a	<1	0.0	<1	0.0	-	-
	27.4.b	7	0.1	3	0.0	2	0.0
	27.4.c	-	-	<1	0.0	-	-
NS02 Otter trawls/seines ≥100 - <120 mm	27.2.a	-	-	-	-	-	-
	27.4.a	-	-	<1	0.0	-	-
	27.4.b	44	0.4	14	0.2	7	0.1
	27.4.c	14	0.1	5	0.1	<1	0.0
NS03 Otter trawls/seines ≥70 - <100 mm	27.4.a	-	-	-	-	-	-
	27.4.b	28	0.3	35	0.4	31	0.4
	27.4.c	65	0.6	72	0.9	14	0.2
NS04 Otter trawls/seines ≥ 120 mm	27.3.a	7	0.1	5	0.1	11	0.2
NS05 Otter trawls/seines ≥90 - <120 mm	27.3.a	159	1.5	124	1.5	116	1.6
NS06 Otter trawls/seines ≥70 - <90 mm	27.3.a	2	0.0	2	0.0	1	0.0
NS07 Otter trawls/seines ≥35 - <70 mm	27.3.a	<1	0.0	<1	0.0	<1	0.0
NS08 Beam trawls ≥ 120 mm	27.3.a	60	0.6	77	0.9	80	1.1
	27.4.a	-	-	<1	0.0	-	-
	27.4.b	250	2.4	106	1.3	53	0.7
NS09 Beam trawls ≥80 - <120 mm	27.4.b	1863	17.8	1498	17.8	1944	26.9
	27.4.c	7416	70.8	6118	72.8	4728	65.4
NS10 Gillnets ≥ 120 mm	27.3.a	26	0.3	13	0.2	2	0.0
	27.4.a	<1	0.0	-	-	-	-
	27.4.b	5	0.1	5	0.1	39	0.5
	27.4.c	2	0.0	6	0.1	<1	0.0
NS11 Gillnets ≥90 - <120 mm	27.3.a	31	0.3	22	0.3	21.8	0.3
	27.4.a	-	-	-	-	-	-
	27.4.b	227	2.2	36	0.4	88	1.2
	27.4.c	118	1.1	94	1.1	15	0.2
NS12 Gillnets <90 mm	27.3.a	<1	0.0	2	0.0	<1	0.0
	27.4.a	-	-	-	-	-	-
	27.4.b	<1	0.0	-	-	<1	0.0
	27.4.c	5	0.0	6	0.1	-	-
NS13 Trammel nets	27.3.a	9	0.1	4	0.1	3	0.1
	27.4.a	-	-	-	-	-	-
	27.4.b	57	0.6	16	0.2	28	0.4
	27.4.c	78	0.7	133	1.6	41	0.6
NS14 Lines	27.3.a	-	-	-	-	<1	0.0
	27.4.a	-	-	-	-	-	-
	27.4.b	-	-	<1	0.0	-	-
	27.4.c	1	0.0	6	0.1	-	-
Total catch under evaluation		10475		8403		7227	

PRA		2018		2019		2020	
FS	Area	Catch	% of TC	Catch	% of TC	Catch	% of TC
NS07 Otter trawls/seines ≥35 - <70 mm	27.3.a	2864	95.8	2176	95.9	2176	97..7