WORKING GROUP ON BEAM TRAWL SURVEYS (WGBEAM)

VOLUME 6 | ISSUE 66

This document has been produced under the auspices of an ICES Expert Group or Committee. The contents therein do not necessarily represent the view of the Council.

ICES Scientific Reports

WORKING GROUP ON BEAM TRAWL SURVEYS (WGBEAM)

Recommended format for purpose of citation:

Editor

Ingeborg de Boois

Authors

Chyanna Allison • Gary Burt • Ingeborg de Boois • Holger Haslob • Thomas Lanssens
Jean-Baptiste Lecomte • Antonio Palermino • Kay Panten • Vaishav Soni • Louise Straker Cox
Adriana Villamor • Jip Vrooman

ICES
CIEM

International Council for
the Exploration of the Sea

Conseil International pour
l'Exploration de la Mer

Contents

i Executive summary

The Working Group on Beam Trawl Surveys (WGBEAM) coordinates and implements European inshore and offshore beam trawl surveys, including planning, standardization, data transmission and data quality assurance. The group also coordinates the Italian-Slovenian and Croatian beam trawl survey in the Adriatic Sea as there is no other body in the EU coordinating beam trawl surveys, and the EU Data Collection Framework requires survey coordination.

In 2023 ten beam trawl surveys were planned, covering the North Sea, 7d, 7e, 7fg, 7a, 8a, 8b and the Northern Adriatic Sea. Contrary to previous years, no beam trawl survey on fish species was conducted in Icelandic waters as the survey on flatfish was ceased, and only a survey on sea cucumbers takes place since 2023. Severe weather conditions affected the spatial coverage of the French offshore survey in the Bay of Biscay, the English offshore survey in 7e, and the Dutch Sole Net Survey (SNS), and the Dutch Demersal Young Fish Survey (DYFS) in the North Sea. The SNS, German DYFS, as well as the offshore Dutch Beam Trawl Survey, faced technical issues, leading to less station coverage. All data have been transmitted to the ICES Database of Trawl Surveys (DATRAS). Survey summary sheets have been prepared for all surveys.

Survey results were presented in a joint session with survey data end-users, North Sea and Celtic Sea stock coordinators. The main topic discussed in this session is the -still open- question how closed areas as wind farms and MPA's may affect the survey results. Stock coordinators presented relevant results from the benchmark groups on elasmobranchs (2022) and flatfish (2024).

R scripts to evaluate the combined offshore and inshore beam trawl survey data by region and cross-regionally have been further developed. Specific analyses have been conducted on elasmobranchs, patterns in abundance and spatial distribution; species identification consistency in inshore surveys; age at length and length frequency consistency for flatfish in the North Sea, sole *Solea solea*, lemon sole *Microstomus kitt*, plaice *Pleuronectes platessa* and dab *Limanda limanda*.

Developments in the ICES database on trawl surveys were presented by ICES Data Centre, and feedback was given where requested.

The manual for the inshore beam trawl surveys has been published in March 2024. The manual for offshore surveys (published in 2023) was updated where needed, to prepare for publication after WGBEAM 2025.

The progress in day-ring analysis for plaice in the North Sea was presented, and appointments were made to exchange expertise.

ii Expert group information

Expert group name	Working Group on Beam Trawl Surveys (WGBEAM)
Expert group cycle	Multiannual fixed term
Year cycle started	2023
Reporting year in cycle	2/3
Chair	Ingeborg de Boois, The Netherlands
Meeting venue and dates	19-22 March 2024, Bremerhaven, Germany (12 participants)

1 General information

1.1 Participation

The 2024 meeting took place from 19-22 March as a hybrid meeting, in Bremerhaven, Germany, and online. In total seven participants joined the full meeting (Annex 1), and five attended the meeting partly. Six countries and ICES Data Centre were represented. On March 20th, eleven data end-users for the relevant flatfish (WGNSSK, WGBIE) and elasmobranch (WGEF) stocks participated in a joint session. Data users from the Working group on Marine Litter (WGML) as well as Working Group on *Crangon* fisheries (WGCRAN) were invited, but did not attend.

1.2 Meeting goals

The group's terms of reference (Annex 2) relate mostly to the role of the group, i.e. to coordinate beam trawl surveys in the ICES area, including planning, standardisation, data transmission and data quality assurance. The group also coordinates the Italian/Croatian/Slovenian beam trawl survey in the Adriatic Sea as there is no other body in the EU coordinating beam trawl surveys, and the EU Data Collection Framework requires survey coordination.

For 2024, the specific tasks were:

1. Compilation of survey summary sheets, check of data submission 2023 surveys (paragraph 2.1);
2. Upload data for all beam trawl surveys (inshore and offshore) including litter in DATRAS[1] for at least the last two years, as far as DATRAS allows the survey data to be submitted. For datasets where index calculation is done directly from DATRAS, as many years of the time-series should be uploaded as is feasible (paragraph 2.2);
3. Provide tabular overview of survey planning, including geographical areas for overlapping tows (paragraph 3.1);
4. Publish the manual on inshore beam trawl surveys, and review the manual on the offshore beam trawl survey (paragraph 3.2);
5. Develop R scripts for the data evaluation by region as well as across regions, and evaluate beam trawl survey data for a selection of parameters (chapter 4). In 2024 the group focussed on:
   - Evaluate elasmobranch catches for the offshore surveys;
   - Evaluate species consistency checks for inshore surveys;
   - Evaluate age-length keys for lemon sole, sole, dab and plaice in offshore beam trawl surveys in ICES areas 4 and 7;
   - Evaluate length-frequency patterns for lemon sole, sole, dab and plaice in offshore beam trawl surveys in ICES areas 4 and 7;
   - Evaluate age-length keys and length-frequency patterns for sole in ICES areas 4, 7, 8 for inshore and offshore surveys.
6. Report back on status of growth patterns in plaice (chapter 5).

---

[1] DATRAS 2024. https://www.ices.dk/data/data-portals/Pages/DATRAS.aspx International Council for the Exploration of the Sea.

Next to that, the ICES DATRAS Team presented the developments done in the past year, and asked for feedback from WGBEAM (paragraph 6.1) and WGBEAM discussed maintenance of survey quality (paragraph 6.2).

1.3   Follow-up of recommendations

ID	EG	Year	Recommendation	Recipients	Status March 2024
24	WGBEAM	2023	"Addition of coding/litter list reference: • It is recommended that there is a clear separation of categories between litter not being present in a haul and litter data not being recorded for a haul. This is especially important when litter sampling just 'slipped through' for a haul, or the decision was made to stop sampling litter in a survey e.g. due to limited staff (this happened e.g. for German BTS 2021 when half of the staff fell ill due to COVID) • As in the updated manual new codes have been added, it is recommended that data submitters can refer to this new list of codes in their files (LTREF). Only in this manner reliable analysis of litter catches can be done. E.g. when A15 does not appear in catches from 2023 onwards, it will not be clear if that is because the previous litter coding list was used, or that A15 was absent."	WGML;#558;#Data Centre;#390	Completed
25	WGBEAM	2023	As a follow-up on recommendation WGBEAM 2021-22 to WGCRAN, and the WGCRAN response, a bootstrap analysis has been carried out on shrimp sample size. It is recommended that WGCRAN conducts sensitivity analyses for the different sample sizes.	WGCRAN;#120	Completed for Belgium, see https://doi.org/10.17895/ices.pub.24220471. WGBEAM assumes that WGCRAN will continue working on the bootstrap for the other DYFS surveys.
174	WGSINS	2022	A sprat larvae pilot survey, which is conducted at night-time during the Q3 IBTS by Denmark and partly Germany and Scotland, showed promising results in the first five years (2018-2022). A potential recruitment index may be derived by the sprat survey. However, a more complete area coverage would be beneficial. WGSINS recommends to continue the survey and encourages additional participants to join the survey. Additional sampling in the entire North Sea area is welcome, but most relevant are the areas that are not covered by the present survey participants, i.e. the area north of 56.5 N and ICES rectangles 36F0-F8, 37F6-F8, 38E8-F8, 40E8-F8 and 41E8-F0. The desired sampling period is Q3, ideally in the second half of August. The sampling	WGBEAM;#118	See paragraph 6.4

gear is a MIK net with 1600 μm mesh size (i.e. the same gear that is used on the Q1 MIK herring larvae surveys).

2 Survey achievements 2023 (ToR a)

2.1 Survey achievements 2023

For the offshore and the inshore surveys, survey summary sheets (Annex 5) have been prepared, containing information for end-users relevant for fish stock assessment, data collected during the survey, and specific comments on the 2023 surveys. Following the decision in the 2021 meeting, industry beam trawl surveys have been taken into account as well.

2.1.1 Offshore surveys

Ten research surveys were carried out, covering the North Sea, and ICES areas 7d, 7e, 7fg, 7a, 8a, 8b and the Northern Adriatic Sea. Contrary to previous years, no beam trawl survey on fish species was conducted in Icelandic waters as the survey on flatfish was ceased, and only a survey on sea cucumbers takes place since 2023. In addition to the research beam trawl surveys, three industry beam trawl surveys have been carried out (UK, The Netherlands, France). The participating vessels and time of the surveys are listed in Table 2.1. Further details (areas covered, technical specifications) by country are given in Annex 5. Details on the surveys are available in De Boois *et al.* (2023).

Comments on the 2023 surveys:

a) Belgian survey fully completed with only one minor technical issue with the net winch that didn't affect completion of all 62 hauls. A high abundance of 0-group plaice and low abundance of 0-group sole was observed.

b) French survey was not fully completed as poor weather hampered sampling at nearly 1/5 stations in the centre of the survey area. Higher abundance of sole than previous few years with the length frequency representative despite non completion of survey. A new method to calculate sole abundance index to account for missing stations. A new vessel is anticipated to be in service in 2026.

c) German survey was conducted aboard a chartered fishing vessel as there were issues with RV Solea ship crewing. Despite a resulting delayed departure all stations were completed. Due to reduced scientific staffing no litter was recorded, and salinity and temperature data could not be collected because of a lack of equipment.

d) Italian/Slovenian survey was 100% completed without any major complications, despite a vessel change from RV to a chartered fishing vessel. The majority of sampling was carried out in the Italian sector, with six stations in the Croatian coast and one in Slovenian waters. Croatia conducts the seven stations in the Croatian territorial waters (7 stations within 12 nm from the coast). Samples were retained and landed every two-three days for subsequent analysis at CNR IRBIM as there was insufficient space onboard. The CTD deployments were not undertaken in 2023, though data loggers were attached to the gear to record salinity, temperature and depth.

e) Dutch survey spatial coverage maintained in southern and eastern area even though technical issues in first week resulted in 75% stations completed, no effect of reduced sampling on survey index anticipated. Secured permission to work within UK Marine Protected Areas which helped maintain geographic coverage. Minor delays caused by deviations around windfarms. In contrast to 2021 and 2022 extreme catches of *Electra pilosa* were not present. Central and western North Sea stations were fully sampled. CTD data incomplete for some hauls. Strong 2018 year class apparent in both surveys 5 year olds cohort.

f) English Q1 survey was affected by poor weather and necessity to repair the trawl blocks which resulted in 75% survey completion. Only four stations were missed in the western Channel, though less than 50% were fished in the Celtic Sea. Along with the 2022 survey, the 2023 survey plaice and sole indices show a difference to pre-2022 years, as two strata were not fished. The July survey was successfully delivered with all stations sampled, though approximately 20% of stations had reduced tow durations between 15-22 minutes. The September survey was fully completed, with 25% stations requiring shorter tow durations which is consistent with previous surveys.

Table 2.1. Overview of offshore beam trawl surveys during 2023 (planned dates)

Country	Vessel	Area	Dates	Gear
Belgium	Belgica	western-southern North Sea	22 – 31 Aug 2023	4 m beam
France	Côtes de la Manche	8a, 8b	01 Nov – 30 Nov 2023	4 m beam
Germany	Chartered fishing vessel	German Bight	21 Aug – 05 Sept 2023	7 m beam
Iceland	Survey ceased as of 2023			
Italy/ Slovenia	Chartered fishing vessel	Northern Adriatic Sea (GSA 17)	14 Nov – 30 Nov 2023	2x 3.5m modified beam
Croatia	Chartered fishing vessel	Northern Adriatic Sea (GSA 17)	14 Nov – 30 Nov 2023	2x 3.5m modified beam
Netherlands	Tridens	southern North Sea, German Bight	31 July–18 Aug 2023	2x 8 m beam
Netherlands	Tridens	central and western North Sea	21 Aug–15 Sep 2023	2x 8 m beam + flip-up rope
UK	Cefas Endeavour	English Channel /Celtic Sea	21 Mar -16 Apr 2023	4 m beam
UK	Cefas Endeavour	7d, 4c	1 – 14 Jul 2023	4 m beam
UK	Cefas Endeavour	7fg, 7a	6 – 25 Sept 2023	4 m beam

2.1.2   Inshore surveys

The inshore surveys in the North Sea are carried out by Belgium (Demersal Young Fish Survey-DYFS), Germany (DYFS), the Netherlands (Demersal Fish Survey-DFS), and UK-England (DYFS).

The Sole Net Survey (SNS), which is carried out by the Netherlands in the North Sea, is classified as an inshore survey, but 'nearshore' may be more appropriate because the area covered is further offshore than the other inshore surveys.

The participating vessels and time of the cruises are listed in Table 2.2. Details on the 2023 survey achievements are in Annex 5. Details on the surveys are given in the inshore beam trawl survey manual (Beier *et al.*, 2024).

Comments on the 2023 surveys:

a) Belgian survey was fully completed. Low abundance of sole and strong 0-group plaice were present, which corresponds to the catches in the other DYFS surveys.

b) German survey affected by technical ship problems which resulted in the northern part of the survey area not being sampled and reduced. The chartered vessel surveys achieved full coverage in the Wadden Sea, though algae and the bryozoan *Electra pilosa* impacted catchability through net clogging in Area 409, thus the index was not calculated due to insufficient spatial coverage. Observed reduction in sole catches over time series from 1980. Additional sampling of small plaice otoliths. Missing ship codes still causing issues with survey DATRAS uploads.

c) Dutch SNS survey had reduced spatial coverage due to technical, logistical and poor weather issues causing ~20% stations to be missed. Nearly 50% of the individual weights were not recorded due to issues with the scale. A relatively high index of 0-group plaice was observed. The DYFS was nearly completed, although weather and technical issues hampered progress. 24 hauls were declared invalid mainly due to algae, *Ulva spp* and bivalves. A very strong 0-group and a relatively strong 1-group plaice was seen. Bryozoan *Electra pilosa* did impact some hauls, but to a lesser extent than in 2022.

d) England achieved full coverage of the survey area in 2023, completing 90 hauls and replicating the 2022 survey design which increased spatial coverage and collected more data than the historic UK Thames survey (2000-2010). Due to time constraints the planned comparison of the 2 m and 3 m beam trawls could not be undertaken. Sole catches have reduced compared to historic surveys and the artefact of increased sampling in small sole and plaice can be seen in the ALK for both species in 2022 and 2023. Funding has already been secured for the 2024 survey.

Table 2.2. Overview of surveys during 2023 (planned dates)

Country (Survey)	Vessel	Area	Dates	Gear
Belgium (DYFS)	Simon Stevin	Belgian coastal zone	11-20 Sep 2023	6 m shrimp trawl
Germany (DYFS)	Chartered vessels	German Wadden Sea areas	01 Sep – 06 Oct 2023	3 m shrimp trawl
Germany (DYFS)	RV Clupea	German coastal zone	11 Sep – 6 Oct 2023	3 m shrimp trawl
Netherlands (SNS)	Isis	Dutch coastal zone	12-27 Sep 2023	6 m beam trawl
Netherlands (DYFS)	Luctor	Scheldt estuary	4-21 Sep 2023	3 m shrimp trawl
Netherlands (DYFS)	Stern	Dutch Wadden Sea	28 Aug – 28 Sep 2023	3 m shrimp trawl
Netherlands (DYFS)	Isis	Dutch coastal zone and German Bight	2–26 Oct 2023	6 m shrimp trawl
UK (DYFS)	Chartered vessel	Thames area	2-16 Sep 2023	2 m beam trawl

2.1.3   Industry surveys

Two industry surveys have been carried out in 2023, by UK, and the Netherlands. Further details (areas covered, technical specifications) by country are given in Annex 5.

Comments on the 2023 surveys:

a) The Dutch turbot and brill industry survey (Schram *et al.*, 2023) provides older age class data to support the assessment, as the BTS survey only provides limited data for larger older flatfish. The survey is conducted using three vessels in an area defined based on brill and turbot North Sea catch rates and was completed without incident. The current assessment model seems to overestimate the abundance and biomass of older ages for both species (≥5-group). The use of this survey data for cohort tracing looks promising. The turbot benchmark is scheduled for next year, where the industry survey data also will be included.

b) The English industry survey was fully completed onboard a new chartered fishing vessel following the sale of the Carhelmar last year. There was continuity in the survey gear and the same vessel skipper was employed from the previous surveys. A few hauls were reduced in duration to avoid static gear and due to failing light, and four stations had circular tow lines due to the presence of static gear.

2.2   Data transmission to DATRAS

(1) Evaluate achievable deadlines for data delivery

In 2020, WGBEAM proposed new data delivery deadlines for beam trawl survey data submission to DATRAS[2]. The deadlines for beam trawl survey data delivery to DATRAS are based on a realistic timeline where data for all species that are relevant for stock assessment can be delivered at the same moment. As no assessment update in autumn has to be conducted anymore for sole and plaice, the deadlines fit to the current assessment process.

The deadlines were evaluated during WGBEAM 2021 and have not been changed, as they all could be met, and as a consequence, were kept for the following years (Annex 4).

(2) Coordinate and evaluate data delivery to DATRAS

Fish trawl data

Unaggregated beam trawl data are stored in DATRAS up and until the survey of the year previous to the meeting year. For 2023, all countries managed to upload their data to DATRAS prior to the WGBEAM 2024 meeting. These data are available in the database, but not all of them are already available for download in exchange format. DATRAS provides a full overview of submissions[3] (select one of the Beam Trawl Surveys, Inshore beam trawl survey or Sole Net Survey).

Exceptions in data submission:

a) Inshore survey UK-ENG 2023 data have not been submitted yet; planned to be uploaded in 2025. The Cefas database is currently being revised, and the decision of continuation of the inshore survey beyond 2024 has not been taken yet. As soon as the decision on continuation is taken, Cefas will start interacting with ICES Data centre to facilitate inshore survey data submission to DATRAS;

---

[2] DATRAS 2024. https://www.ices.dk/data/data-portals/Pages/DATRAS.aspx ICES.

[3] Submission status DATRAS 2024. https://datras.ices.dk/Data_products/Submission_Status.aspx ICES.

b) Upload of historic German inshore data is, like in 2023, hampered by delay in the provision of ship codes. As for the inshore survey multiple commercial vessels are chartered, a 'dummy code' such as Unknown vessel will not be sufficient, as then it will not be possible to separate the different vessels anymore. The provision of ship codes is outside the control of ICES, and can take more than six months. Survey data upload should take place before the deadline set, so end-users can access the data. It is recommended that ICES creates temporary ship codes when new ship codes are requested, which can be replaced by formal codes as soon as they become available (data resubmission required).

Marine litter

Data on by-catches of marine litter are also stored in the DATRAS database. In the offshore beam trawl surveys (BTS) and Belgian inshore survey (DYFS) in the North Sea litter is being registered and submitted to DATRAS on a regular basis. Litter data from the English BTS surveys are regularly added for western Channel and Celtic Sea (Q1), North Sea and eastern Channel (Q3), Irish Sea and Bristol Channel (Q3). All 2023 litter data for the offshore beam trawl surveys as well as for Belgium inshore beam trawl survey have been uploaded to DATRAS.

3 Survey coordination 2024 (ToR a, b)

3.1 Planning surveys 2024 (ToR a)

The survey planning for the offshore and inshore beam trawl surveys 2024 is largely in line with previous years. Annex 6 contains the detailed planning for offshore, inshore and industry beam trawl surveys in 2024.

As in previous years, WGBEAM encourages that if time and weather allow, overlapping hauls should be carried out by countries operating in the same area. During the Dutch and German offshore surveys in the North Sea, some overlapping hauls should be attempted in the following rectangles, like in 2020 and 2021: 40F4, 40F5, 40F6, 41F4, 41F5, 41F6, 42F4, 42F5, 42F6, 43F4, 43F5, 43F6. The responsible scientists will contact each other approx. one month before the start of the Dutch survey to make appointments on the execution of the comparative tows. Comparative fishing has always been on the WGBEAM task list, but has become more important since the index calculation takes into account all beam trawl survey data in the North Sea applying model approaches, e.g. DeltaGAM (Berg *et al.* 2014). Such models are more reliable when overlapping tows are available in the data series, allowing to account for gear effects.

Cefas requests to drop additional stations on the offshore survey in ICES area 7d; these are comparative stations with the offshore survey by Belgium. Main reason for ceasing the stations is that the port of departure and port of return will change compared to previous years. This makes it logistically almost impossible to fish on the stations without losing a disproportionate amount of survey time. The proposal will be discussed with data users in 2024, and a presentation by Cefas for the WGBEAM 2025 will be prepared.

The Belgian and Dutch offshore beam trawl surveys also include rectangles fished by both in the same time frame, but the fishing ground at the Belgian positions is very rough. It is not possible to fish on these locations with the gear used by The Netherlands.

UK will conduct an inshore survey in Thames area (14 sea days) in 2024, coordinated by Louise Straker Cox (Cefas). Funding has been secured for 2024, though which funding submission route needs to be explored for future years still needs to determined.

3.2 Manuals (ToR b)

The Manual on inshore beam trawl surveys (Beier *et al.*, 2024) has been published as a TIMES product the day before the WGBEAM 2024 meeting.

During the meeting updates have been made to the Manual on offshore beam trawl surveys (de Boois *et al.*, 2023), in a version at the SharePoint. More information on MPAs and wind farms including contact addresses for MPAs have been added, as well as a table for data checks. The revised version will be published in 2025.

4 Evaluation of combined survey data (ToR c)

Since 2021, WGBEAM subgroups evaluate offshore and inshore beam trawl survey data from DATRAS. Consistency analyses scripts are made available at https://github.com/ices-eg/wg_WGBEAM. These R scripts can be used to evaluate any beam trawl survey (BTS, DYFS, SNS) and any species in DATRAS. The script has been updated over time, and used for a number of species.

4.1 Evaluation elasmobranch catch rates

Using the standard WGBEAM R script, the elasmobranch catches were analysed and are presented in Annex 8. As depicted in the report of last year (ICES, 2023a), there is still a visible drop in total numbers in 2022 because of uncompleted surveys. This affected especially *Scyliorhinus stellaris*, *Squalus acanthias*, *Raja clavata* and *Raja undulata*. Furthermore, figures A8.5 till A8.8 show a smaller coverage with gaps in 7h and 7d.

In absolute terms, the four dominant species are: *Raja clavata* (mainly UK survey), *Amblyraja radiata* (mainly NL survey), *Raja montagui* (mainly UK survey) and *Scyliorhinus canicula* (mainly UK survey).

Total number of individuals per year are shown by country for the *Raja* species in Figure A8.1. Most ray species have generally increased throughout the time series (with a high increase for *Raja microocellata*). We observed a decreasing trend for *Raja clavata* and *Raja montagui*. In absolute terms, the dominant species are: *Raja clavata* (mainly UK survey), *Amblyraja radiata* (mainly NL survey), *Raja montagui* (mainly UK survey).

Total number of individuals per year are shown by country for sharks and dogfish species in Figure A8.4. All shark species showed a stable trend, with the exception of *Squalus acanthias*, which had a remarkable increase for 2023. This is caused by one extreme catch in the Dutch 2023 BTS (confirmed by WGBEAM). In absolute terms, the dominant species is *Scyliorhinus canicula* (mainly UK survey).

A more extensive description can be found in Annex 8.

4.2 Comparison of by-survey indices and by-area indices

For regions where only one survey is conducted, by-survey indices are available. Indices for sole (*Solea solea*) in the Bay of Biscay (paragraph 4.2.1, Annex 7.1), and in the Adriatic Sea (paragraph 4.2.2, Annex 7.2) are presented as separate series. For the North Sea, plaice and sole recruit indices (0- and 1-year olds) are presented separately (paragraph 4.2.3, Annex 7.3).

4.2.1 Sole in Bay of Biscay (ICES area 8a, 8b)

The average number of soles per km^2 at age from 2018 to 2023 for the French survey in the Bay of Biscay are in Figure A7.1. The 0-group shows a lot of variability, which can be explained by the fact that this survey does not target these younger individuals located in coastal nursery areas. The 1-group and 2-group showed a decrease in abundance in 2020 and 2021 (the lowest values over the last 5 years), but abundance increased in 2022 and 2023 being at the level of 2018 and 2019. The same pattern is observed for older ages even if the magnitude of the decrease in 2020 and 2021 is smaller.

During the 2024 WKBFlat1, a new approach to compute the French BTS-VIII was presented and agreed upon. It is based on the Vector Autoregressive Spatio-Temporal (VAST) model, which provides a tool to derive an abundance index from scientific surveys by accounting for spatial and temporal variability (Thorson, 2019). This approach improved cohort consistencies of the age-based index. It also allows to provide an index when sampling stations are missing, which was the case in years 2020 to 2023 because of very bad weather conditions.

4.2.2 Sole in the Adriatic Sea (GSA-17)

Figure A7.2 shows the time-series trends in the indices for the northern Adriatic Sea common sole, based on the SoleMon offshore beam trawl surveys. Age slicing, based on von Bertalanffy parameters coming from 2020 FAO-GFCM Benchmark assessment (Linf: 38.1; k: 0.29, t0: -1.7), was carried out using FSA R script.

The 2023 survey indicates an increase of the 0 age group compared to 2022 reaching values highly higher than the long-term arithmetic mean, close to the peaks registered in 2019 and 2020. Whereas, 1 age group were lower than the arithmetic mean. Age 2, and 4 are similar to the values detected in 2022 being above the mean value, while the 3 age group index is the higher ever recorded along the time series. Ages 5+ stay below the long-term arithmetic mean since 2020 but is increasing compared to the previous years. The big difference in this age group between 2022 and 2023 could be due to lack of coverage in 2022 of the area where older individuals concentrate (offshore waters southwest of the Istrian peninsula) due to bad weather conditions and COVID-19 issues. More in general, this plus group is quite fluctuating due to the very few specimens that reach these ages.

4.2.3 Sole and plaice recruits in the North Sea (ICES area 4)

The international DYFS index for 0- and 1-year plaice resp. sole is a combination of DYFS data from Belgium, the Netherlands (both 0 and 1 group), and Germany (only 0-group). It is a weighted mean, based on the surface of the area covered, and with a weighing factor per depth class.

For plaice the index showed a high recruitment in 2021 and 2023 (highest since 1996). The 2021 peak in recruitment was still visible as a relatively strong 1-year age group in 2022, the highest since 2004 (Annex 7.3; Figure A7.3 upper panels). The 1-year-olds in 2023 were, despite the lower recruitment in 2022, in the same order of magnitude as in 2022.

The international DYFS index for sole shows intermediate values for the 0-group in 2021 and 2022, and very little recruits in 2023 (Annex 7.3; Figure A7.3 lower panels). The 1-group in 2023 was higher than in 2022.

4.3 Evaluation of biological information for species in North Sea (ICES area 4, 7d) and Celtic Sea (ICES area 7f, 7g) stock assessment

Historically, WGBEAM produced indices for plaice and sole, and only these data were presented and checked thoroughly for the use in stock assessments. As the indices are nowadays mostly calculated by stock coordinators, WGBEAM decided in 2023 to develop methodology for evaluation of the input data for the index calculation. The evaluation of the input data (length-weight relationships, age-length keys, and/or cohort tracking) is certainly one of the major tasks of the survey working groups.

Hence, one task of the WGBEAM 2024 was to analyse the age-length keys (ALKs) and length frequency distribution (LFD) plots for a number of species used in fish stock assessment by region and cross-regionally: lemon sole (*Microstomus kitt*), sole (*Solea solea*), dab (*Limanda limanda*), and plaice (*Pleuronectes platessa*). A full overview of analyses of ALKs and LFDs per species can be found in Annex 9.

4.3.1 Data selection

The DATRAS information from the Exchange format was used: CA records for ALKs, HL records for the LF distributions. Only BTS data was downloaded. For next years, SNS and DYFS (all four species) as well as BTS-VIII and BTS-GSA17 (sole only) should be taken into account.

WGBEAM recommends that download of CPUE products is made possible via the ICES DATRAS R package, next to the download of unaggregated data. As an alternative, clear guidance can be provided on which R packages could be used to download the CPUE product.

4.3.2 Evaluation of age-length keys

Age-length keys for the Belgian, Dutch, German and UK BTS surveys in the North Sea are shown in Annex 9, by species. Overall, the ALKs seem consistent throughout years and countries. Differences in patterns of ALKs seem to find their origin in the spatial growth differences rather than in differences in age readings between countries.

For dab, there are some strange patterns for single length classes and years, which might be caused by low samples sizes and/or erroneous data entries. These might be checked: i) Belgium 2022 <10 cm; ii) 2018 the Netherlands 9 cm; 2022 the Netherlands 11 cm (Figure A9.5).

For all species it was mentioned that the analysis of ALKs could be improved by splitting up the North Sea data in W and E of 3°E, based on the different growth rates in the areas (Chin *et al.*, 2023). For the UK data, splitting the data by survey or survey area will help to better distinguish patterns. This will be taken on board for the WGBEAM 2025 meeting.

4.3.3 Evaluation of length distribution

The LFD figures reflects the impression from the field observations. For lemon sole, there is a pattern of increasing abundance in smaller size classes in German and Dutch BTS data, whereas English and Belgian abundance across size classes is fairly consistent (Figure A9.2).

For sole, the LFDs distributions in the UK surveys show in general a broader range of lengths compared to the other countries (Figure A9.4). The UK and Belgian surveys both catch more smaller sole compared to the Dutch BTS.

The dab length frequency distributions (Figure A9.6) of the Netherlands and Belgium are very similar, with one large mode around 16 cm and smaller modes around 9 cm. The German length frequency distribution often has two modes, around 14 cm and 18 cm. The UK and German dab length frequency distributions display more variability between years. There might be several reasons for this, e.g. area effects or high recruitment, potentially in combination with different distribution of stations.

The Netherlands catch more small (<10 cm) plaice than the other countries (Figure A9.8). Additionally, the German BTS seems to catch less of the larger (>20 cm) individuals in later years.

4.3.4 Further development of the evaluation of by-species information

Although useful, the evaluation of base data by WGBEAM is still under development. Therefore, in 2024 proposals for improvement were made, to be discussed with data users in 2024, and to further develop scripts for at WGBEAM 2025.

During the meeting in 2024, only offshore beam trawl survey data for ICES areas 4 and 7 was evaluated. The scripts should be extended with ICES area 8ab (Bay of Biscay) and GSA-17 (Mediterranean). Next to that, the inshore surveys should be taken into account.

The figures of ALKs provided good information to evaluate inconsistencies between countries, e.g. in age reading. It could also be valuable to present ALK information by survey (e.g. Figure 4.1), to better represent the use in stock assessment. The downside of both is that the UK survey in the first quarter is mixed with Q3 and Q4 information. Splitting up per 6 month-period for ALK information may be worth considering for future graphs. Furthermore, the UK survey stretches out over different areas, so it could be considered to align ALK evaluation with stock area definitions per species. Next to that, there is a known difference in growth speed for plaice, but potentially also for other flatfish species, in the North Sea, so it is advised to split up in West and East of 3°E.
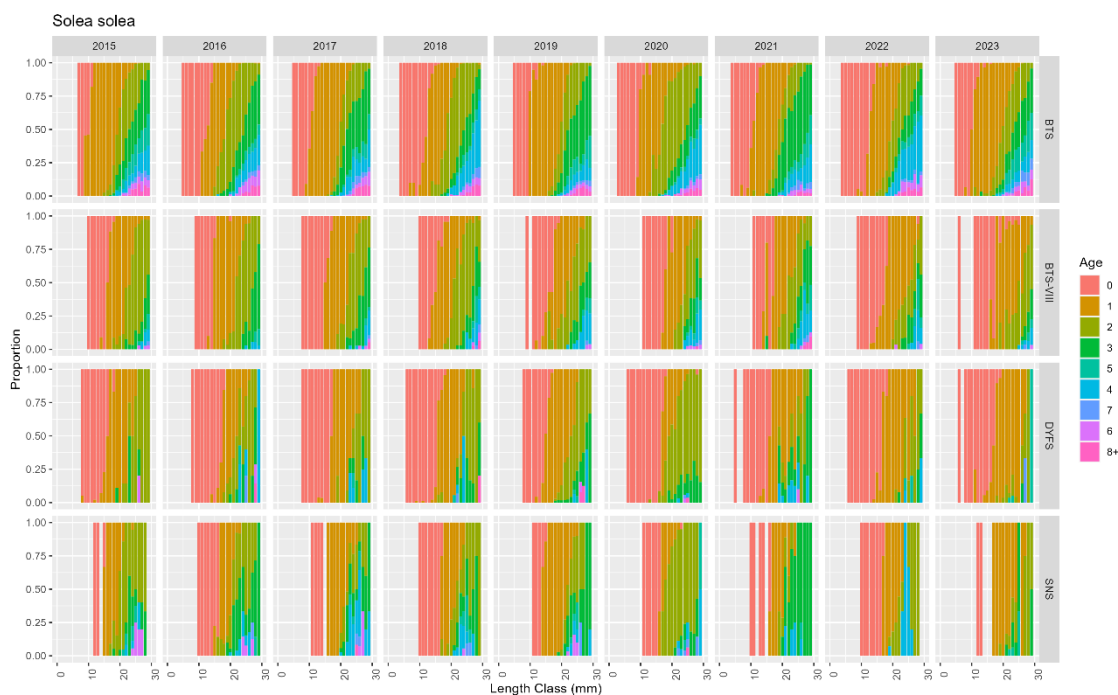

Figure 4.1 Alternative visualisation of ALK proportions (sole, data from DATRAS, surveys 2015-2023).

The LFD information could also be presented by survey (Figure 4.2) as opposed to 'by country', to better represent the use in stock assessment. Splitting up per season (see ALK) is essential, to minimise the noise of the effect of growth within the year.
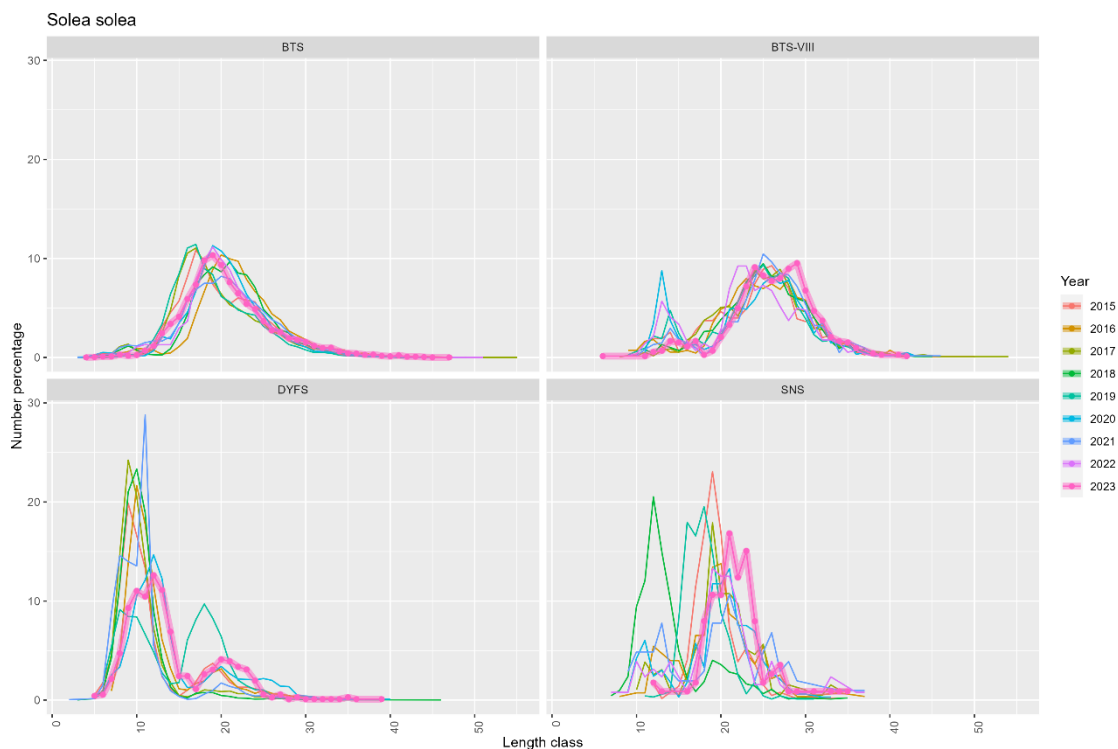
Figure 4.2 Alternative visualisation of LFD (sole, data from DATRAS, surveys 2015-2023).

4.4 Evaluation species identification consistency in the inshore beam trawl surveys

The DATRAS exchange HL data were used to check the DYFS data for possible species inconsistency. Data taken into account included data from The Netherlands (1985-2023), Belgium (1985-2023), and Germany (2003-2023). The "Valid_Aphia" was linked to the most recent World Register Of Marine Species (WORMS) record using the worrms R-package (Chamberlaine and Vanhoorne, 2023). The whole data set contained a total of 418 different Aphia IDs.

The level of species identification differs between countries and has changed over time for all countries (Beier *et al.*, 2024). Therefore, the number of unique species names increased over time for all countries. However, in general the species identification is consistent between countries, and many inconsistencies and errors applied to species that are not key species for this survey. The most relevant inconsistencies for fish species are depicted in figures in Annex 10. These were mostly related to species for which the identification to species level is not straightforward, and the reported taxonomic level differs among countries and years (e.g. *Pomatoschistus* spec., see figure A10.4).

We advise data users working with such species or investigating biodiversity aspects to apply a conservative approach and aggregate those problematic species/species groups onto a higher taxonomic level. The main target species of the inshore surveys, however, were consistent throughout the time series. Some obvious inconsistencies might be fixed (Table 4.1.)

Table 4.1 Species inconsistencies in inshore beam trawl surveys that might require action.

Species 1	Species 2	Countries	Action needed
Liparis liparis liparis (293624)	*Liparis liparis* (127219)	BE, NL, DE (several years)	The AphiaID 293624 and species name *Liparis liparis liparis* is not accepted, change to Valid_AphiaID 127219 *Liparis liparis*.
Sepiola (138483)	*Sepiola atlantica* (141454)	BE, NL, DE (several data years)	It is recommended to upload as *Sepiola,* also for historic data, since multiple Sepiola species occur in the North Sea (de Heij & Goud 2010; Goud & De Heij 2012) and reliable identification of fresh specimens is not possible. So unless identification was done based on preserved animals, the input should be changed.
Tritia pygmaea (876854)	*Tritia varicosa* (1391526)	NL (data year 2007)	The AphiaID 876854 and species name *Tritia pygmaea* is not accepted, change to Valid_AphiaID 1391526 *Tritia varicosa*.
Teuthida		NL (data year 2023)	*Nomen dubio*, check
Mytilus (138228)	*Mytilus edulis* (140480)	DE (data year 2015)	Change *Mytilus* to *Mytilus edulis*
Molgula manhattensis	*Molgula occulta*	NL, DE (several data years)	Only *Molgula manhattensis* records in NL data, while in DE data only *Molgula occulta* occurs. Experts should check which is the correct one.

4.5 Evaluation of shrimp sample size

In 2022 WGBEAM created an R-script to review *Crangon crangon* length frequency data from the inshore BTS surveys to help determine whether sub-sampling sizes could be reduced for each haul. In 2023 the R-script has been updated and used to analyse data downloaded from DATRAS (BTS Exchange Data HH, HL and CA) for the inshore between 2011-2022. The updated R-script has been stored on https://github.com/ices-eg/wg_WGBEAM.

In 2023 WGCRAN conducted a bootstrap analysis for the Belgian shrimp sampling during DYFS ICES, 2023b). The report states that the bootstrap analyses for the other surveys still have to be done. After consulting one of the WGCRAN chairs, WGBEAM awaits the WGCRAN output.

5 Growth patterns in plaice (ToR d)

The reason for the analysis of growth patterns in plaice through day ring analysis is that spawning plaice is encountered during the BTS (Q3) in the North Sea. The macroscopic indication was confirmed by histological analyses in 2022. To see if spawning activity leads to offspring, WGBEAM decided to collect otoliths of young (0- and possibly 1-year olds) and analyse the day rings in order to identify the time of settlement.

In the 2022 and 2023 inshore surveys, otoliths of small plaice were collected by Belgium, Germany, the Netherlands and UK. Germany sent the otoliths to the Netherlands for day ring analysis. As the day ring analysis lab in the Netherlands could not be made operational in the first half of 2023, and no personnel for the project would be available in the second half, the work was postponed to 2024. From January to March 2024 the first experimental studies were conducted with respect to gluing, grinding, polishing, taking pictures and looking at the day rings of small plaice were done. Up to now, the otoliths used were of 0 year old plaice from the routine sampling.

Ingeborg de Boois presented the current state of the art. The preparation of the otoliths has to be finetuned before the processing of the internationally collected otoliths will take place. It was however decided that all countries will collect a number of otoliths of plaice < 10 cm (2 per DYFS area) for this specific task. If this length range falls within the regular sampling, then also the remaining otolith can be used for day ring analysis.

Louise Straker Cox presented sea bass otoliths prepared for day ring analyses. Cefas and WMR will stay in contact about exchange of expertise on day ring analysis. Thünen Institut is interested in the experiences with otolith preparation for day ring analysis.

6 Other topics

6.1 DATRAS related

The ICES DATRAS team presented the developments in the system, and topics discussed by the Working group on DATRAS governance (WGDG).

a. Species download of Exchange data for single (or a few) species is implemented. Only for HH the system still asks for a species, which is irrelevant. The DATRAS Team is aware of it and it will be solved in due time. The product descriptions have been modified, to align product names and content over the different surveys. WGBEAM comments that in the product 'CPUE per length per haul per hour' also the CPUE per km² is presented for beam trawl surveys. Therefore, WGBEAM suggests to at least modify the product description from 'Provides Catch in numbers per length class and hour of hauling per haul. Available for all species. Uses LngtClass in mm. This Data product can be requested per Survey Area.' into 'Provides Catch in numbers per length class and hour of hauling per haul, and for beam trawl surveys (BTS, DYFS, SNS, Netherlands Industry survey on Turbot and Brill) also per km² per haul. Available for all species. Uses LngtClass in mm. This Data product can be requested per Survey Area.'

b. The DATRAS team also presented the DATRAS data comparison tool for exchange data, which is crucial for ensuring the accuracy and usefulness of the data. This process involves analysing two sets of data versions and identifying any differences between them. The system was tested during WGBEAM 2024 by a subgroup of experienced data submitters, which provided feedback to the DATRAS Team. The exercise was useful, also to add comparisons for submitters's benefits.

c. The alignment of header naming between DATRAS and the ICES acoustic data portal is completed by Working group on DATRAS governance (WGDG) and will be implemented by DATRAS Team in Q3 2024 and operational from Q4 2024. For countries having issues to change the headers easily it is always possible to change the headers in the csv right bfore submission.

d. The vocabulary of OtGrading will change, to align with maturity staging quality reporting. DATRAS Team planned to implement this in Q2 2024. WGBEAM requested to postpone this to the same timing as the change of headers, as it is easier for submitters to change multiple things at the same time instead of changing minor things at different moments.

e. DATRAS Team proposes to add 'Survey' and 'Organisation' to the files that are submitted. WGBEAM agrees, and requests that implementation is done along the same timeline as the other format changes.

f. The Acoustic governance group requested an additional field for length code. WGDG responded to the request in December 2023 with the following proposal: "Most labs store the length data in one unit, so WGDG proposes (a) renaming 'length code' to 'measurement increment' and investigate the possibility to let Length data (b) be represented in Exchange data in one unit (proposal mm), as well as (c) be submitted in one unit." WGBEAM adds to that that the length code (or measurement increment) should then also be made visible in the DATRAS products.

g. The DATRAS user handbook is currently being written. It will be an updated compilation of the information under 'DATRAS documentation' on the webpage. WGBEAM is invited to report questions that are not yet dealt with in the FAQs to the ICES DATRAS Team (datrasadministration@ices.dk).

h. WGBEAM recommends that WGDG and DATRAS Team evaluate the options for adding a check to the screening process, i.e. age-length by species (in line with length-weight).

Although most WGBEAM members will be able to implement the proposed changes from Q4 onwards to the submitted files, it should be noted that issues may arise for England (Cefas), as there is no direct influence from DATRAS submitters on the database export format. It is advised that all WGBEAM members also check with their national IBTSWG representatives/IBTS submitters and/or WGBIFS representatives/BITS submitters, to align the concerns and limitations in the communication with the DATRAS Team.

6.2 Maintaining survey quality

6.2.1 Exchanges and workshops 2024/2025

The workshop on maturity staging of lemon sole (WKMSLEM) will take place in 2024 in Ostend.

Staff exchange is considered as a powerful way to align surveys, and to better understand the commonalities and differences between data collection. Possibilities for staff exchange in 2024 or 2025:
- Inshore: it would be useful if staff exchange with the UK inshore survey could be arranged, but as the timing is similar to the other inshore surveys, it may be difficult. Staff exchange between Netherlands and Germany (e.g. on board Isis in October) may be feasible, in 2024 or 2025.
- Offshore: the Netherlands and Germany will organise a staff exchange on the offshore beam trawl survey in 2025.

Belgium and the Netherlands will investigate comparative tows during the inshore beam trawl survey on the only Belgian station in the Dutch EEZ.

Benchmark groups: see paragraph 6.3.

6.2.2 Closed areas affecting surveys

For the beam trawl surveys, the number of closed areas for fishing has increased over the past decade. Those closed areas have a different nature and the effect on the surveys differs (Table 6.1). WGBEAM will discuss this topic in the next meetings, and add the information when manuals are updated. A list with contact details of relevant authorities will be created at the WGBEAM SharePoint. Suggestions on how to deal with unavoidable survey reduction are also provided in ICES (2020) chapter 2.

Based on the evaluation of the surveys in 2023, the following can be concluded:
- In the Mediterranean (GSA-17) and Bay of Biscay (ICES area 8ab) there is no effect of wind farms and Marine Protected Areas (MPAs) on the surveys;
- In the North Sea, Celtic Sea and Irish Sea the effect varies:
  o Wind farms: most offshore surveys are affected in some way by wind farms, mostly meaning that additional steaming is needed to get to the next station. It will certainly help when research vessels are allowed to pass through the wind farms. It is unclear what the effect of future wind farms will be, as the areas allocated in the planning phase exceed the final wind farm size.
  o MPAs: the nature of the MPAs varies. Many do allow for some fishing activity, and in most cases exemption is given for a few research tows. When clearances are requested, the country providing the clearance also checks the permission in MPAs. It is advised that institutes clearly state in the permit request when the vessel has stations planned in

MPAs. It helps to provide a full overview of MPAs in a country, and identify which ones do not lead to problems in the survey (either because beam trawl fishing is still allowed, or because a station can be shifted to a location outside an MPA relatively easy. It then becomes more clear that a request for exemption is well thought about, which may increase the chance to receive it. It is not advised to shift stations too far away from the original location without trying to receive an exemption, as that may over time lead to large blank survey areas (in case of expanding MPAs).

6.3   Feedback from end-users

Cancellations of surveys should be communicated as soon as possible to end-users.

Benchmarks in near future of relevance for WGBEAM: turbot and brill in 4, plaice 7d, (2024 data preparation, 2025 benchmark).

Feedback from benchmarks in 2023/2024:

a. The workshop no benchmarks of flatfish WKBFlat1 benchmarked sole in the North Sea. Q3 BTS is the main index, using a GAM model approach. From 2024 onwards, the SNS and DYFS data will also be incorporated as a delta GAM modelled series. Biomass index and an age index are used. The most striking thing was the sudden decrease of sole biomass in 2021 in the survey catches, for which no clear reason could be found yet.
   Data issues: There were some data issues for UK data, which were solved after contact with UK colleagues. There were duplicates for all records in 1998 surveys Q3 BTS, which was solved by DATRAS team. Some extremely large values for swept area were found in German BTS data, despite the DATRAS checks. WGBEAM checked the recorded distances in relation to tow duration in DATRAS data for offshore and inshore surveys (Annex 11, Figure A11.1 and Table A11.1). WGBEAM members are asked to check the values mentioned in Table A11.1 and resubmit data preferably before WGBEAM 2024.
   WGBEAM asked what is done with respect to missing age data. A common age-length key (ALK) is applied. WGBEAM points out that this should be done with care, as the ALK may differ for fish east and west of approx. 3°E. That has been proven for plaice, but may also apply to sole.
b. WKBFlat1 also benchmarked sole in the Bay of Biscay. The index is also calculated using a model approach, using VAST. This allows for computing indices even when stations are missing, as sole abundance can be predicted based on a spatio-temporal field. It could be an interesting approach for the Adriatic Sea as well.
c. The Benchmark Workshop for selected elasmobranch stocks (WKBELASMO; ICES 2022) was convened to evaluate the appropriateness of data and methods to assess and provide short-term forecast for three rays stocks in the greater North Sea: thornback ray in the North Sea, Skagerrak, Kattegat, and eastern English Channel (rjc.27.3a47d), spotted ray in the North Sea, Skagerrak, Kattegat, and eastern English Channel (rjm.27.3a47d), and blonde ray in the southern North Sea and eastern English Channel (rjh.27.4c7d). The benchmark tried to move to model based surveys for spotted ray and blonde ray. Model can deal with zero values, and it is easier to split up over areas. Spotted ray: > 30 cm from all BTS was used except for Germany. Thornback ray: UK and BE BTS surveys are used. For blonde ray stock assessment no input from beam trawl surveys is used.

6.4 Options for sprat larvae sampling during beam trawl surveys

Sprat (*Sprattus sprattus*) larvae sampling is only considered for the offshore surveys in the North Sea. The spatial coverage of the inshore surveys is limited and the vessels used for the surveys don't allow for extra personnel to conduct night-time sampling.

In 2023 the options were investigated for the Dutch BTS and a working document was provided and presented to WGBEAM 2024 (de Boois, 2023). Main conclusion was that in approximately 50% of the nights there may be room for additional sampling during the BTS survey period. Additional personnel (ship's crew and scientific crew) is always needed to conduct the night-time activities. WGBEAM will also provide the working document to WGSINS.

Reference list

Literature references

Beier, U., de Boois, I. J., Haslob, H., Raat, H., and Vrooman, J. 2024. ICES Survey Protocols – Inshore beam trawl surveys, coordinated by Working Group on Beam Trawl Surveys (WGBEAM). ICES Techniques in Marine Environmental Sciences Vol. 70. 55 pp. https://doi.org/10.17895/ices.pub.25382437

Berg, C.W., Nielsen, A., Kristensen, K. 2014. Evaluation of alternative age-based methods for estimating relative abindance from survey data in relation to assessment models. Fisheries research Vol. 151, p 91-99. https://doi.org/10.1016/j.fishres.2013.10.005

Chin, K., Sakinan, S., bleeker, K., and de Boois, I. 2023. Evaluation the efficiency of otolith collection for estimating the age composition. Poster ICES Annual Science Conference September 2023

de Boois, I.J. 2023. Investigation of possibilities to use downtime in Dutch Beam trawl survey for other monitoring activities. CVO memo CVO-2405759-IdB-lcs. Available upon request.

de Boois, I.J., Burt, G., Lecomte, J.-B., Masnadi, F., Panten, K., Raat, H., Sigurdsson, G.M., Thorlacius, M. 2023. ICES Survey Protocols – Offshore beam trawl surveys, coordinated by Working group on Beam Trawl Surveys (WGBEAM). ICES Techniques in Marine Environmental Sciences Vol. 69. 70 pp. https://doi.org/10.17895/ices.pub.21603336

de Heij, A., Goud, J. 2010. Sepiola tridens spec. nov., an overlooked species (Cephalopoda, Sepiolidae) living in the North Sea and north-eastern Atlantic Ocean. Basteria, 74(1/3), 51–62. https://natuurtijdschriften.nl/pub/597375/BAST2010074001004.pdf

Goud, J., de Heij, A. 2012. Mediterranean Sepiola aurantiaca Jatta, 1896, versus the NE Atlantic Sepiola pfefferi Grimpe, 1921 (Cephalopoda, Sepiolinae). Basteria 76 (1-3): 1-11 (2012). https://natuurtijdschriften.nl/pub/597408/BAST2012076001001.pdf

ICES. 2020. ICES Workshop on unavoidable survey effort reduction (WKUSER). ICES Scientific Reports. 2 :72. 92pp. http://doi.org/10.17895/ices.pub.7453

ICES. 2022. Benchmark Workshop for selected elasmobranch stocks (WKELASMO). ICES Scientific Reports. 4:47. 136 pp. http://doi.org/10.17895/ices.pub.21025021

ICES. 2023a. Working Group on Beam Trawl Surveys (WGBEAM). ICES Scientific Reports. 5:48. 84 pp. https://doi.org/10.17895/ices.pub.22726112

ICES. 2023b. Working Group on Crangon Fisheries and Life History (WGCRAN). ICES Scientific Reports. 5:93. 48 pp. https://doi.org/10.17895/ices.pub.24220471

Schram, E. Hintzen, N., Bleeker, K., Tiano, J., Chin, K., Poos, J.J., Greenway, E., Staeudle, T., and Batsleer, J. 2023. Industry-science collaboration on data limited stocks. Final report on the industry-science collaboration project OSW Data arme visbestanden. Wageningen Marine Research report C067/23. https://doi.org/10.18174/640518 (accessible from 1st April 2024)

R script references

Report sec-tion	Link to script on WGBEAM github	Short description of the script (incl surveys used, analyses, figures created, etc.)	Creator 2024
4.4	species_consistency_check_DYFS.R https://github.com/ices-eg/wg_WGBEAM/blob/master/species_con-cistency_check_DYFS.R	Check consistency of Valid AphiaIDs with lat-est WORMS version. Create a look-up-table to compare species determination by coun-try.	Holger Haslob
4.4	Species consistency check detail per spe-cies_DYFS.R https://github.com/ices-eg/wg_WGBEAM/blob/master/Spe-cies%20consistency%20check%20de-tail%20per%20species_DYFS.R	Create graphs for inconsistent species deter-minations between countries for single spe-cies/species groups.	Jip Vrooman
4.1	Elasmobranchs script https://github.com/ices-eg/wg_WGBEAM/blob/master/Evaluate%20sp-tmp%20distribution%20for%20%20%20%20elasmo.r	Evaluate spatial-temporal distribution from combined offshore and inshore data for elasmobranchs	Thomas Lanssens, Antonio Palermino
4.3	Analysis of ALKs and LFDs for sole, all off-shore and inshore beam trawl surveys wg_WGBEAM/aged_data_analy-sis/2023_comparison_age_based_index/R at master · ices-eg/wg_WGBEAM · GitHub	Evaluate ALKs and LFDs for sole for all beam trawl surveys in one go. Also applicable to other species.	Jean-Bap-tiste Lecomte

Annex 1:   List of participants

Name	Institute	Country of institute
Full meeting attended		
Ingeborg de Boois	Wageningen Marine Research	Netherlands
Gary Burt	Centre for Environment Fisheries and Aquaculture Science (Cefas)	UK
Holger Haslob	Thuenen-Institute of Sea Fisheries	Germany
Thomas Lanssens	Institute for Agricultural, Fisheries and Food Research (ILVO)	Belgium
Antonio Palermino	Institute for Marine Biological resources and Biotechnology (CNR - IRBIM)	Italy
Kay Panten	Thuenen-Institute of Sea Fisheries	Germany
Louise Straker Cox	Centre for Environment Fisheries and Aquaculture Science (Cefas)	UK
Jip Vrooman	Wageningen Marine Research	Netherlands
Meeting partly attended		
Chyanna Allison	Centre for Environment Fisheries and Aquaculture Science (Cefas)	UK
Jean-Baptiste Lecomte	Institut français de recherche pour l'exploitation de la mer (IFREMER)	France
Vaishav Soni	ICES	Denmark
Adriana Villamor	ICES	Denmark

Annex 2: Resolution and agenda

Annex 2.1 Resolution

WGBEAM – Working Group on Beam Trawl Surveys

2022/FT/EOSG01 The **Working Group on Beam Trawl Surveys** (WGBEAM), chaired by Ingeborg de Boois, the Netherlands, will work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
2023	20-23 March 2023	Hafnarfjörður, Iceland	The first interim report by 30 April 2023 to SCICOM and ACOM	Chair: Ingeborg de Boois Additional chair to be defined
Year 2	19-22 March 2024	Bremerhaven, Germany	TBD	chair to be defined
Year 3	2025 TBD		TBD	chair to be defined

ToR descriptors[4]

ToR	Description	Background	Science Plan codes	Duration	Expected Deliverables
a	Coordinate inshore and offshore surveys, in the ICES areas as well as in the Adriatic Sea. Industry surveys are also included.	Dates, sampling areas and contact details of key persons are shared in order to (a) identify opportunities for tows on the same location, to support the deltaGAM methodology for index calculation in combining different survey gears. (b) coordinate effort in case of unforeseen circumstances hampering one of the surveys, primarily North Sea (c) Unaggregated beam trawl survey data are stored in DATRAS up and until the survey of the year previous to the meeting year. Data from the year(s) before that, should be checked for completeness (final data submitted) (d) Report on the performance and abnormalities in the inshore and offshore surveys in the past year	3.1	annually	(1) Finalized planning for the inshore and offshore beam trawl surveys, including areas where overlappinig tows may occur. (2) Updated ICES database for inshore and offshore beam trawl surveys. (3) Survey summary sheet by region.
b	Review and if needed update the manuals for	Review and update the survey manuals if needed.	3.1	annual check,	Up-to-date manuals for offshore and inshore

[4] Avoid generic terms such as "Discuss" or "Consider". Aim at drafting specific and clear ToR, the delivery of which can be assessed

ToR Description	Background	Science Plan Codes	Duration	Expected Deliverables
offshore and inshore beam trawl surveys			finalisation in Year 3	beam trawl surveys. If no changes occur over the time period, a time stamp identifying the latest review will be added to the latest version. Otherwise updated manuals will be provided.
c Evaluate the offshore and inshore beam trawl survey data by region, as well as cross-regionally in a systematic and reproduceable manner. Document inconsistencies, correct errors or omissions identified.	Evaluation by region will ensure that patterns in the data (e.g. time-series, cohort strength) are clear, even when inter-survey trends contradict. Evaluation across regions will provide insight in the commonalities and differences in e.g. stock dynamics, species abundance and/or length groups in different regions. Evaluation of e.g. species composition, length measurements and litter registrations will ensure that patterns in the data are based on correct data and not due to artefacts. By doing this in a reproduceable manner (R script), the focus can be shifted or extended over the years without re-inventing the wheel. Moreover, traceability of analyses increases. Evaluation of age-based information is relevant for stock assessment. As almost all final fisheries-independent timeseries are generated by stock assessors themselves, the survey coordination group should make sure that there is sufficient insight prior to stock assessment on the development of age groups over time, regions, and species.	3.2, 3.3	annually	(a) Updated, consistent (e.g. species composition, litter coding, consistent species identification in overlapping survey areas) and quality controlled beam trawl survey data are available in DATRAS; (b) Up-to-date R script (github) to evaluate the results by region, and cross-regionally
d Investigate growth patterns in plaice (*Pleuronectes platessa*), for small fish (day rings) as well for 1+ fish, over the areas.	Dutch research on histological maturation of plaice as well as field observations in the offshore beam trawl survey in the southwestern North Sea show that plaice spawns in August/September in that area. It is unclear if the spawning results in Reproduction. Additional data collection will be done, in order to do day-ring analayses for the 0-group plaice. Next to that, growth rates of fish (i.a. plaice) are changing directly affecting the length at age. As stock assessments are age-based, a decrease of length at age will affect the available fish within the commercial length range.	3.2, 5.2	Year 3 finalising	Peer reviewed publication on plaice

Summary of the Work Plan

Year 1	(1)	Compilation of survey summary sheets
	(2)	Provide tabular overview of survey planning, including geographical areas for overlapping tows
	(3)	Data for all beam trawl surveys (inshore and offshore) including litter uploaded in DATRAS for at least the past two years, as far as DATRAS allows the survey data to be submitted. For datasets where index calculation is done directly from DATRAS, as many years of the time-series should be uploaded as is feasible
	(4)	R scripts for and results from the data evaluation by region as well as across regions
	(5)	If relevant, updated inshore and offshore survey manual at sharepoint
	(6)	Data collection and analyses on growth rates of plaice
Year 2	(1)	Compilation of survey summary sheets
	(2)	Provide tabular overview of survey planning, including geographical areas for overlapping tows
	(3)	Data for all beam trawl surveys (inshore and offshore) including litter uploaded in DATRAS for at least the past two years, as far as DATRAS allows the survey data to be submitted. For datasets where index calculation is done directly from DATRAS, as many years of the time-series should be uploaded as is feasible
	(4)	R scripts for and results from the data evaluation by region as well as across regions
	(5)	If relevant, updated inshore and offshore survey manual at sharepoint
	(6)	Data collection and analyses on growth rates of plaice
Year 3	(1)	Compilation of survey summary sheets
	(2)	Provide tabular overview of survey planning, including geographical areas for overlapping tows
	(3)	Data for all beam trawl surveys (inshore and offshore) including litter uploaded in DATRAS for at least the past two years, as far as DATRAS allows the survey data to be submitted. For datasets where index calculation is done directly from DATRAS, as many years of the time-series should be uploaded as is feasible
	(4)	R scripts for and results from the data evaluation by region as well as across regions
	(5)	If relevant, updated inshore and offshore survey manual at sharepoint, and versions ready for review and publication
	(6)	Finalisation of analyses on growth rates of plaice, first draft of peer reviewed publication ready.

Supporting information

Priority	The scientific surveys coordinated by this Group provide major fishery-independent tuning information for the assessment of several fish stocks in the a number of regions. Consequently, these activities are considered to have a very high priority.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group is normally attended by about 12 beam trawl survey experts
Secretariat facilities	Report finalization, support ICES Data Centre with respect to DATRAS-related topics
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	The survey data feed into to the assessments of flatfish stocks, brown shrimp and elasmobranch species carried out by various stock assessment Egs. Linked to ACOM through the quality of stock assessments and management advice.
Linkages to other committees or groups	Outcomes of and data supplied by WGBEAM are relevant to WGML, possibly to BEWG, and integrated ecosystem assessment groups.
Linkages to other organizations	The offshore beam trawl survey data are used in the large fish indicator (OSPAR).

Annex 2.2   Agenda WGBEAM 2024

Preliminary Agenda for WGBEAM 19-22 March 2024

Mixed meeting

Daily schedule (Europe)

day	Europe mainland	Iceland/UK
Tuesday	09.00-18.00	08.00-17.00
Wednesday	09.00-18.00	08.00-17.00
Thursday	09.00-18.00	08.00-17.00
Friday	09.00-11.30	08.00-10.30

Lunch and coffee breaks according to needs and availability

Terms of reference (https://community.ices.dk/ExpertGroups/wgbeam/2024%20Meeting%20Documents/01.%20ToR%20and%20general%20information/WGBEAM%20Resolution%202023-2025.pdf):

a) Coordinate inshore and offshore surveys, in the ICES areas as well as in the Adriatic Sea. Industry surveys are also included.

b) Review and if needed update the manuals for offshore and inshore beam trawl surveys. (2024: only review of offshore manual needed)

c) Evaluate the offshore and inshore beam trawl survey data by region, as well as cross-regionally in a systematic and reproduceable manner. Document inconsistencies, or correct errors or omissions identified.
   - Evaluate species consistency checks for inshore surveys.
   - ALKs and LFDs for sole, dab, lemon sole, plaice.
   - Elasmobranchs

d) Investigate growth patterns in plaice (*Pleuronectes platessa*), for small fish (day rings) as well for 1+ fish, over the areas.[5]

Highlights: green=plenary, yellow=subgroup

Tuesday 19 March

CET 09.00/UTC 08.00   Getting ready, connecting, etc.

CET 09.15/UTC 08.15   Welcome, round the table, terms of reference and agenda, practicalities of the meeting, Code of Ethics and Professional Conduct (figshare.com)

CET 09.30/UTC 08.30   Report structure, responsibilities

CET 09.45/UTC 08.45   Follow-up on general recommendations and actions (topical issues listed in the agenda):

---

[5] In 2024 this task will mainly be coordination of activities, and report on work done in 2023

CET 10.40/UTC 09.40 **Break**

CET 11.00/UTC 10.00

- Possibilities to use downtime in Dutch BTS [Ingeborg]

CET 11.45/UTC 10.45 **Tor a, b: status**

(followed by) **Subgroup division Tor c**

ToR c Evaluate the offshore and inshore beam trawl survey data by region, as well as cross-regionally in a systematic and reproduceable manner. Document inconsistencies, or correct errors or omissions identified.

[1] Evaluate species consistency checks for inshore surveys. [lead: Holger+Jip]
[2] Elasmobranchs [lead: Thomas, Antonio]
[3] Offshore manual [lead: Kay, Gary]
[4] ALKs and LFDs for sole, dab, lemon sole, plaice [all]
[5] other interesting topics?

Discuss subgroup timing in relation to participants' availability

CET 12.30/UTC 11.30	**Break**
CET 13.30/UTC 12.30	**Subgroup work**
CET 17.00/UTC 16.00	**Wrap-up Tuesday, progress on tasks**
CET 17.30/UTC 16.30	End of day

Wednesday 20 March

CET 09.00/UTC 08.00 Connecting and round the table of the guests

CET 09.15/UTC 08.15 Highlights, striking things and serious issues from 2023 surveys (5 min per survey max.)

Guideline: focus on the following questions:

- Did we encounter any special species?
- Did we carry out any special activities?
- Did we see strong yearclasses or unexpected patterns in cohorts?
- Did we have any serious issues affecting the survey spatial coverage or data quality?
- Inshore (from north to south):
  o Germany [Holger]
  o The Netherlands [Jip]
  o Belgium [Thomas]
  o England [Louise]
  → Discussion: are there any commonalities worth reporting on?
- Offshore (from north to south):
  o England; max 10 minutes total due to the nr of surveys [Louise]
  o Germany [Kay]
  o The Netherlands [Ingeborg]
  o Belgium [Thomas]
  o Italy/Slovenia [Antonio]
- Industry:

- o   Industry survey on turbot and brill   [Justin]
- o   Western Channel Sole and Plaice   [Gary]
  ➔ Discussion: are there any commonalities worth reporting on?

CET 10.40/UTC 09.40   Break

CET 11.00/UTC 10.00   Data users' presentations

- Developments in use of beam trawl survey data in stock assessments (max. 7 mins presentation, 2 mins clarifying questions)
  - o   Benchmark sole results   [Iago/Chun]
  - o   Benchmark elasmobranchs results relevant to WGBEAM   [Katinka]
  - ➔ Discussion: can WGBEAM contribute to any benchmark/data preparation in 2024/2025?

CET 12.30/UTC 11.30   **Break**

CET 13.30/UTC 12.30

DATRAS related recommendations

ID	EG	Year	Recommendation	Recipients	Status January/February 2024
23	WGBEAM	2023	"The provision of ship codes is outside the control of ICES, and can take more than six months. Survey data upload should take place before the deadline set, so end-users can access the data. It is recommended that ICES creates temporary shipcodes when new ship codes are requested, which can be replaced by formal codes as soon as they become available (data resubmission required). The same should apply to historic -and sometimes inactive- vessels."	Data Centre;#390	ICES Data centre is putting more pressure on NOAA to get shipcodes for quickly. The acceptance process has improved, e.g. Antonio is waiting for a code, but can submit with an anonymous code. Holger did the same, and uses the anonymous codes for the missing codes. He'll take the last known shipcode as a proxy for the ships. Resubmission of GER DYFS is time consuming as there are five different shipcodes. Holger will discuss batch upload for DATRAS data from TI. Explanation table in update of inshore manual.
26	WGBEAM	2023	"Download of exchange data from DATRAS: • WGBEAM recommends that in the download of the Exchange file via https://datras.ices.dk/Data_products/Download/Download_Data_public.aspx the selection of gear is removed and the selection of country is added, in order to allow for easier download of data submitted by one country. It should be considered to use 'Surveying country' to prevent misunderstanding about geographical country definitions. • WGBEAM recommends that when selection of species is made possible in the download of the Exchange file via https://datras.ices.dk/Data_products/Download/Download_Data_public.aspx, all	WGDG;#633;#E OSG;#549	Completed

ID EG	Year Recommendation	Recipients	Status January/February 2024
	HH information is always provided for the year, country and vessel selected.		

DATRAS topics   **[DATRAS Team] Vaishav, Adriana, Laura**

CET 15.00/UTC 14.00   **Subgroup work**

Subgroups according to progress on Tuesday. Working towards finalisation of first subgroups.

CET 17.00/UTC 16.00   **Wrap-up Wednesday, progress on tasks**

CET 17.30/UTC 16.30   End of day

Thursday 21 March

CET 09.00/UTC 08.00   **Tor d, status**

- Presentation on state of the art day-ring analysis at WMR   [Ingeborg]
- Presentation French BTS   [Jean-Baptiste]

CET 10.00/UTC 09.00   Break

CET 10.30/UTC 09.30   **Quality assurance in beam trawl surveys**

- Exchanges and workshops 2024/2025
- Possibilities for staff exchange
- Closed areas (e.g. wind farms, MPA's) affecting the survey spatial coverage: how to maintain quality of the time-series?
- Alignment of species identification

CET 11.00/UTC 10.00   **Subgroups**

tbd

CET 12.30/UTC 11.30   Break

CET 13.30/UTC 12.30   **Subgroups and report writing**

CET 17.00/UTC 16.00   Wrap-up of today's work; state of the art report

CET 17.30/UTC 16.30   End of day

Friday 22 March

CET 09.00/UTC 08.00   Plenary

- Recommendations to other groups
- Intersessional WGBEAM actions
- Dates and venue next meeting
- Agree on report, and timeline finalisation
- Open ends and action list for WGBEAM

CET 11.30/UTC 10.30   Closure of the meeting

Annex 3: Actions

Topic	Action	Action by (lead=*Italics*)	Milestone dates
Additional sampling	Investigate the options for comparative tows during the inshore beam trawl survey on the only Belgian station in the Dutch EEZ	*Jip, Thomas*	1 June 2024
Additional sampling	Send memo on potential use of downtime in Dutch BTS to WGSINS chairs	*Ingeborg*	1 May 2024
Analysis of survey data -improvement of R scripts	Split up the ALK and LFD evaluation plots for the North Sea data in W and E of 3°E, based on the different growth rates in the areas. Other improvements: see paragraph 4.3.4 of WGBEAM 2024 report. For the UK data, splitting the data by surveys, or survey area will help to better distinguish patterns.	Chyanna, Jean-Baptiste	(prior to or during) WGBEAM 2025
Analysis of survey data -improvement of R scripts	Remove DevStage='E' (viable egg cases) from the script used for elasmobranch evaluation	Antonio, Thomas	(prior to or during) WGBEAM 2025
Analysis of survey data – North Sea sole and plaice index	Compare data user's index with 'old' international index.	*Ingeborg*, Chun, Iago, Jip, Thomas, Holger,	1 October 2024
Comparative fishing inshore	Investigate the options for comparative tows during the inshore beam trawl survey on the only Belgian station in the Dutch EEZ.	*Jip, Thomas*	1 June 2024
Data consistency - species identification	Invite Belgian and German experts to Dutch species identification workshops	*Ingeborg*	1 November 2024
Data resubmission BTS	Check single length classes for dab CA records: i) Belgium 2022 <10 cm; ii) 2018 the Netherlands 9 cm; 2022 the Netherlands 11 cm (see Figure A9.5 in WGBEAM 2024 report)	*Thomas, Ingeborg*	1 October 2024
Data resubmission BTS	Check and if needed correct and resubmit information on distance towed based on the analysis by WGBEAM 2024 (Table A11.1)	*Thomas, Kay, Gary, Ingeborg*	1 October 2024
Data resubmission DYFS, SNS	Check and if needed correct and resubmit species information based on the consistency checks by WGBEAM 2024 (Table 4.1)	*Holger, Jip, Ingeborg, Thomas*	1 October 2024
Data resubmission DYFS, SNS	Check and if needed correct and resubmit information on distance towed based on the analysis by WGBEAM 2024 (Table A11.1)	*Holger, Jip, Ingeborg, Thomas*	1 October 2024
Data submission BTS, DYFS, SNS, NL Industry survey on Turbot and Brill	It is advised that only data that have been logged are reported to DATRAS, and values like standard survey speed of calculated distance based on positions are not submitted.	*All*	Always
Data submission BTS, DYFS, SNS, NL	Communicate with national IBTSWG and WGBIFS contact persons/IBTS and BITS data submitters about alignment of	*Ingeborg, Kay, Holger, Gary, Chyanna, Louise*	1 June 2024

Industry survey on Turbot and Brill	data submission in the new format, and coordinate reporting to DATRAS Team about potential issues		
Data submission BTS, DYFS, SNS, NL Industry survey on Turbot and Brill	Report questions that are not yet dealt with in the FAQs to the ICES DATRAS Team (datrasadministration@ices.dk).	*All*	1 June 2024
Data submission BTS, DYFS, SNS, NL Industry survey on Turbot and Brill	Apply the following changes to the submitted files (due to changes in DATRAS): Change headers Change vocabulary OtGrading Add variables 'Survey' and 'Organisation' to the survey files	*Thomas, Ingeborg, Kay, Holger, Gary, Chyanna, Louise*	1 October 2024
Data submission DYFS	Schedule upload of UK inshore survey data 2023, 2022, and historic up to 2010	*Louise*, Gary, DATRAS Team	15 February 2025
Data visibility	Send a list to ICES DATRAS team with UK offshore beam trawl survey data that should not be made available anymore, and a good description should be given on the rationale behind the limitation of data availibity. Current products should also be recalculated.	*Louise, Gary*	1 June 2024
DATRAS products	Modify the product description of 'CPUE per length per haul per hour' from 'Provides Catch in numbers per length class and hour of hauling per haul. Available for all species. Uses LngtClass in mm. This Data product can be requested per Survey Area.' into 'Provides Catch in numbers per length class and hour of hauling per haul, and for beam trawl surveys (BTS, DYFS, SNS, Netherlands Industry survey on Turbot and Brill) also per km2 per haul. Available for all species. Uses LngtClass in mm. This Data product can be requested per Survey Area.'	*DATRAS Team*	1 June 2024
Day ring analyses plaice	Set up information exchange on otolith preparation for day ring analyses, and on interpretation of day rings	*Ingeborg, Louise*	1 June 2024
Day ring analyses plaice	Collect samples of small plaice (< 10 cm) during DYFS 2024 for day ring analyses; 2 per DYFS area	*Jip, Holger, Thomas, Louise*	1 November 2024
Manual inshore	Add information on the UK inshore survey in the inshore beam trawl survey manual (link)	*Louise*	15 February 2025
Manual inshore	Add information to the table with data checks (Table 7.2) in the inshore beam trawl survey manual (link)	*Ingeborg, Jip, Holger, Louise, Thomas*	15 February 2025
Manual offshore	Add information to the table with data checks (Table 7.2) in the offshore beam trawl survey manual (link)	*Ingeborg, Thomas, Kay, Gary, Jean-Baptiste, Antonio*	1 December 2024
Staff exchange inshore beam trawl surveys	Investigate options for staff exchange between Netherlands and Germany (e.g. on board Isis in October), in 2024 or 2025.	*Jip, Holger*	1 June 2024
Staff exchange offshore beam trawl surveys	The Netherlands and Germany will organise a staff exchange on the offshore beam traw survey in 2025.	*Ingeborg, Kay*	1 December 2024

Station BTS	reduction	Provide text to data users via WGBEAM chair (probably WGNSSK and WGEF) with the reasoning behind to reduce stations in the UK 7d/4c offshore beam trawl survey, and the request what information is needed to be allowed to reduce or remove those.	*Louise, Gary, Chyanna*	15 April 2024
Station BTS	reduction	Prepare presentation on station reduction in the UK 7d/4c survey.	*Chyanna*, Louise	1 March 2025

Annex 4:   Deadlines for data delivery to DATRAS

The deadlines for beam trawl survey data delivery to DATRAS are based on a realistic timeline where data for all species that are relevant for stock assessment can be delivered at the same moment. That is different from to the current situation, where, under high pressure, plaice and sole data for the offshore beam trawl surveys in the North Sea, mainly targeting older flatfish, are made available for the update assessment in autumn. Recruit information comes from the inshore surveys (SNS, DYFS) that are still running when the update assessment is carried out. The distributional range of the younger age classes (0-2) ranges for both plaice and sole is only properly covered by the combination of the DYFS, SNS, BTS, NS-IBTS.

Annex 4.1 Deadlines for data delivery to DATRAS of the offshore beam trawl surveys conducted in 2024.

Country	Area	End date survey	DATRAS code	surveyDeadline DATRAS delivery	Deadline DATRAS LITTER delivery
Belgium	western-southern North Sea	mid-September	BTS	Incomplete: 5th December[6] Complete: 1st March	1st March
Germany	German Bight	mid-September	BTS	Complete: 5th December	1st March
Netherlands	North Sea	mid-September	BTS	Incomplete: 5th December [7] Complete: 1st March	1st March
UK	English Channel / Celtic Sea	mid-April	BTS	Incomplete: 5th August [8] Complete: 1st December	1st December
UK	7d, 4c	end July	BTS	Incomplete: 5th December [9] Complete: 1st March	1st March
UK	7fg, 7a	mid-September	BTS	Incomplete: 5th December [10] Complete: 1st March	1st March
Italy/ Slovenia	Northern Adriatic Sea (GSA 17)	mid December	BTS-GSA17	Complete: 1st June	No litter data delivery
France	8a, 8b	mid December	BTS-VIII	Complete: 1st April	No litter data delivery
Iceland	Entire coast of Iceland	end July	No code	Complete: 1st April (currently no delivery to DATRAS)	No litter data delivery

---

[6] file includes complete HH information, HL information for fish species, CA information for commercial flatfish species (brill, dab, flounder, lemon sole, plaice, sole, turbot)

[7] file includes complete HH and HL information; CA information available for commercial flatfish species (brill, dab, flounder, lemon sole, plaice, sole, turbot)

[8] file includes complete HH and HL information; CA information available for commercial flatfish species (brill, lemon sole, plaice, sole, turbot, megrim)

[9] file includes complete HH and HL information; CA information available for commercial flatfish species (brill, lemon sole, plaice, sole, turbot)

[10] file includes complete HH and HL information; CA information available for commercial flatfish species (brill, lemon sole, plaice, sole, turbot)

Annex 4.2 Deadlines for data delivery to DATRAS of the inshore beam trawl surveys conducted in 2024.

Country	Area	End date survey	DATRAS survey code	Deadline delivery DATRAS
Belgium	Belgian coastal zone	end September	DYFS	Complete: 1st February
Germany	German Bight and German Wadden Sea. Coastal Area outside the island chain	mid-October	DYFS	Complete: 1st February
Netherlands (DYFS)	Scheldt estuary, Dutch Wadden Sea, Dutch coastal zone and German Bight	end October	DYFS	Complete: 1st February
Netherlands (SNS)	Dutch coastal zone	end September	SNS	Complete: 1st February
UK	Thames estuary	end September	DYFS	Submission foreseen from 2025 onwards

Annex 4.3 Overview of open (green) and closed[11] (grey marked with X) periods for resubmission of beam trawl survey data to DATRAS.

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Greater North Sea				X	X	X						
7d				X	X	X						
7a, fg				X	X	X						
Bay of Biscay					X	X						
Adriatic Sea						X					X	X

---

[11] When data users request resubmission, updates may be uploaded to DATRAS in the closed period

Annex 5: Survey summary sheets 2023 surveys

Survey, country	Area coverage	Running since	Methodology described in	Information to assessment WG	Data availability	Comments on 2023 survey	Data collected
Beam Trawl Survey (BTS), Belgium	South-western North Sea	1985	WGBEAM_beam_trawl_survey_manual	WGNSSK: *Pleuronectes platessa* (ple.27.420), indices by age group, age 1-10+; *Solea solea* (sol.27.4), indices by age group, age 1-10+ WGEF: elasmobranch species, CPUE per species per haul	Unaggregated data: (fish, benthos, litter) http://datras.ices.dk Area based age information from 2004-2009. Haul based age information from 2010-2023. Density plots per species: ICES DataPortal	The Belgian BTS was carried out from 22 Aug to 31 Aug with the new RV Belgica (in operation since 2022). No stations were cancelled and no heavy delays occurred. Due to the historical presence of large amounts of *Alcyonidium digitatum* or *Sabellaria sp.* and the presence of ships at anchor, some hauls were shortened to 15 minutes. Sampling design remained the same as last year. Conclusion: in total 62 out of a total of 62 planned stations were successfully fished and declared valid. This is within the margin of 90% of the plan to be	Fish species: all species Fish length: all species, elasmobranch by sex Fish weight: sample weight per species, elasmobranch by sex Fish biological data: individual weight, length, sex, age for plaice, sole, cod, turbot, brill, dab and lemon sole. Maturity data for summer spawner lemon sole and plaice for the second year. Benthos: all species, numbers and total weight per species per haul. Length measurements for *Sepia sp., Loligo vulgaris,* and *Loligo forbesii*. Carapax width measurements for *Cancer pagurus* (by sex) and carapax length measurement for *Homarus gammarus* (by sex). Only presence absence for Anthozoa, Bryozoa, Hydrozoa and Porifera.

					achieved as outlined in the DCF programme.	Marine litter: all hauls CTD: continuous tow profile Other: /
Beam Trawl Survey (BTS), Germany	German Bight (North Sea)	1991	[WGBEAM beam trawl survey manual](#)	WGNSSK: Limanda limanda (dab.27.3a4), Pleuronectes platessa (ple.27.420), Solea solea (sol.27.4), indices by age group, age 1-10+ WGEF: elasmobranch species, CPUE per species per haul	Unaggregated data (fish, benthos, litter): datras.ices.dk Density plots per species: [ICES DataPortal](#)	The German BTS could not be carried out with the RV Solea due to personnel problems at the shipping company. The commercial beam trawler Jacob Grietje was chartered. The survey started with a 3-day delay and ran from 21 August to 5 September 2023. All 63 planned stations were successfully completed. Three hauls had to be repeated due to net damage. Due to the limited scientific crew (only 4 scientists instead of 7), no marine litter was collected during the entire survey. Temperature and salinity data could not be collected due to lack of equipment.	Fish species: all species Fish length: all species; dab, plaice, elasmobranch by sex. Fish weight: sample weight per species, elasmobranch by sex Fish biological data: individual weight, length, sex, yearclass for dab, plaice, sole Benthos: all species, numbers and total weight per species per haul. Cephalopods, edible crab, *Nephrops norvegicus* length measurements. Marine litter: - CTD: - Other: -

| Beam Trawl Survey (BTS), Netherlands | Southern and Eastern North Sea | 1985 | WGBEAM beam trawl survey manual | WGNSSK: *Limanda limanda* (dab.27.3a4), *Pleuronectes platessa* (ple.27.420), *Scophthalmus maximus* (tur.27.4), *Scophthalmus rhombus* (bll.27.3a47de), *Solea solea* (sol.27.4), *Platichthys flesus* (fle.27.3a4), indices by age group, age 1-10+

WGEF: CPUE per species per haul | Unaggregated data (fish, benthos, litter) for complete timeseries: datras.ices.dk

Density plots per species: ICES DataPortal

Hydrographic data: ocean.ices.dk | Technical issues in the first survey week resulted in less stations (57) sampled than planned (74) in BTS1 but spatial coverage was maintained.

No extreme catches of *Electra pilosa*, as opposed to 2022 and 2021.

Strong 2018 yearclasses for plaice visible in index as 5 year olds in whole survey area. Strong 2018 yearclass sole visible as 4 year olds in the south-eastern North Sea. | Fish species: all species

Fish length: all species, elasmobranch by sex.

Fish weight: no sample weight per species till 2017, elasmobranchs by sex.

Fish biological data: individual weight, length, sex, yearclass for plaice, sole, dab, lemon sole, turbot, brill, long rough dab, flounder, cod. Maturity data for summer spawners such as lemon sole.

Benthos: all species, numbers. Cephalopods, edible crab, *Nephrops norvegicus* length measurements.

Marine litter: all trawls

CTD: vertical profile planned for all hauls, but not always managed due to technical issues and weather conditions.

Other: - |
| Beam Trawl Survey (BTS), Netherlands | Central and Western North Sea | 1998 | WGBEAM beam trawl survey manual | WGNSSK: *Limanda limanda* (dab.27.3a4), *Pleuronectes platessa* (ple.27.420), *Scophthalmus maximus* (tur.27.4), *Scophthalmus rhombus* (bll.27.3a47de), *Solea solea* (sol.27.4), *Platichthys flesus* | Unaggregated data (fish, benthos, litter) for complete timeseries: datras.ices.dk

Density plots per species: ICES DataPortal | Survey conducted as planned. All planned stations have been fished, 74 in total.

Strong 2018 yearclasses for plaice still visible in index as 5 year olds in whole survey area. | Fish species: all species

Fish length: all species, elasmobranch by sex.

Fish weight: sample weight per species, elasmobranchs by sex.

Fish biological data: individual weight, length, sex, yearclass for plaice, sole, dab, lemon sole, turbot, brill, long rough |

				(fle.27.3a4), indices by age group, age 1-10+ WGEF: elasmobranch species, CPUE per species per haul	Hydrographic data: ocean.ices.dk	CTD showed many spikes, so there is for some hauls CTD information is missing.	dab, flounder, scaldfish, solenette, thickback sole, cod, hake. Maturity data for summer spawners such as lemon sole and thickback sole. Benthos: all species, numbers and total weight per species per haul. Commercial cephalopods, edible crab, *Nephrops norvegicus* length measurements. Marine litter: all trawls CTD: vertical profile planned for all hauls, but not always managed due to technical issues and weather conditions. Other: DNA samples for witch flounder age determination (Wageningen University), rays tagged for PhD project Eleanor Greenway
Western Channel Beam Trawl Survey, VIIe, 1st quarter (SWE-COS), England	Western English and Celtic Sea	2006	WGBEAM beam trawl survey manual	WGCSE Sole 7e Plaice 7e WGEF Cuckoo ray 6 7 8abd Spotted ray 7ae-h Undulate ray 7de Smooth hound Nea	Unaggregated data: Cefas Density plots per species: Cefas	Survey undertaken between 21 March to 16 Apr 2023. A total of 77 out of 81 planned tows in the western Channel survey area were successfully fished along with 22 out of a planned 50 tows in the Celtic Sea. However, following survey protocol of completing stations in numerical order reduces the number of valid tows in the Celtic Sea to 18 valid tows, with the remaining 4 tows	Fish species: all species Fish length: all species. Elasmobrach species, four-spot megrim, megrim, plaice by sex. Fish weight: sample weight by species and sex for all elasmobrach species, four-spot megrim, megrim, plaice. Fish biological data: Individual weight, length, sex

Lesser-spotted dogfish 7a-ce-j

Greater-spotted dog-fish 6 7

Blonde ray 7e

Small-eyed ray 7de

Thornback ray 7e

Category 6 stocks

Common skate 6 7a-ce-k

to be considered as 'additional'. The survey was not fully completed due to a reduced number of working days resulting from a combination of poor weather and the need for vessel equipment repairs (towing block). In the western Channel, nine stratum were completed (numbers 1-4, 6-9, and 11) and the other four stratum were valid, though 1 station was missing from each (numbers 5, 10, 11 and 13). In the Celtic Sea, only stratum K was completed, with five strata partially completed as two or more stations were missing (C, D, H, J and N) and the remaining four strata achieved only 'additional' stations fished out of numerical sequence, with no successful sampling in stratum G. One trawl station was invalid after damage to the gear. In addition to the trawl, ESM2, Niskin, and CTD were deployed to collect environmental data and water samples for caesium analysis.

and maturity for all elasmobranch species, and conger eel, (cod), (haddock), (whiting), ling, hake, (monkfish), John dory, (black bream) all species of gurnard, seabass, red mullet, four-spot megrim, (megrim), (turbot), (brill), witch, (lemon sole), (plaice (sole). Ages determined for those species highlighted by brackets.

Benthos: all species, numbers and total weight per species quantified for beam trawl with blinder. Additional observations made for beam trawl without blinder captured against catch for beam trawl with blinder. Length measurements collected for cephalopods and commercial shellfish. Sentinel and non-native species weighed and counted for both beam trawls.

Marine litter: all trawls

CTD: average surface and bottom temperatures and salinities collected for each tow.

Other: zoo-plankton (ring net), environmental data (ESM2), multibeam seabed

						imagery data, water samples for caesium & tritium analysis, genomic sampling of selected fish species, and opportunistic tagging of species of elasmobranch.
Beam Trawl Survey (BTS), England	Eastern English Channel and Southern North Sea	1988	WGBEAM beam trawl survey manual	WGNSSK Plaice 4 SD20 Plaice 7d Sole 7d WGEF blonde ray 4c 7d Cuckoo ray 3 4 Spotted ray 3 4 7d Thornback ray 3 4 7d Undulate ray 7de Smooth-hound Nea Lesser-spotted dogfish 3a 4 7d	Unaggregated data: datras.ices.dk Density plots per species: ICES DataPortal	The survey was conducted between 1 and 14 July. All 79 stations were successfully sampled, though the tow durations were reduced for 18 stations. Two stations in the southern North Sea had shorter two duration, one due to the presence of an electricity cable and for the other, wind speed and direction affected tow speed. Five stations in the English sector of Division 7.d were fished for 20 minutes due to a history of large epibenthos catches or the presence of static gear on the tow location. The tows were shortened for eleven stations in the French sector of Division 7.d due to historic large epibenthos and sediment catches, the presence of static gear, rough ground and the electricity cables in station locations. A CTD, Niskin and ESM2 were in addition to the trawl at each station to	Fish species: all species Fish length: all species. Elasmobranch species, plaice by sex. Fish weight: sample weight by species and sex for all elasmobranch species, plaice. Fish biological data: Individual weight, length, sex and maturity for all elasmobranch species, and conger eel, (cod), (whiting), ling, (monkfish), John dory, all species of gurnard, (seabass), red mullet, (turbot), (brill), dab, (lemon sole), flounder, (plaice), (sole). Ages determined for those species highlighted by brackets. Benthos: all species, numbers and total weight per species at a selected number of pre-selected stations. If not, species observed only.

							collect water samples and environmental data.	Sentinel and non-native species weighed and counted. Length measurements collected for cephalopods and commercial shellfish.

Marine litter: all trawls

CTD: average surface and bottom temperatures and salinities collected for each tow.

Other: environmental data (ESM2), collection of water samples for nutrient analysis, genomic sampling of selected fish species and opportunistic tagging of species of elasmobranch.

ISBCBTS (September) (ISBCTS), England	Irish Sea and Bristol Channel	1988	WGBEAM beam trawl survey manual	WGCSE Plaice 7a Sole 7a Sole 7fg Plaice 7fg WGEF Thornback ray 7afg Small-eyed ray 7fg Spotted ray 7ae-h Cuckoo ray 6 7 8abd Smooth-hound Nea	Unaggregated data: datras.ices.dk Density plots per species: ICES DataPortal	The survey was carried out between 6 to 25 Sept 2023. All 108 stations targeted were successfully completed. As expected, the tow duration at 26 stations was reduced from the normal 30 minutes which is usual for this survey series. A combination of the presence of static gear, history of large catches, previous gear damage at the location, the presence or the presence of static gear, obstructions (cables and buoys) and for one station failing light. The ESM2,	Fish species: all species Fish length: all species. Elasmobrach species, plaice by sex. Fish weight: sample weight by species and sex for all elasmobrach species, plaice. Fish biological data: individual weight, length, sex and maturity for all elasmobranch species, and conger eel, (cod), (haddock), (whiting), ling, hake, (monkfish), John dory, (black bream), all species of gurnard, seabass, red mullet, (turbot), (brill),

			Lesser-spotted dogfish 7a-ce-j		Niskin and CTD were deployed at a number of locations to collect environmental data and water samples for caesium analysis.	dab (lemon sole), (plaice), (sole). Ages determined for those species highlighted by brackets.
			Greater-spotted dogfish 6 7			Benthos: all species, numbers and total weight per species at a selected number of pre-selected stations. If not, species observed only. Sentinel and non-native species weighed and counted. Length measurements collected for cephalopods and commercial shellfish.
			Category 5 stocks			
			Blonde ray 7afg			Marine litter: all trawls
						CTD: average surface and bottom temperatures and salinities collected for each tow.
						Other: environmental data (ESM2), collection of surface water samples for analysis of tritium and water samples to determine alkalinity, genomic sampling of selected fish species opportunistic tagging of species of elasmobranch.
Beam Trawl Survey, France	Bay of Biscay	2007	[WGBEAM beam trawl survey manual](#)	WGBIE : Sole 8ab	Unaggregated data: datras.ices.dk http://datras.ices.dk	41 hauls of the 50 reference stations were carried out during 2023. Main issue in 2023 : 9 hauls of the 50 reference sta-	Fish species: all species Fish length: all species, meagre, monkfish, red mullet, seabass, sole and elasmobrach species by sex.

					tions were not sampled because of extremely bad weather conditions.	Fish weight: sample weight by species.
						Fish biological data: maturity, sex, otoliths for meagre, red mullet, seabass and sole. Illicium for monksfish.
						Benthos: Numbers and total weight per species
						Marine litter: all trawls.
						CTD: bottom temperatures collected for each tow (end).
Beam Trawl Survey, Italy-Slovenia-Croatia	North Adriatic Sea (GSA 17)	2005	[WGBEAM beam trawl survey manual;](#) SoleMon handbook (available here: https://dcf-italia.cnr.it/web/#/links/linee-guida)	FAO-GFCM-SAC-WGSAD, STECF: *Penaeus kerathurus, Pecten jacobaeus, Scophthalmus maximus, Scophthalmus rhombus, Sepia officinalis, Solea solea, Squilla mantis, Bolinus brandaris* Index of Abundance by size and/or age for common sole, spottail mantis shrimp, cuttlefish and Mediterranean scallop.	Unaggregated data: datras.ices.dk for sole	The 2023 survey was carried out from 14/11 to 30/11/2023 with the fishing vessel "Aquila Marina". 67 hauls (60 Italian + 1 Slovenian + 6 in the Croatian EEZ) were carried out during the 2023 survey. No unforeseen events occurred during the on-board activities. All the commercial species, a subsample of benthos, and the marine litter caught at each sampling station were landed every 2-3 days and taken to the CNR IRBIM laboratory for analysis. CTD profiles were not performed in 2023, but each gear was equipped with a	Fish species: The primary target species is *Solea solea*, with additional species including cuttlefish, Mediterranean scallop, queen scallop, turbot, brill, skates, purple dye murex, spottail mantis shrimp and caramote prawn. Fish length: all species Fish weight: individual weight for target species, total weight for the other. Fish biological data: individual weight, length, sex and maturity for target species. Length and total weight for other species.

					data logger to record temperature, salinity, and depth during the trawling.	Benthos: all hauls, more than 250 macro and mega-benthos species Marine litter: all hauls Temperature, salinity and depth data loggers attached to the gears recording bottom parameters during hauls.
Inshore beam trawl survey (DYFS)	Coastal zone Belgium	1971	Inshore beam trawl survey manual in progress	WGNSSK: Recruitment information available on *Pleuronectes platessa* (ple.27.420) and *Solea solea* (sol.27.4).	Unaggregated data (1985 – 2022): http://datras.ices.dk	The Belgian DYFS was carried out from 11-20 Sept 2023 with RV Simon Stevin. All haul durations were 15 minutes (in line with other inshore beam trawl surveys). Station 9 was moved slightly to the east because of aquaculture infrastructure. Due to bad weather one day was lost but this did not affect the survey. <u>Conclusion</u>: 33 sampling stations were completed successfully at 15 minutes of haul duration (100% coverage).	Fish species: all species (since 2020), before only commercial species. Fish length: selected list of commercial species; elasmobranchs by sex Fish weight: sample weight per species Fish biological data: individual weight, length, sex, age for plaice and sole Benthos: *Crangon crangon* sample weight and length of minimal 500 individuals per haul. Due to the low number of shrimp, the theoretical minimal of 500 could not always be achieved. Subsample of epibenthos: numbers and sample weight (since 2020). Marine litter: all hauls CTD: continuous tow profile Other: /

Inshore beam trawl survey (DYFS)	Coastal zone Germany and German Wadden Sea	1972	Inshore beam trawl survey manual in progress	WGNSSK: *Pleuronectes platessa* (ple.27.420), *Solea solea* (sol.27.4), combined BEL/GER/NED recruitment index	Unaggregated data: (2003 – 2023) datras.ices.dk	In 2023, two cruises with RV Clupea were carried out for the German DYFS. However, due to bad weather conditions and technical problems with the ship the northern part of the survey area was not covered (area 406N). Overall, 45 hauls (all valid) were carried out by RV Clupea for the German DYFS in 2023 (areas 405, 406S). The cruises with chartered commercial shrimp vessels in 2023 were conducted as planned. The whole survey area in the Wadden Sea was covered (chartered vessels: 140 valid hauls, 24 invalid). However, due to a mass occurrence of algae in the area 409 the catchability of the gear was reduced and 24 hauls had to be flagged as invalid in this area. The remaining valid hauls did not cover the area sufficiently for an index calculation.	Fish species: all species Fish length: all species Fish weight: sample of all species Fish biological data: individual weight, length, sex, year class for plaice. Benthos: all species, *Crangon crangon* total weight and length measurements of 250g subsample. Marine litter: only on RV Clupea CTD: continuous during hauls on chartered vessels, CTD attached to the gear (not in area 413). CTD casts on selected stations RV Clupea. Other: Secchi-Depth (chartered vessels)

Inshore beam trawl survey (DYFS)	Coastal zone Netherlands, Germany, Denmark, Dutch Wadden Sea, Eastern and Western Scheldt	1970	Inshore beam trawl survey manual in progress	WGNSSK: *Pleuronectes platessa* (ple.27.420), *Solea solea* (sol.27.4), combined BEL/GER/NED recruitment index	Unaggregated data (from 1985 till most recent year): datras.ices.dk Density plots per species: ICES DataPortal	Survey coverage in coastal zone lower than planned (83 of the 113 stations fished, of which 2 invalid), due to bad weather and technical issues. Spatial coverage not severely affected. Extra program not carried out. Still *Electra pilosa*, albeit somewhat less than previous years. 30 short-snouted seahorses (*Hippocampus hippocampus*), and a few three-bearded rocklings (*Gaidropsarus vulgaris*) Survey coverage in the Dutch Wadden Sea: full spatial coverage but unusually high number of invalid hauls (20 of 148 (out of 148)), mainly due to *ulva* and an green algae species. Locally a lot of whiting and bib. Not much sole, plaice differs per location, lot of small ones in the eastern Dutch WS. 3 sepias. Survey in Eastern and Western Scheldt conducted as planned (74 valid hauls, 2 invalid (out of 76)). Not a lot of fish. Some seahorses. 1 thornback ray (*Raja clavate*), 1 stingray	Fish species: all species Fish length: all species Fish weight: no sample weight per species Fish biological data: individual weight, length, sex, yearclass for plaice, dab, sole, flounder, turbot, brill. Maturity data only to separate between immature and maturing. Benthos: all species numbers. *Crangon crangon*, Cephalopods, edible crab length measurements Marine litter: no CTD: continuous during haul, CTD attached to net. Not all hauls recorded due to technical issues with the CTD. Other: additional hauls conducted for national programmes.

						(*Dasyatis Pastinaca*) and one smooth-hound (*Mustelus* spp).	
						Dutch plaice index for 0-group very high (one of the highest since 1970); 1-group highest since 2000. Sole indices low.	
Sole net survey (SNS)	Dutch EEZ and southern German Bight	1969	Inshore beam trawl survey manual in progress	WGNSSK: *Pleuronectes platessa* (ple.27.420), *Solea solea* (sol.27.4) , *Platichthys flesus* (fle.27.3a4), indices by age group age 1-4+	Unaggregated data (from 1985 till most recent year): datras.ices.dk Density plots per species: ICES DataPortal	42 out of 51 hauls were conducted, of which 1 was invalid. Quite some technical and other issues. For all transects at least a few stations have been sampled, so spatial coverage is not severely affected. Due to issues with the scale no individual weights were collected for the sampled fish during the first two weeks. Again a few seahorses. Dutch plaice index for 0-group relatively high. Sole index low. Strong 2021 year class for plaice still visible in 2022 SNS index as 1-year olds.	Fish length: all species Fish weight: no sample weight per species Fish biological data: individual length, weight, sex, yearclass for plaice, dab, sole, flounder, turbot, brill (no weight collected in the first two weeks of 2023 due to issues with the scale). Maturity data only to separate between immature and maturing. Benthos: all species numbers. Cephalopods, edible crab length measurements. Marine litter: no CTD: continuous during haul, CTD attached to net. Not all hauls were recorded due to due to a misunderstanding. Other: -

Industry survey, The Netherlands	Southern North Sea	2019	Schematic: https://edepot.wur.nl/545556 (in Dutch) Report: 544588 (wur.nl); https://doi.org/10.18174/640518 (accessible from 1st April 2024)	Not yet, but after 5 years to benchmark related to WGNSSK: *Scophthalmus maximus* (tur.27.4), *Scophthalmus rhombus* (bll.27.3a47de)	Unaggregated data (complete timeseries): datras.ices.dk	Area fully covered as planned.	Fish length: turbot and brill Fish weight: individual weights per fish Fish biological data: individual weight, length, sex, yearclass for turbot, brill. Maturity data only to separate between immature and maturing. Benthos: no Marine litter: no CTD: no Other: -
Industry survey, UK	Western Channel 7e.	2003	2022 Report (2023 awaiting approval): 2022 report available on Cefas Data Portal	WGCSE	Unaggregated data available from Cefas upon request	Survey completed in usual time window, with the eastern leg taking place between 16–21 August, followed by the western leg between 20–27 September, and all of the planned 90 (45 eastern survey; 45 western survey) stations were successfully sampled without major incident. For the eastern leg, four tows were made in a circular direction to avoid static gear, and at one tow the catch was processed as two separate entities when the gear had filled with sand and shell after 25 minutes	Fish length: All species Fish weight: No Fish biological data: individual length, sex, maturity, yearclass for plaice and sole Benthos: no Marine litter: no CTD: no Other: -

of towing, which had to be brought aboard and shot again to resume the tow, whilst retaining the standard 60 minute tow duration. The tow duration at four of the western leg stations had to be reduced from the standard 60 minute tow duration due to lack of daylight, and one station had to be moved slightly to avoid static gear.

Industry survey, France	No information available

Annex 6:   Planning beam trawl surveys 2024

Annex 6.1 Timing of the offshore beam trawl surveys in 2024

Country	Vessel	Area	Dates	Gear	Contact
Belgium	Belgica	western-southern North Sea	20 – 30 Aug 2024	4 m beam	thomas.lanssens@ilvo.vlaanderen.be; laura.lemey@ilvo.vlaanderen.be; Cc: els.torreele@ilvo.vlaanderen.be
France	Côtes de la Manche	8a, 8b	02 Nov – 29 Nov 2024	4 m beam	jean.baptiste.lecomte@ifremer.fr yann.coupeau@ifremer.fr
Germany	Solea	German Bight	16 Aug – 03 Sept 2024	7 m beam	kay.panten@thuenen.de
Italy/ Slovenia	G. Dallaporta	Northern Adriatic Sea (GSA 17)	Oct-Nov 2024	2x 3.5m modified beam	giuseppe.scarcella@cnr.it laura.sabatini@irbim.cnr.it
Croatia	Chartered fishing vessel	Northern Adriatic Sea (GSA 17)	29 July–16 Aug 2024	2x 8 m beam	thomas1.smith@wur.nl Cc: ingeborg.deboois@wur.nl, michiel.dammers@wur.nl
Netherlands	Tridens	southern North Sea, German Bight	19 Aug–13 Sep 2024	2x 8 m beam + flip-up rope	ingeborg.deboois@wur.nl Cc:thomas1.smith@wur.nl, michiel.dammers@wur.nl
Netherlands	Tridens	central and western North Sea	Oct-Nov 2024	2x 3.5m modified beam	giuseppe.scarcella@cnr.it laura.sabatini@irbim.cnr.it
UK	Cefas Endeavour	English Channel /Celtic Sea	4-30 Mar 2024	4 m beam	ian.holmes@cefas.gov.uk
UK	Cefas Endeavour	7d, 4c	28 Jun – 11 Jul 2024	4 m beam	linford.mann@cefas.gov.uk Cc: ian.holmes@cefas.gov.uk
UK	Cefas Endeavour	7fg, 7a	6-25 Sep 2024	4 m beam	georgina.eastley@cefas.gov.uk Cc: ian.holmes@cefas.gov.uk

Annex 6.2 Timing of the inshore beam trawl surveys in 2024

Country	Vessel	Area	Dates	Gear	Contact
Belgium (DYFS)	Simon Stevin	Belgian coastal zone	9-17 Sep 2024	6 m shrimp trawl	thomas.lanssens@ilvo.vlaanderen.be; laura.lemey@ilvo.vlaanderen.be; Cc: els.torreele@ilvo.vlaanderen.be
Germany	Chartered vessels	German Wadden Sea areas	23 Aug – 11 Oct 2024	3 m shrimp trawl	holger.haslob@thuenen.de
Germany	RV Clupea	German coastal zone	16 Sep – 04 Oct 2024	3 m shrimp trawl	holger.haslob@thuenen.de
Netherlands (SNS)	Isis	German coastal zone	9-20 Sep 2024	6 m beam trawl	tbd; Cc: jip.vrooman@wur.nl
Netherlands (DYFS)	Isis	Dutch coastal zone	2-20 Sep 2024	3 m shrimp trawl	jetze.vanzwol@wur.nl; Cc: jip.vrooman@wur.nl
Netherlands (DYFS)	Luctor	Scheldt estuary	26 Aug – 27 Sep 2024	3 m shrimp trawl	Marcel.devries@wur.nl; Cc: jip.vrooman@wur.nl
Netherlands (DYFS)	Stern	Dutch Wadden Sea	23 Sep– 18 Oct 2024	6 m shrimp trawl	Thomas.pasterkamp@wur.nl; Cc: jip.vrooman@wur.nl
UK (DYFS)	Charter Vessel	4.c (Thames)	5-20 Sep 2024	2 m Beam Trawl	louise.strakercox@cefas.gov.uk

Annex 6.3 Timing of the industry beam trawl surveys in 2024

Country	Survey	Area	Dates	Gear	Contact
Netherlands	Industry survey on Turbot and Brill	southern North Sea	Oct 2024	Commercial beam trawl	Edward.schram@wur.nl
UK	Industry survey	7e (western English Channel)	Aug – Sept 2024	Commercial beam trawl	Samantha.birch@cefas.gov.uk
France	Industry survey	Dieppe to Authie Bay	End Aug 2024	3 m beam trawl	Victor.Martin.Baillet@ifremer.fr

As in previous years, WGBEAM recommends that if time and weather allows, overlapping hauls should be carried out by countries operating in the same area.

During the Dutch and German offshore surveys in the North Sea, some overlapping hauls should be attempted in the following rectangles: 40F4-F6, 41F4-F6, 42F4-F6, 43F4-F6.

The Belgian and Dutch offshore surveys also include rectangles fished by both, but the bottom of the Belgian positions is very rough, making it impossible to conduct comparative tows without damaging the Dutch fishing gear.

Annex 7: Age-based indices plaice in ICES area 8a and 8b, sole in GSA17, recruit indices sole and plaice ICES area 4c

Annex 7.1 Sole in the Bay of Biscay (B1706; ICES area 8)-2023 BTS-VIII survey

Figure A7.1 Average number of common soles per km2 for each age in the Bay of Biscay (BTS-VIII surveys). Age-8 is an age-plus group. Y-axis scales depend on age for ease of reading.

Annex 7.2 Sole in the Adriatic Sea – GSA17
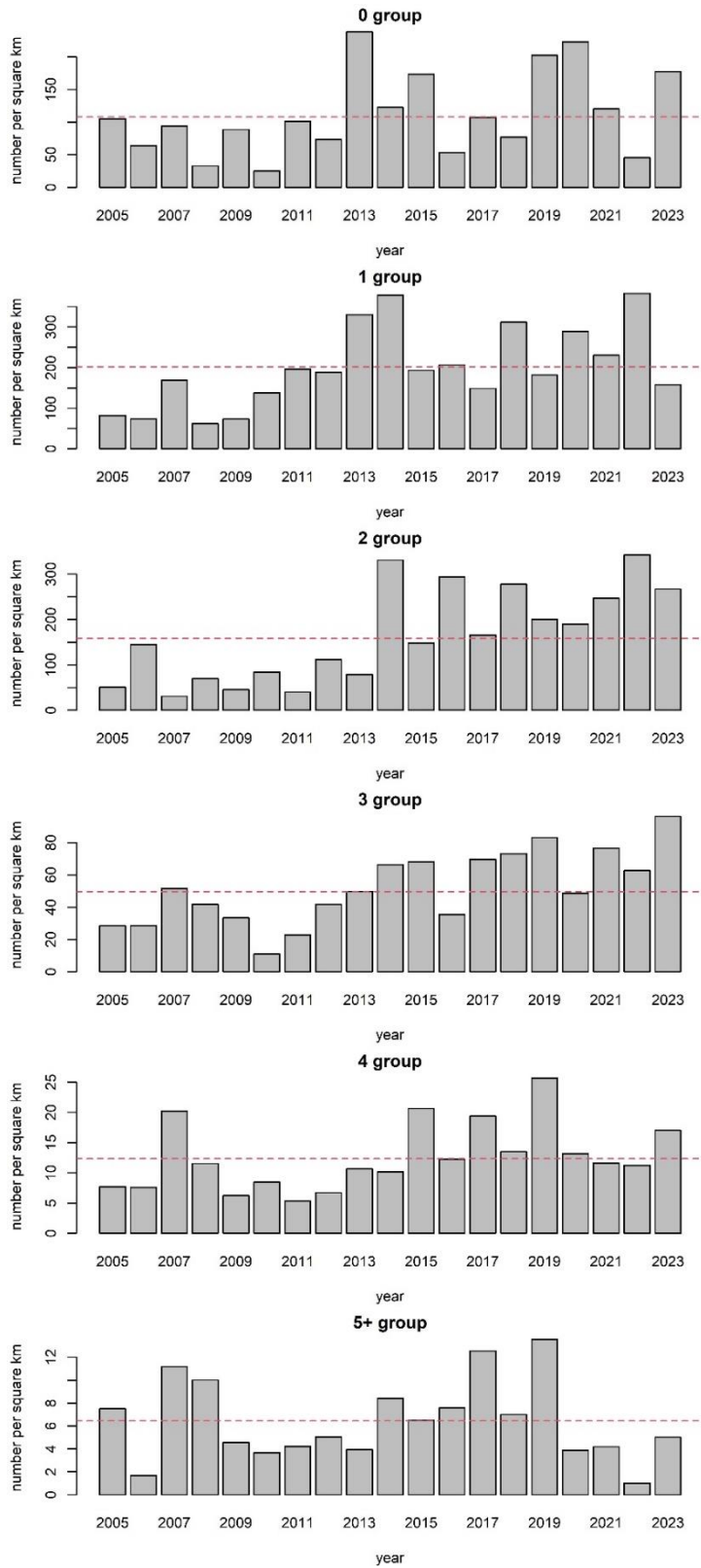
Figure A7.2 Common sole age indeces in the Adriatic Sea (SoleMon surveys).

Annex 7.3 Plaice and sole recruits in the North Sea 4a
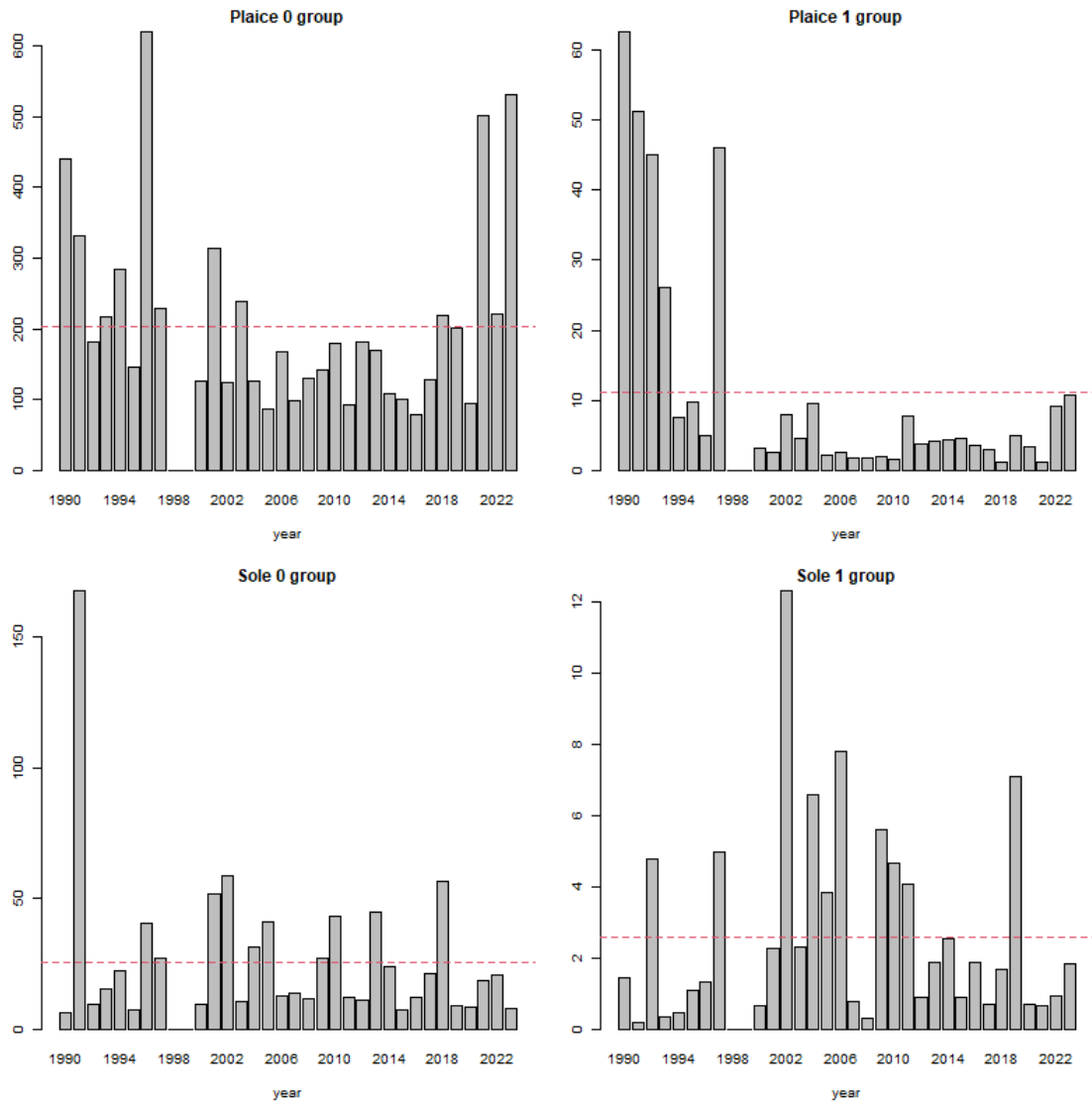
Figure A7.3 Recruit indices (0- and 1-year olds) from international DYFS (BEL, NED, GER) for plaice (upper figures) and sole (lower figures)

Annex 8: Evaluation of elasmobranch catches

The latest information on DATRAS is extracted by the getDATRAS function (icesDatras package). Haul information (HH) and length information (HL) are combined into one dataset. We reviewed all the data (from 2002 until 2023) and for the maps we focussed on the last 10 years, so from 2014 until 2023. Simple quality checks (e.g. tables to explore missing data, checks for Nas) are incorporated into the script. In the script, a species list is created from WoRMS[12] (package worrms 0.4.3), so valid Aphia ID codes in DATRAS can be linked to the correct scientific names. Before filtering to a specific species of interest, a list of the fished stations is created. In this way stations with zero observations can be taken into account when calculating average values. In order to calculate CPUEs (square roots of numbers/km^2) from the beam trawl surveys, total numbers per haul and the surface area that was fished (swept area option 1 = beam with*distance/10^6) for each haul need to be made available with the script. If the column for total numbers is not filled in (NA or -9), total catch numbers can be calculated based on haul numbers at-length (HLNoAtLngt) multiplied by the subsampling ratio (SubFactor).

As depicted in the report of last year, there is still a visible drop in total numbers in 2022 because of uncompleted surveys. This affected especially *Scyliorhinus stellaris*, *Squalus acanthias*, *Raja clavata* and *Raja undulata*. Further, figures A8.5 till A8.8 show a smaller coverage with gaps in 7h and 7d.

Total number of individuals per year are shown by country for the Raja species in Figure A8.1 and sharks and dogfish species in Figure A8.4. Most ray species have generally increased throughout the time series (with a high increase for *Raja microocellata*). We observed a decreasing trend for *Raja clavata* and *Raja montagui*. All shark species showed a stable trend, with the exception of *Squalus acanthias*, which had a remarkable increase for 2023. This is caused by one extreme catch in the Dutch 2023 BTS (confirmed by WGBEAM).

In absolute terms, the dominant species are: *Raja clavata* (mainly UK survey), *Amblyraja radiata* (mainly NL survey), *Raja montagui* (mainly UK survey) and *Scyliorhinus canicula* (mainly UK survey).

Table A8.1: Elasmobranch species list used for the analysis with common name, scientific name and Aphia ID

Code	Common Name	Scientific Name	AphiaID
SYR	starry ray	*Amblyraja radiata*	105865
CUR	cuckoo ray	*Leucoraja naevus*	105876
BLR	blonde ray	*Raja brachyura*	367297
THR	thornback ray (roker)	*Raja clavata*	105883
PTR	smalleyed (painted) ray	*Raja microocellata*	105885
SDR	spotted ray	*Raja montagui*	105887
UNR	undulate (painted) ray	*Raja undulata*	105891

---

[12] WoRMS 2024. www.marinespecies.org. Flanders Marine Institute (VLIZ - Belgium)

GAG	Tope shark	*Galeorhinus galeus*	105820
SDV	Smooth-hound species	*Mustelus spp.*	105732
SYC	Lesser spotted dogfish	*Scyliorhinus canicula*	105814
SYT	Nursehound	*Scyliorhinus stellaris*	105815
DGS	Spiny dogfish	*Squalus acanthias*	105923

Annex 8.1 Ray species

Looking at the Rajiformes distribution in the area under examination, it can be seen that the species distribution differs considerably by area (Figures A8.2 and A8.3). *Amblyraja radiata* is mostly distributed to the north-east (between UK and Sweden) and is rarely found below the 54°N parallel. *Raja clavata* and *Raja montagui* are on the opposite more evenly distributed around UK but, unlike *Amblyraja radiata*, they are rarely found at latitudes higher than the 54°N parallel. *Raja brachyura* is also distributed in the seas surrounding UK but with a greater concentration south of the English Channel and the French coast.

Particular is the distribution of *Leucoraja naevus* which is present in the catches both in the southwest of the area sampled (English Channel and Celtic Sea) and in the north along the coasts of Scotland (with a sample in 2003 even close to Shetland Island). The two rarest species, *Raja microcellata* and *Raja undulata,* seem to have a more restricted range confined to the Celtic Sea and English Channel only. Both the distribution of the species and the CPUE are consistent over the past 10 years (see Figure A8.3).
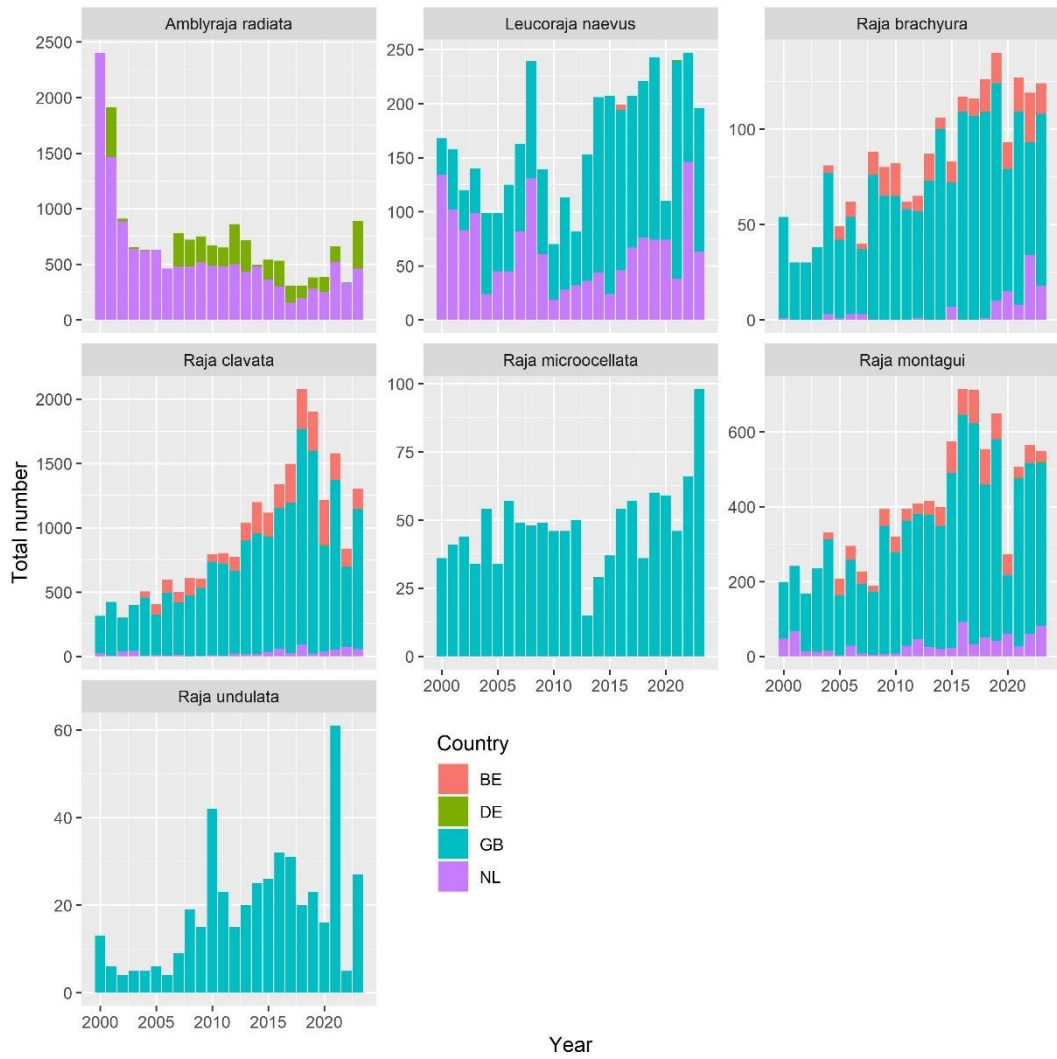
Figure A8.1: Total numbers of Rajiformes from BTS, DYFS & SNS data in DATRAS for the period 2000-2023. The panels are divided based on the different species. The colours show the different countries (purple=Netherlands; blue=UK; green=Germany; red=Belgium).
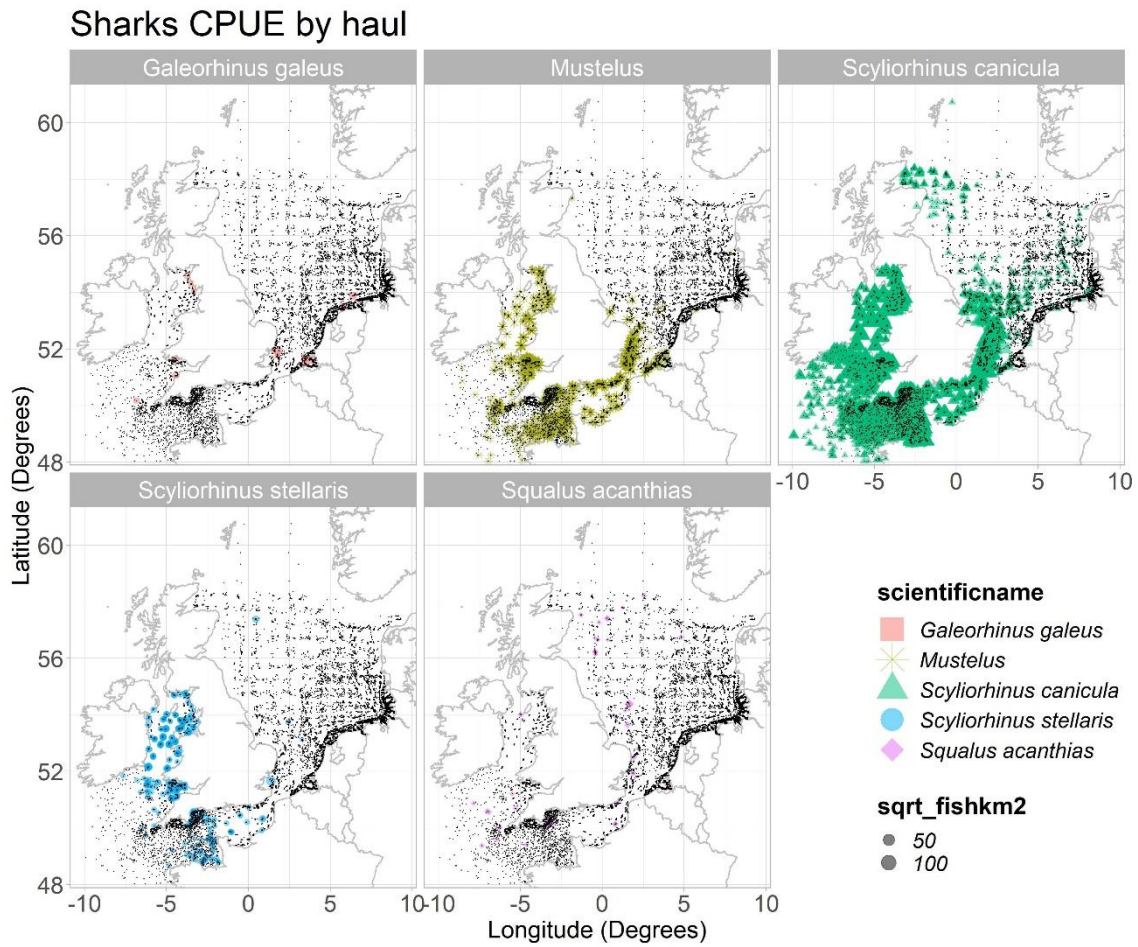
Raja family CPUE by haul
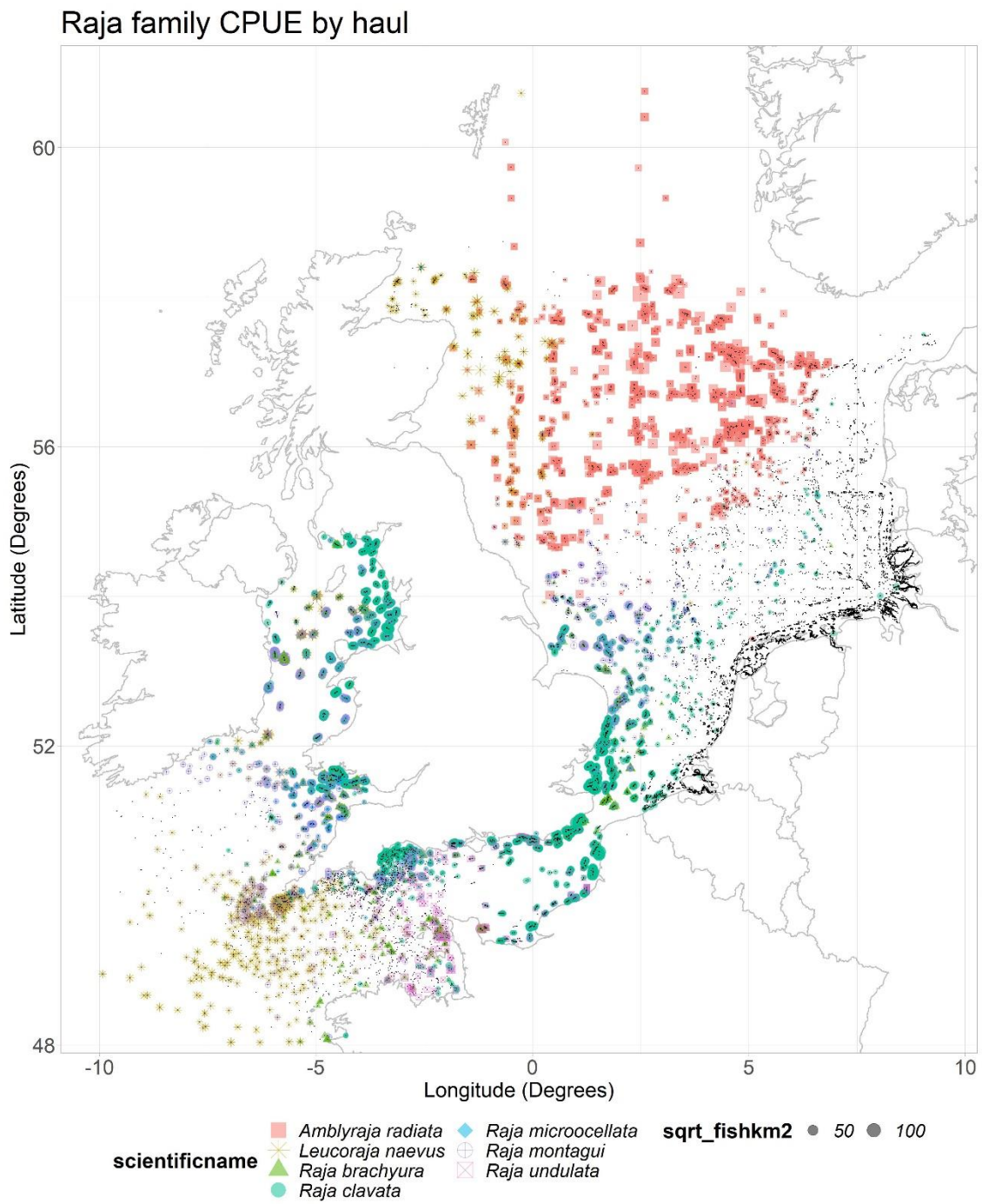
Figure A8.2: CPUE (square root of numbers/km²) by haul of Rajiformes from the BTS, SNS & DYFS (all years combined). The colours show the different species (see legend).
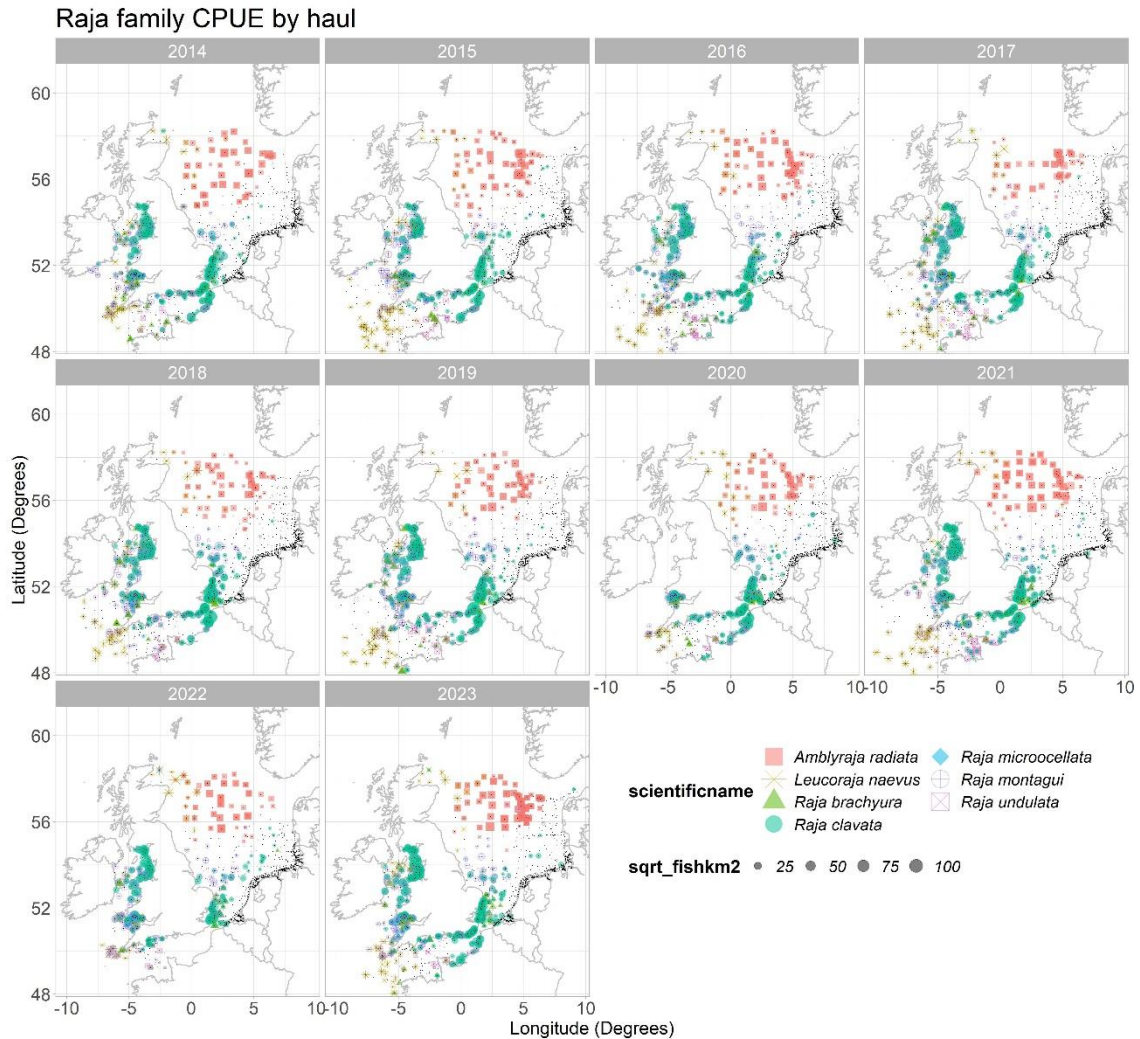
Figure A8.3: CPUE (square root of numbers/km²) by haul of Rajiformes from the BTS, SNS & DYFS for the period 2014-2023. The colours show the different species (see legend).

Annex 8.2 Shark and dogfish species

Allthe five shark species are found in the Irish and Celtic Sea and the English Channel (Figure A8.5). *Galeorhinus galeus* and *Squalus acanthias* are the rearrest and have low densities, the latest being more widely distributed but captured sporadically throughout most of the North Sea over the past 10 years (Figure A8.8). *Scyliorhinus stellaris* has slightly higher densities and is mostly concentrated in the Irish Sea and the English Channel. Note the odd occurrence of *S. stellaris* in 2023 in the northern part of the North Sea: these were egg cases of the species.

Mustelus sp. has both higher densities and a broader distribution, with one record at the North-East of the UK (Figure A8.7, in 2021). The most abundant and widespread species is *Scyliorhinus canicula,* with high densities around the UK stretching into the southern part of the North Sea along with a patch around Orkney Islands (Figure A8.6).
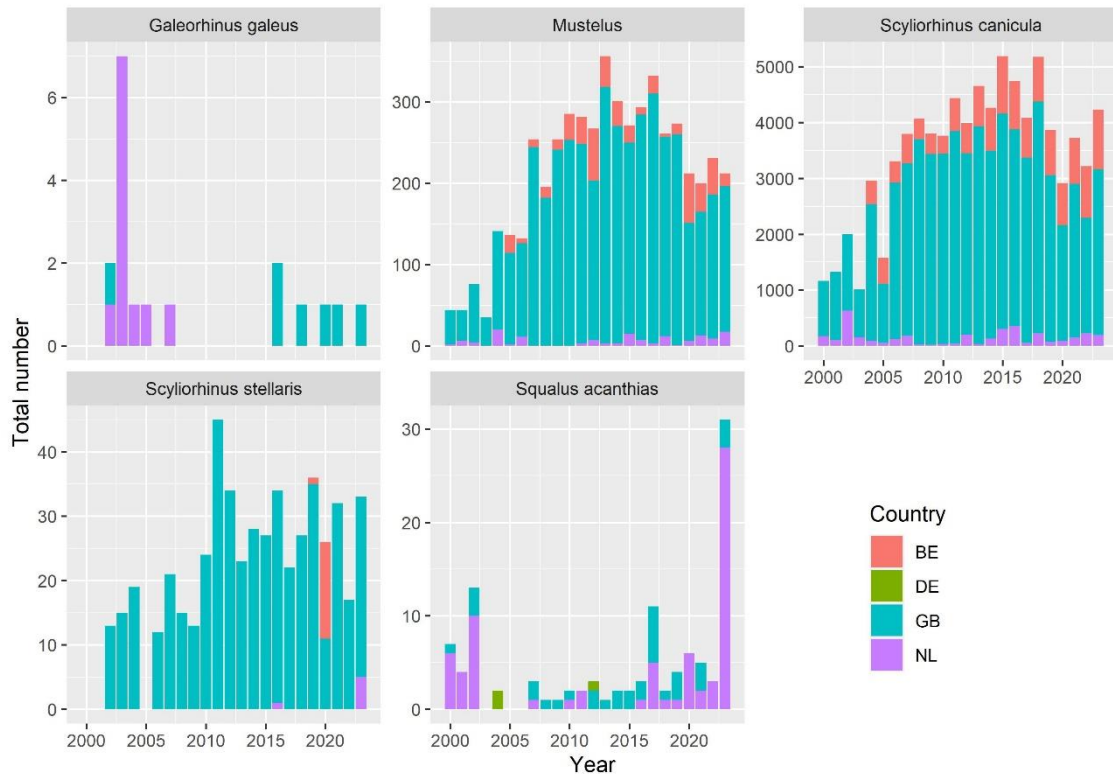
Figure A8.4: Total numbers of sharks and dogfish from BTS, SNS & DYFS data in DATRAS for the period 2000-2023. The panels are divided based on the different species. The colours show the different countries (purple=Netherlands; blue=UK; green=Germany; red=Belgium). Note the different y-axis scales per panel. NB Scyliorhinus stellaris in NL survey are viable egg cases.

Figure A8.5: CPUE (square root of numbers/km²) by haul of sharks and dogfish from the BTS, SNS & DYFS (all years combined). The colours show the different species (see legend). NB Scyliorhinus stellaris in Northern North Sea are viable egg cases.

Scyliorhinus canicula CPUE by haul
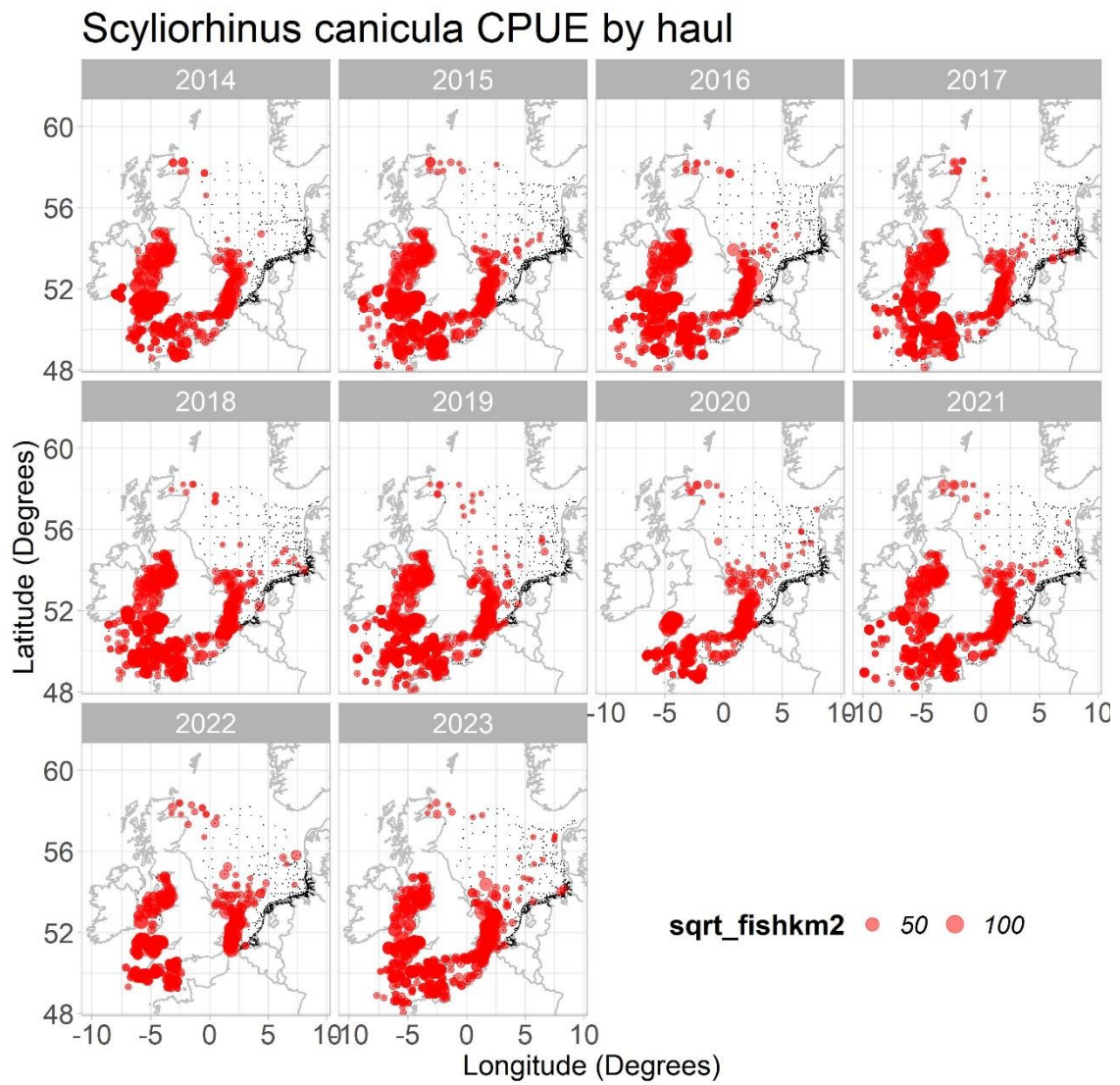
Figure A8.6: CPUE (square root of numbers/km²) by haul of the small spotted dogfish (*Scyliorhinus canicula)* from the BTS, SNS & DYFS for the years 2014-2023. The red colours show the CPUE while the black show trawl stations (see legend).
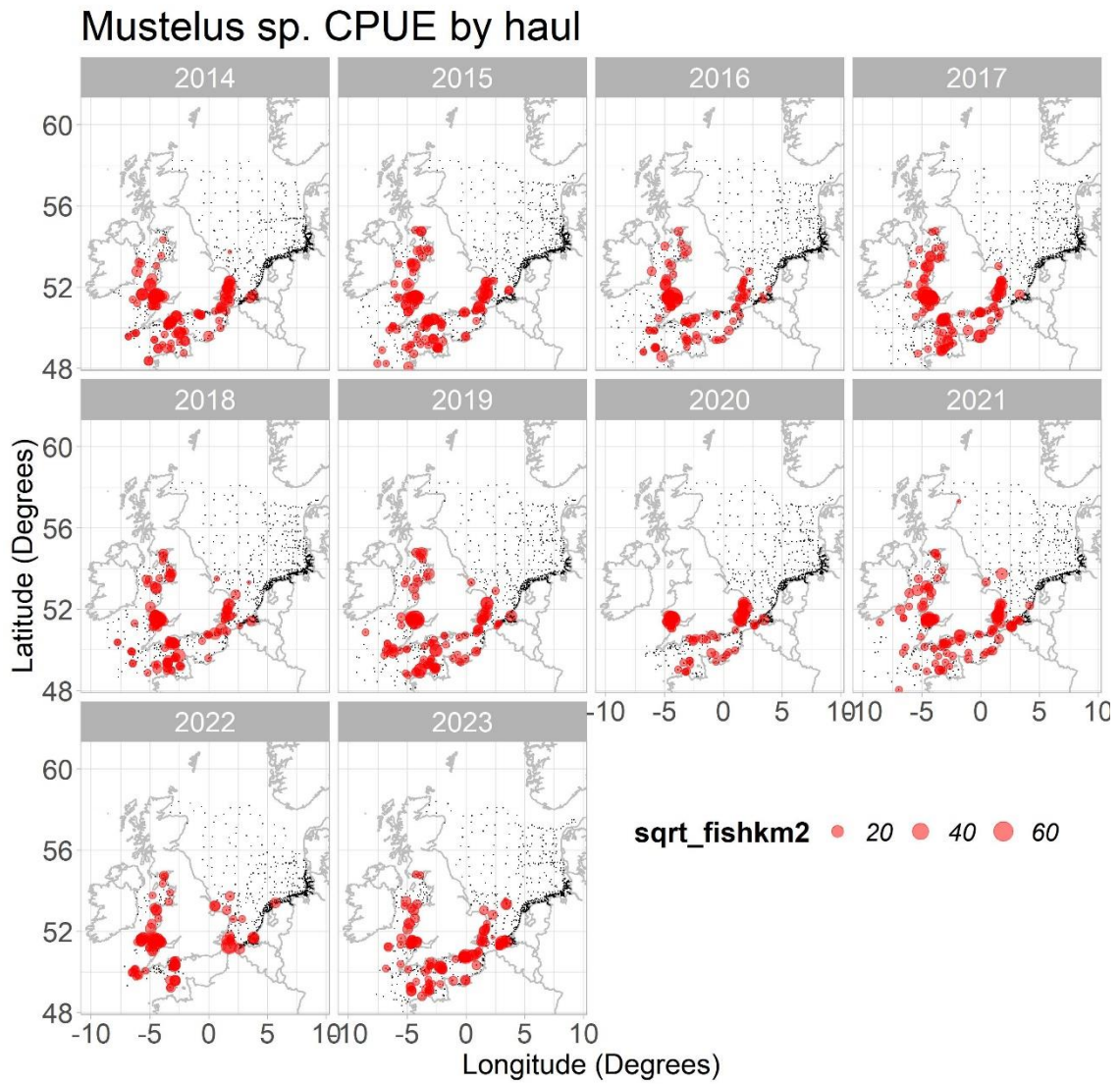
Figure A8.7: CPUE (square root of numbers/km²) by haul of the smooth-hound species (*Mustelus* sp.) from the BTS, SNS & DYFS for the period 2014-2023. The red colours show the CPUE while the black show trawl stations (see legend).
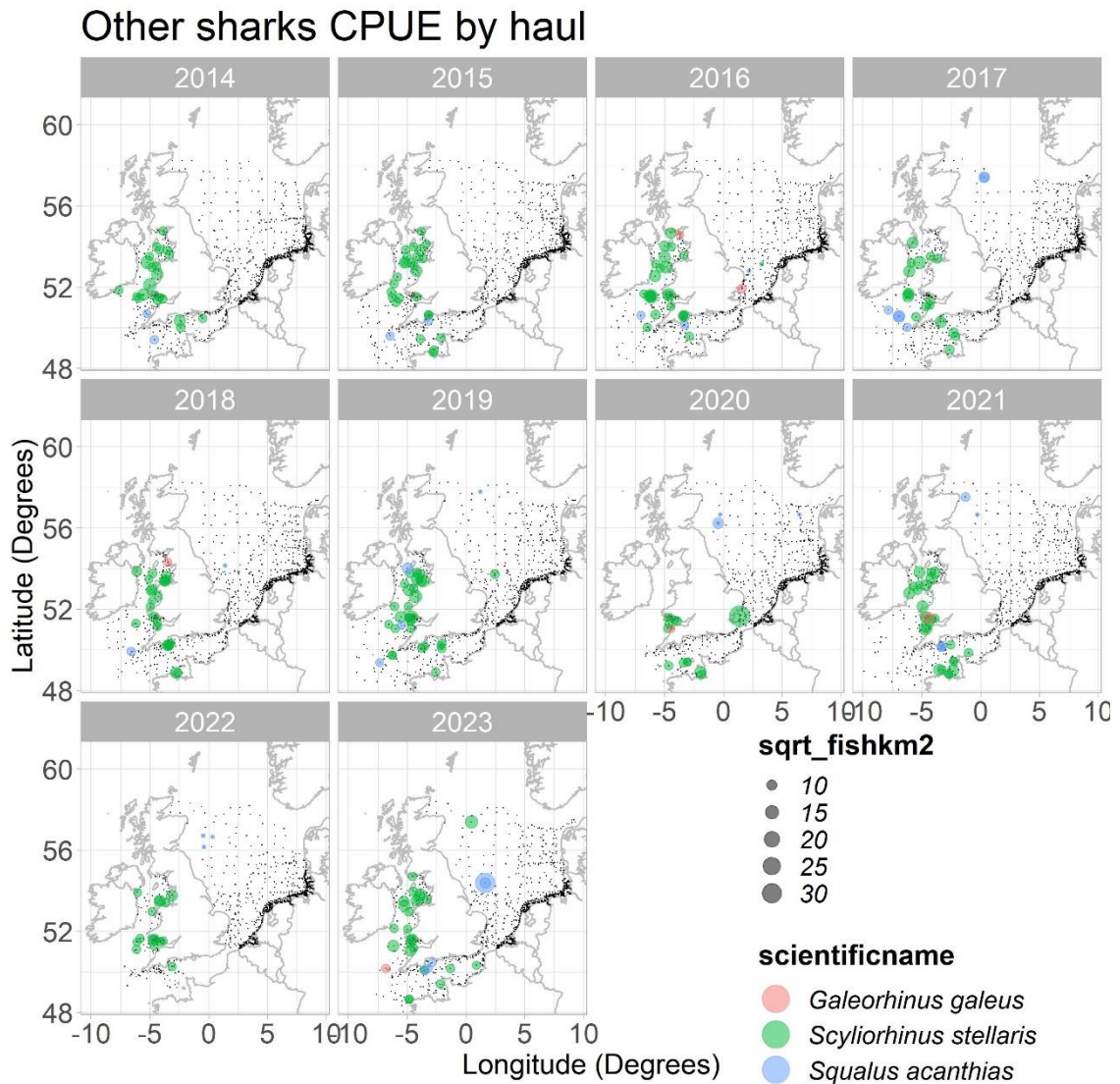
Figure A8.8: CPUE (square root of numbers/km²) by haul of the tope shark (*Galeorhinus galeus)*, nursehound *(Scyliorhinus stellaris)* & spiny dogfish *(Squalus acanthias)* from the BTS, SNS & DYFS for the years 2014-2023. The colours show the CPUE by species while the black show trawl stations (see legend). NB Scyliorhinus stellaris in Northern North Sea in 2023 are viable egg cases.

Annex 9: Analyses of length, age, and cohort consistency by species
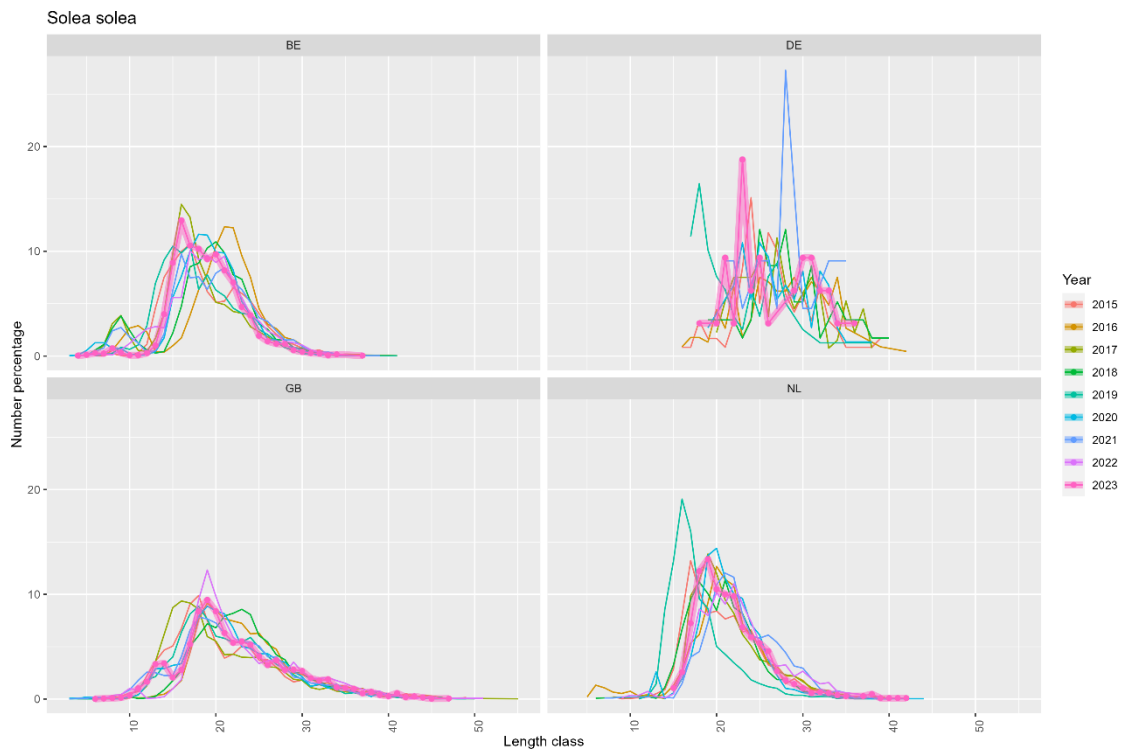
Annex 9.1 Lemon sole

No major differences in age-length keys between countries could be discovered for lemon sole, other than those caused by regional differences in growth patterns (Figure A9.1).

England has the most consistent age distribution and samples the 0-groups more consistently (Figure A9.1). The Dutch survey shows age 7 and 8 lemon sole more strongly. Difference in age-length ranges in eastern and western North Sea, English Channel and Irish and Celtic Sea may be present but is difficult to discern from Figure A9.1. The age and length data comparison will be affected by area, survey quartile, spawning season as well as abundance, sample size, and survey completeness by each country. Separating the UK data into area and quartile (and potentially north and south for Irish Sea and Celtic Sea), and the North Sea survey data into east and west of 3°E will help with analysis of consistency in length, age and cohort and determining any differences.

Figure A9.2 shows that length frequency range is similar between countries and across nine years reviewed. There is a pattern of increasing abundance in smaller size classes in German and Dutch data, whereas English and Belgian abundance across size classes is fairly consistent.
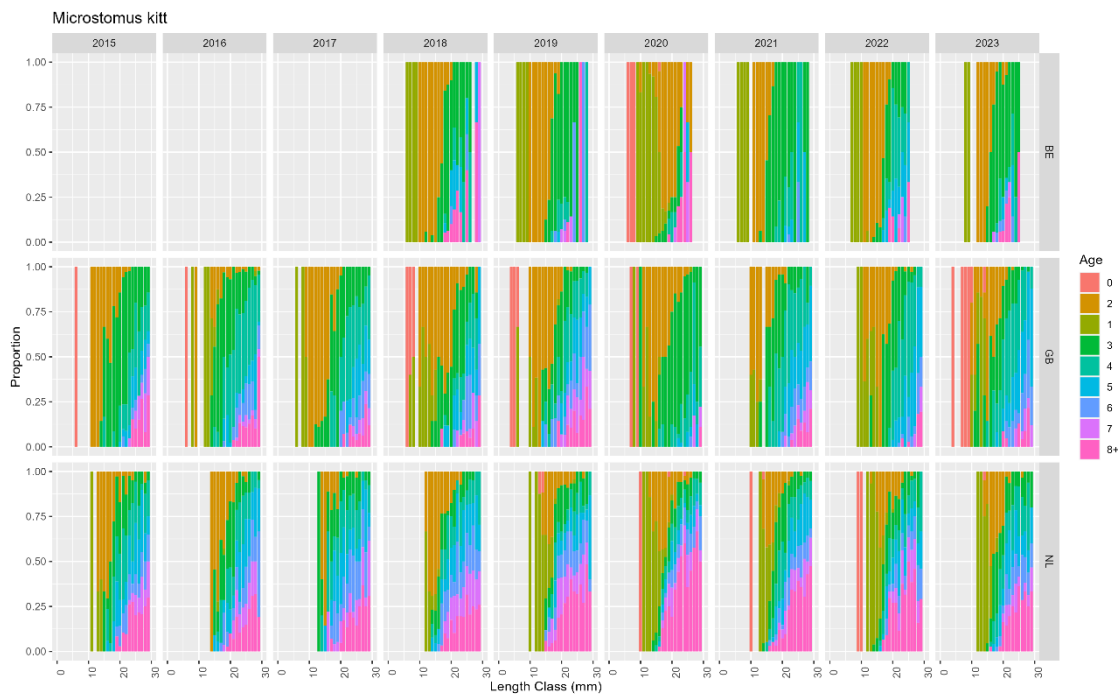
Figure A9.1 Age-length keys for lemon sole, per year per country, BTS. Different colours represent age groups. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.
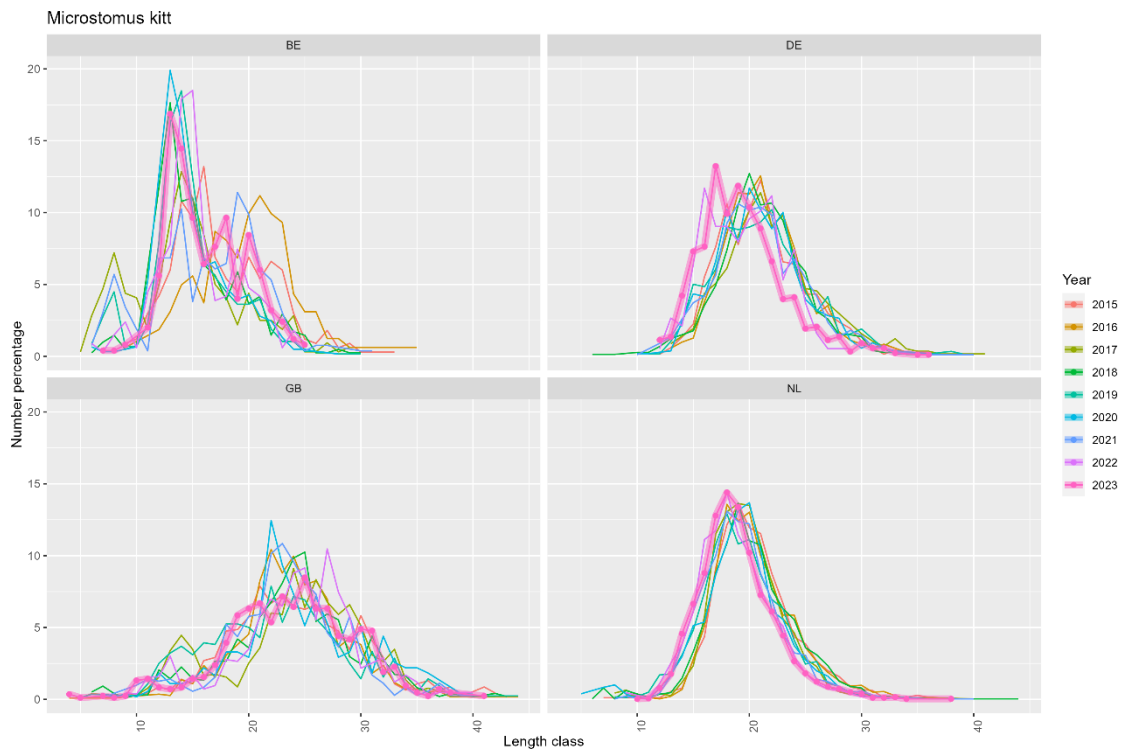
Figure A9.2 Length distribution of lemon sole, per year per country, BTS. Different colours represent sampling years. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.

Annex 9.2 Sole

No major differences in age-length keys between countries could be discovered for sole, other than those caused by regional differences in growth patterns (Figure A9.3).

The German BTS only catches a small number of sole and was thus not taken further into account in this comparison. The Dutch survey seems to catch less small sole compared to the BTS surveys by Belgium and the UK. However, also the Belgium BTS caught no sole smaller than 12 cm in 2015 and 2016. Otherwise, the age-length keys seem consistent between Belgium, UK and the Netherlands. Some variability in the largest fish in the Belgian data is probably caused by small sample sizes.

The length distributions in the UK surveys show in general a broader range of lengths compared to the other countries. The UK and Belgian surveys both catch more smaller sole compared to the Dutch BTS. Also, those surveys display often two modes with a smaller one for small length classes. For the Dutch BTS the 2019 length frequency distribution displays a larger mode around 16 cm, which is in line with a strong 2018 cohort. The obvious differences between the UK and the other surveys is probably due to the fact that all areas were taken into account. Thus, the UK data also contain data from the Irish Sea and the Channel areas. This comparison would therefore benefit from splitting the those data by area.
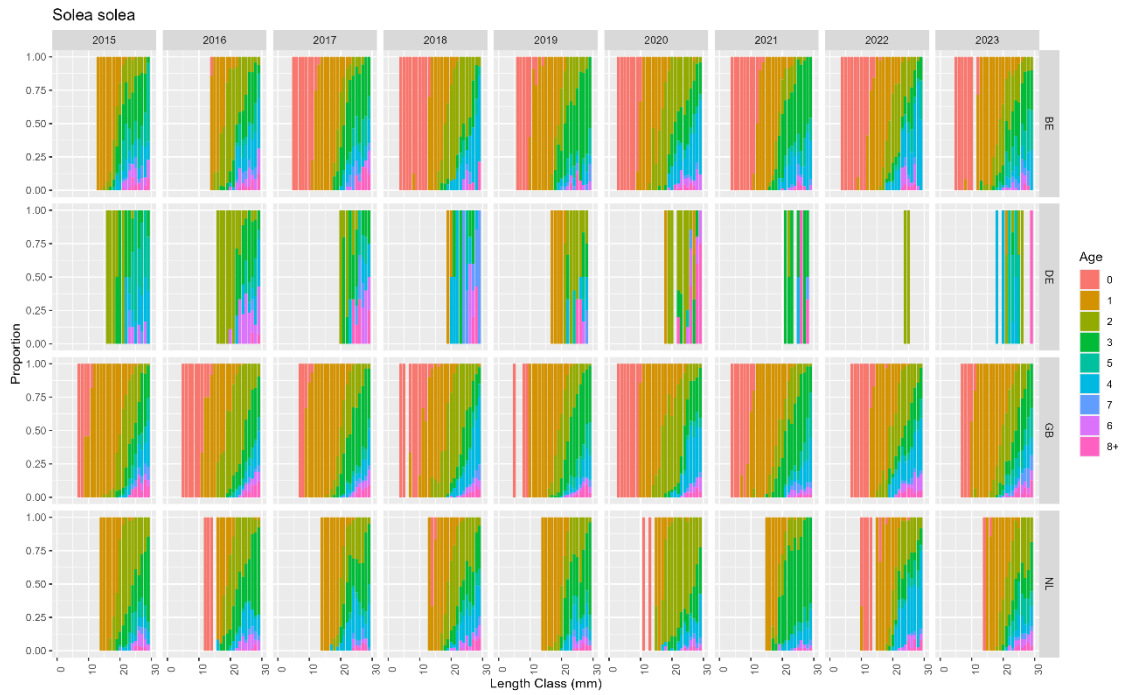
Figure A9.3 Age-length keys for sole, per year per country, BTS. Different colours represent age groups. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.

Figure A9.4 Length distribution of sole, per year per country, BTS. Different colours represent sampling years. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.

Annex 9.3 Dab

No major differences in age-length keys between countries could be discovered for dab, other than those caused by regional differences in growth patterns (Figure A9.5). Overall the patterns across countries are quite consistent. However, it seems that there are more older fish in the Dutch and Belgian data compared to the German data, which could be related to spatial growth differences, as the German stations are more located in the eastern North Sea. A gradient in growth from west to east in the North Sea was reported before for plaice (Chin et al., 2023) and could also be likely for dab. There are some strange patterns for single length classes and years, which might be caused by low samples sizes and/or erroneous data entries that should be checked: i) BE 2022 <10cm; ii) 2018 NL 9cm; 2022 NL 11cm. The German data in 2022 are based on fewer samples than usual, because only a few stations were covered. Therefore, these data should be interpreted with caution. Especially in the German and Belgian data are also some strange patterns visible for the largest fish which is probably due to low sample sizes.

The dab length frequency distributions (Figure A9.6) of the Netherlands and Belgium are very similar with one large mode around 16 cm and smaller modes around 9 cm. The German length frequency distribution has often two modes, around 14 cm and 18 cm. The UK and German dab length frequency distributions display more variability between years. There might be several reasons for this, e.g. area effects, high recruitment in combination with different distribution of stations. The high peak of small dab in the 2020 UK data can be possibly be explained by a limited area coverage due to COVID-19, resulting in a high number of hauls in an area where small dab are usually very abundant. Further, the UK length frequency distributions display more than two modes and differ the most from the other three length distributions (Belgium, the Netherlands, Germany), i.e. it displays a broader length range. It has to be noted here, that all BTS data were used to display the length frequency distributions, and this includes a wider geographical range for the UK BTS including also the Irish Sea and the Channel areas, while the Belgian, German, and Dutch data are restricted to the North Sea area. Therefore, this comparison would benefit from splitting the UK data by area.
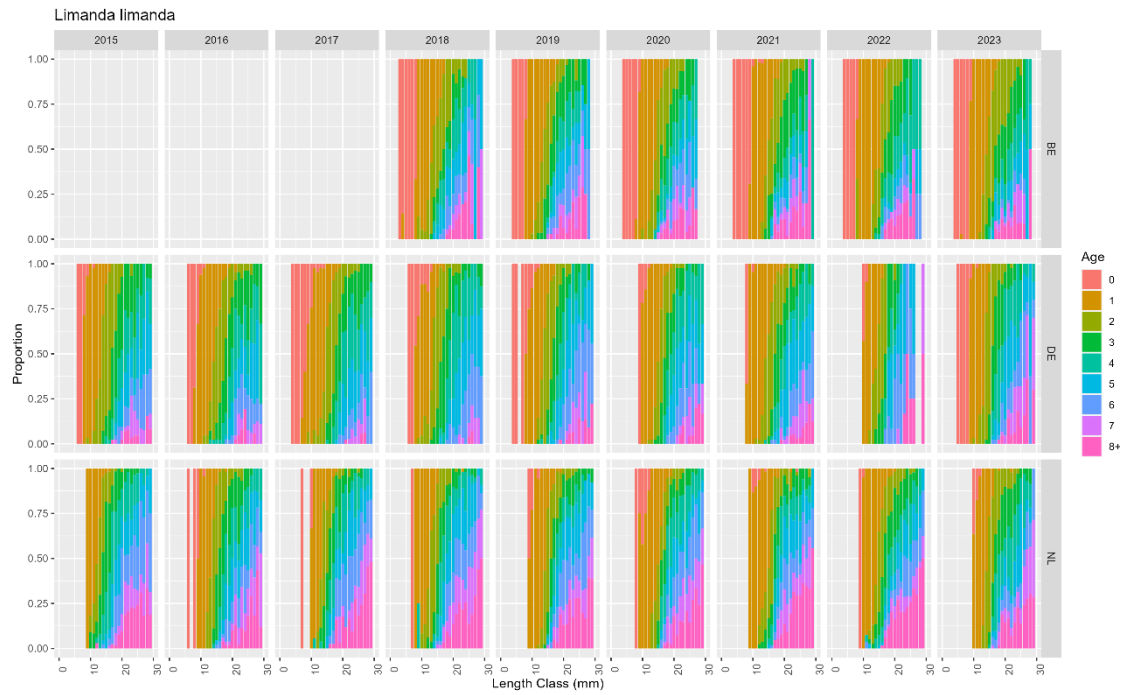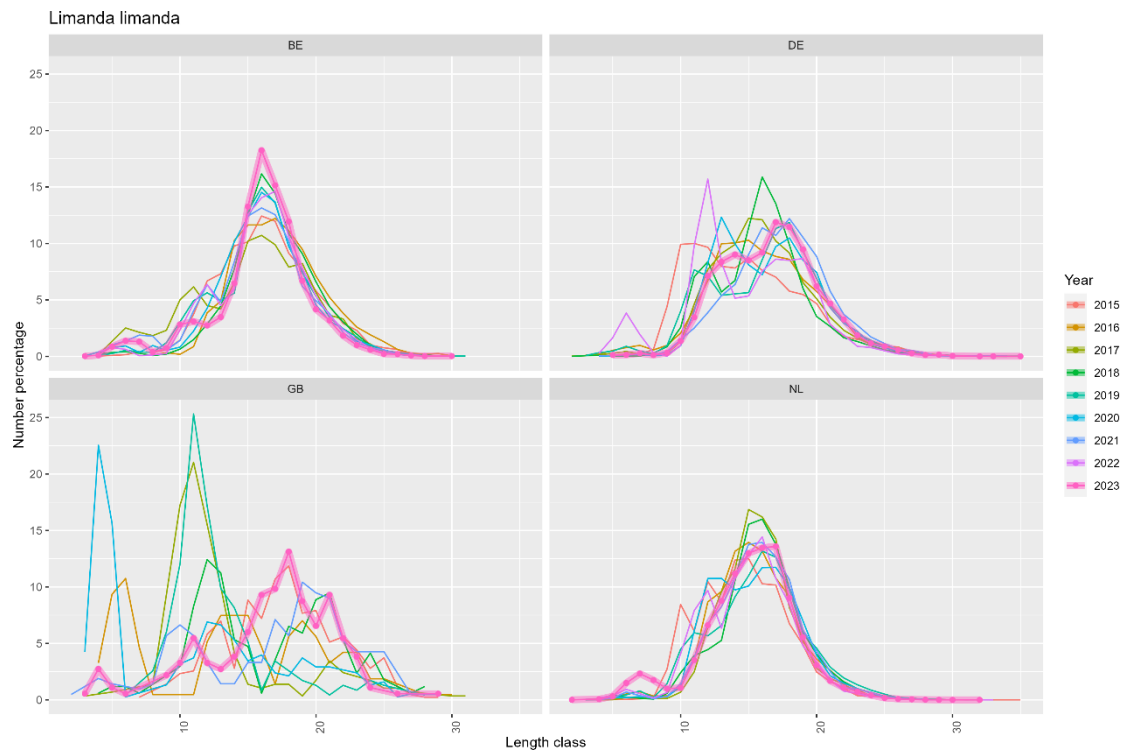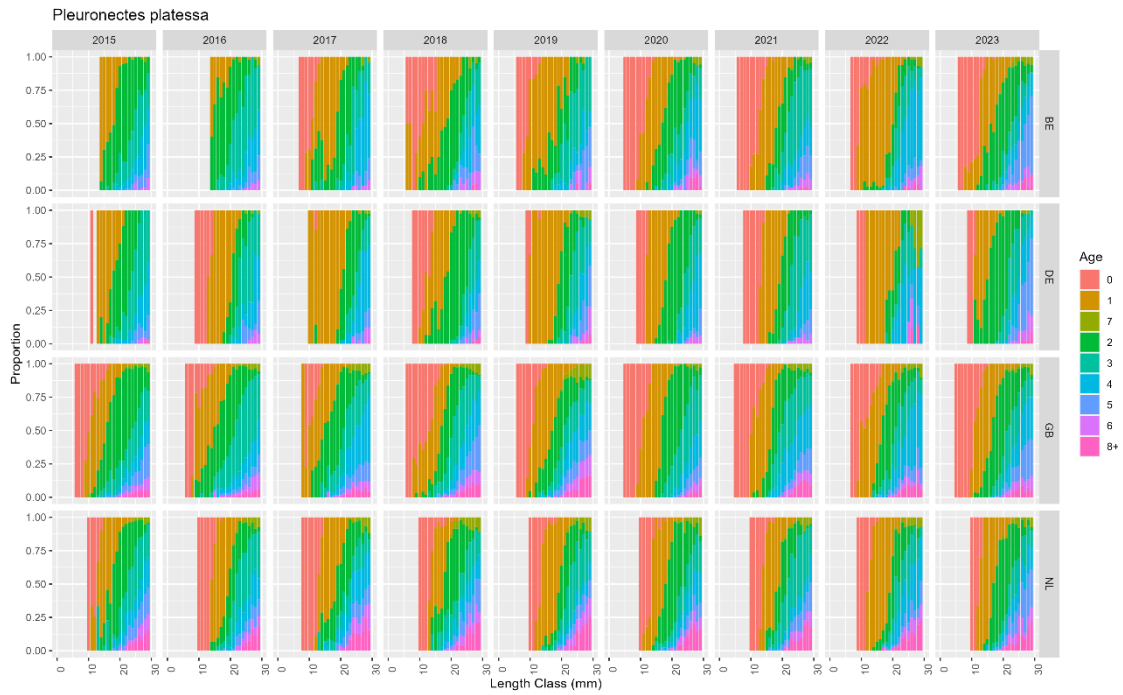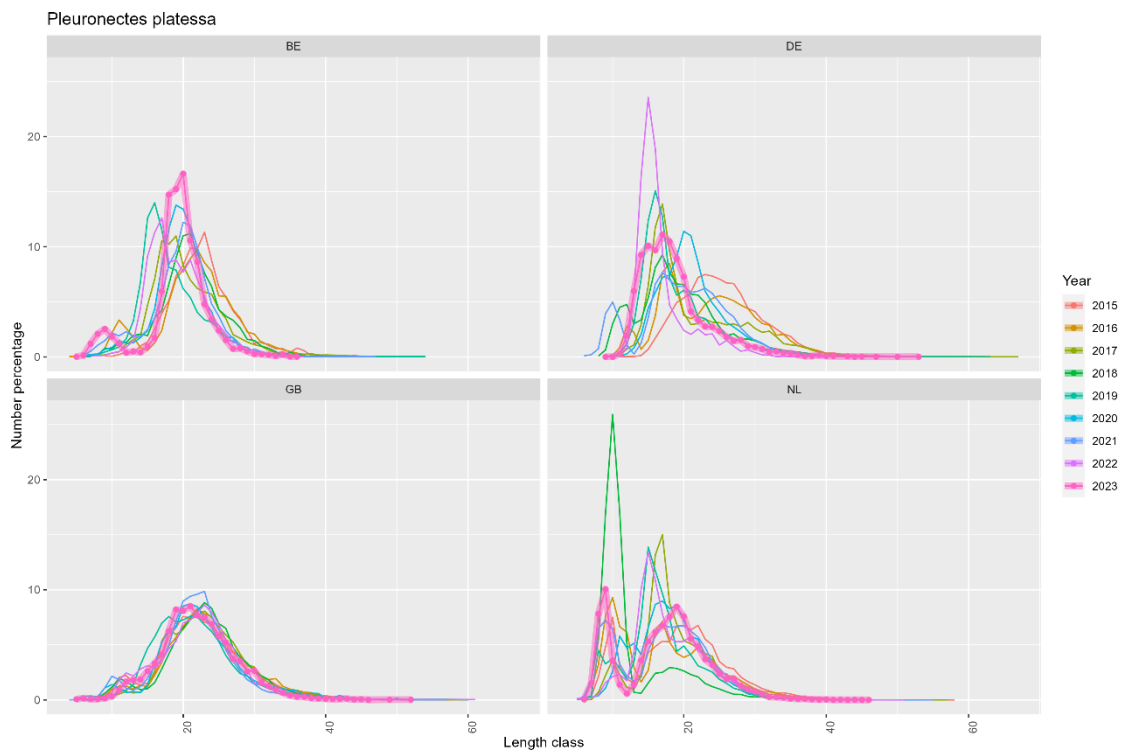
Figure A9.5 Age-length keys for dab, per year per country, BTS. Different colours represent age groups. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.

Figure A9.6 Length distribution of dab, per year per country, BTS. Different colours represent sampling years. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.

Annex 9.4 Plaice

No major differences in age-length keys between countries could be discovered for dab, other than those caused by regional differences in growth patterns (Figure A9.7).

Three things that draw attention are (1) that in 2017 the German data does not contain 0-class individuals (2) the Belgian data show an interesting pattern in 2017 with some small 2-year-old individuals and (3) for the Dutch (and UK to a lesser extent) data, individuals are generally older than fish of the same length sampled in the German BTS, suggesting a higher growth rate in waters sampled by the German BTS (mainly Danish waters and a few stations in Norwegian and German waters). It has been suggested by Chin *et al.* (2023) that this is a longitudinal effect (Figure A9.9). It is recommended for next year to distinguish between east and west of the 3 degrees longitude (see Figure A9.9), as well as between the different regions sampled by the UK.

The Netherlands catch more small (<10 cm) fish than the other countries (Figure A9.8). Additionally, the German BTS seems to catch less of the larger (>20 cm) individuals in later years (Figure A9.8). Finally, the variation between years seems larger for Belgian, German and Dutch data compared to UK data. One explanation for this could be that the differences are levelled out by the fact that so many different regions are sampled, and in various seasons. Additionally, there seem to have been a lot of changes in the North Sea plaice stock over recent years, which is depicted in the Dutch, Belgian and German data. Again it is recommended to split these data per region for next year.

Figure A9.7 Age-length keys for plaice, per year per country, BTS. Different colours represent age groups. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.

Figure A9.8 Length distribution of plaice, per year per country, BTS. Different colours represent sampling years. BE=Belgium, DE=Germany, GB=Great Britain (in this case England), NL=the Netherlands.

Evaluation the efficiency of otolith collection for estimating the age composition

Kelly Chin, Serdar Sakinan, Chun Chen, Katinka Bleeker, Ingeborg de Boois

WAGENINGEN
UNIVERSITY & RESEARCH

Background

During many seagoing activities otoliths of fish are collected. The bony structures are used to identify the age of fish (Figure 1). The age of fish cannot be determined from the outside, so data collection occurs by length groups.
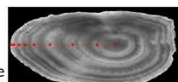
Figure 1. Plaice otolith with dots on the annual growth lines

Often, the origin of the number of otoliths to be collected is not known. As otolith collection is costly and labour intensive, and each fish is counted as one experimental animal, we evaluated the number of otoliths needed for reliable stock assessment.

Objectives

1. Develop a generic methodology to define the number of otoliths by length group for age-length keys used in stock assessment.
2. Evaluate the current data collection by species, and modify current sampling plans.

Method

Survey catches and individual age-length data were used from ICES Database on trawl surveys (DATRAS). **DATRAS link**

A random sample of size from catch (L) and a subsample of age is taken for aging (A), which were used to model the proportional age-length distribution (Text box 1, Table 1).

The optimal age sample size is modelled for a certain CV (Text box 1), and a given number of length measurements of the species.

The method has been applied to North Sea plaice, in the nearshore surveys DYFS+SNS (target: ages 0-4), and for the combined BTS+NS-IBTS Q3 (target: older age groups), 2010-2022.

Table 1. Snapshot of the modelled age-length table (NS-IBTS+BTS plaice, 2010-2022)

Text box 1. Formulas used to model the age-length distribution and to calculate the CV and variance

$$\hat{\theta}_{la} = A_{la}/A_l \qquad \text{Proportion of fish of length (l) and age (a)}$$

$$\hat{\theta}_a = \sum_l \hat{\alpha}_l \hat{\theta}_{la} = \sum_l r_{la} \qquad \text{Proportion all age (a) fish; } r_{la} = l_a/l_l$$

$$V_a = \sum_l \hat{\alpha}_l \hat{\theta}_{la}(1 - \hat{\theta}_{la}) \qquad \text{Variance within length intervals for proportional allocation}$$

$$B_a = \sum_l \hat{\alpha}_l (\hat{\theta}_{la} - \hat{\theta}_a)^2 \qquad \text{A variance component between length intervals}$$

$$SE^2 = \frac{V_a}{A} + \frac{B_a}{L} \qquad \text{Variance}$$

$$CV^2 = \left(\frac{V_a}{A} + \frac{B_a}{L} \right) / \hat{\theta}_a^2 \qquad \text{CV = Coefficient of variation}$$
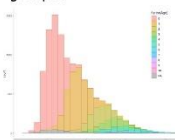
$$A = \frac{V_a}{\hat{\theta}_a^2 CV^2 - B_a/L}$$

$$V = \frac{\sum_a V_a}{A} + \frac{\sum_a B_a}{L}$$

Results

DYFS+SNS

For the nearshore surveys the range of age groups is quite limited (Figure 2). The reliable estimates (Table 2) overlap with the target age groups.

Figure 2. Length-age distribution for a particular age for DYFS+SNS combined, in a given year.

Table 2. Age sample sizes (A) needed to achieve a certain CV plaice DYFS+SNS, 2010-2022. Bold numbers: reliable estimate possible.

BTS+IBTS Q3

For the offshore surveys the range of age groups is large, and the proportional age at length varies for the western and eastern North Sea (Figure 3). The reliable estimates (Table 3) overlap with the target age groups.
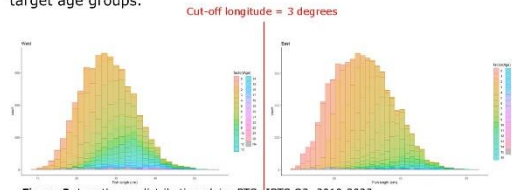

Figure 3. Length-age distribution plaice BTS+IBTS Q3, 2010-2022. left panel: West of 3°E; right panel: East of 3°E

Table 3. Age sample sizes (A) needed to achieve a certain CV for a particular age for BTS+IBTS Q3 combined, in a given year, for 5000 length measurements for the species. Bold numbers: reliable estimate possible. left panel: West of 3°E; right panel: East of 3°E

Table 4. Snapshot of the otolith collection by length class (NS-IBTS+BTS plaice, East of 3°E, 2010-2022). The right columns show the different numbers of fish for a total amount of otoliths

Next steps

- Finetuning of the model
- Based on the final model's outcomes, the otolith collection by species and survey will be evaluated, and proposals for new sampling plans will be shared with survey coordination groups before implementation.

Figure A9.9 Publication of Chin *et al*. (2023)

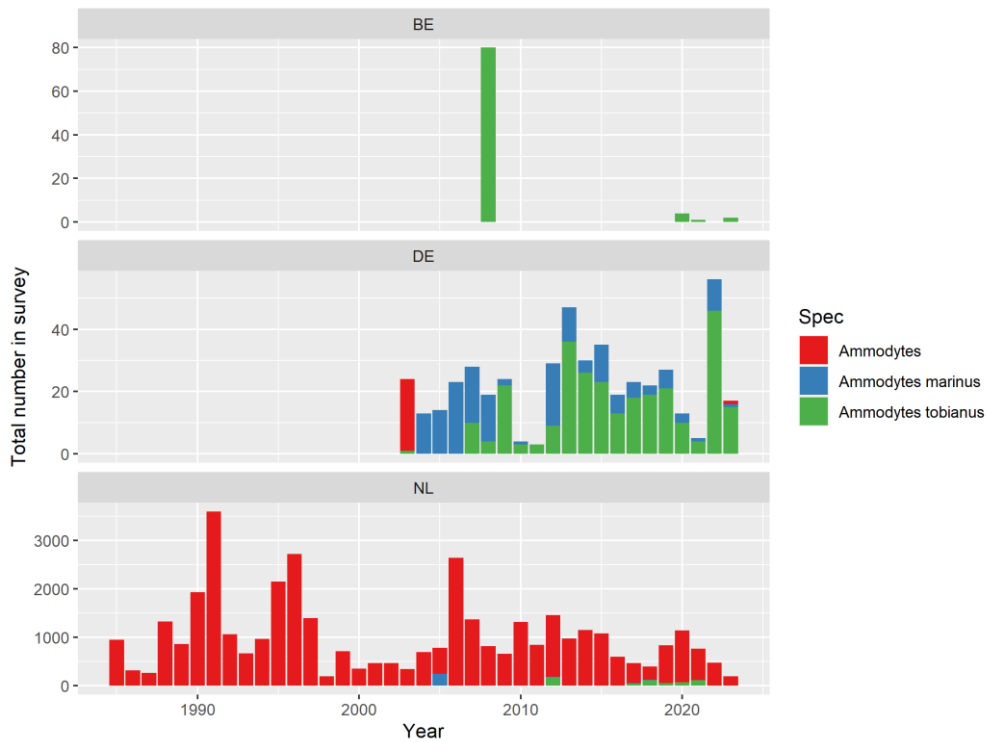# Annex 10: Species identification consistency in the inshore beam trawl surveys

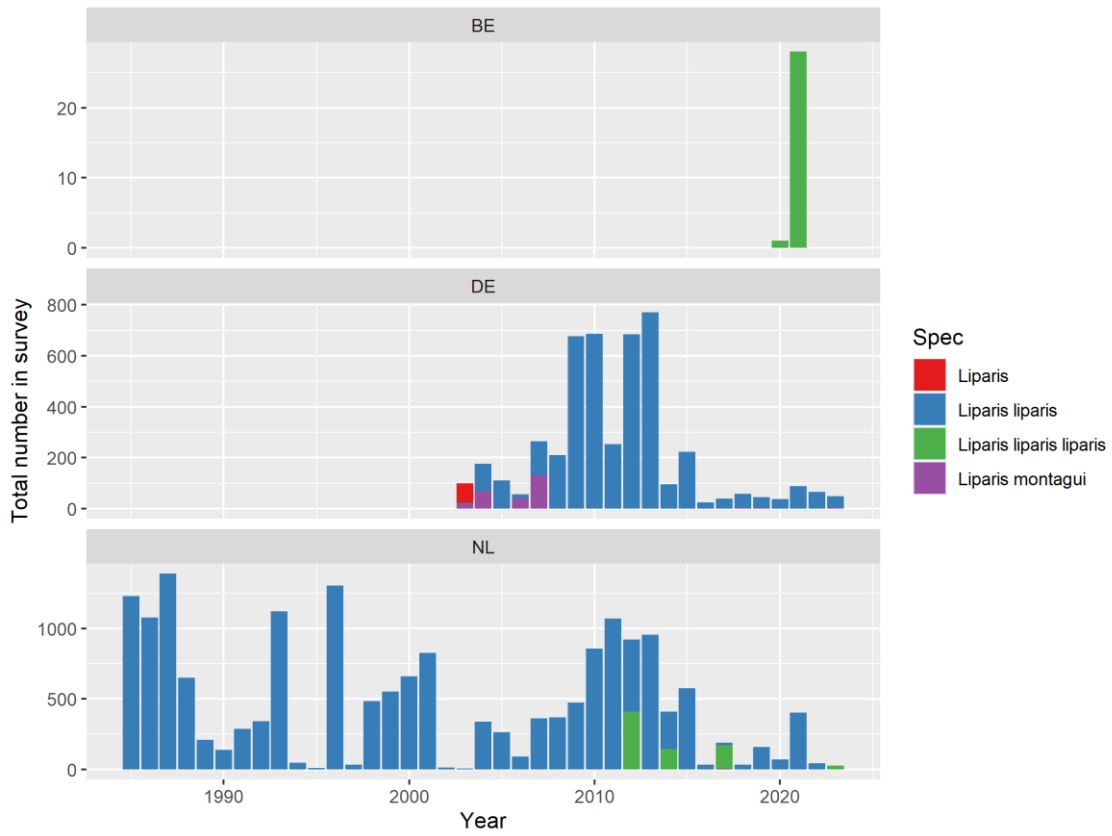**Figure A10.1: Entries of *Ammodytes*, *Ammodytes marinus* and *Ammodytes tobianus* over time into the DYFS database.**

Figure A10.2: Entries of different *Liparis* species into the DYFS database over time.
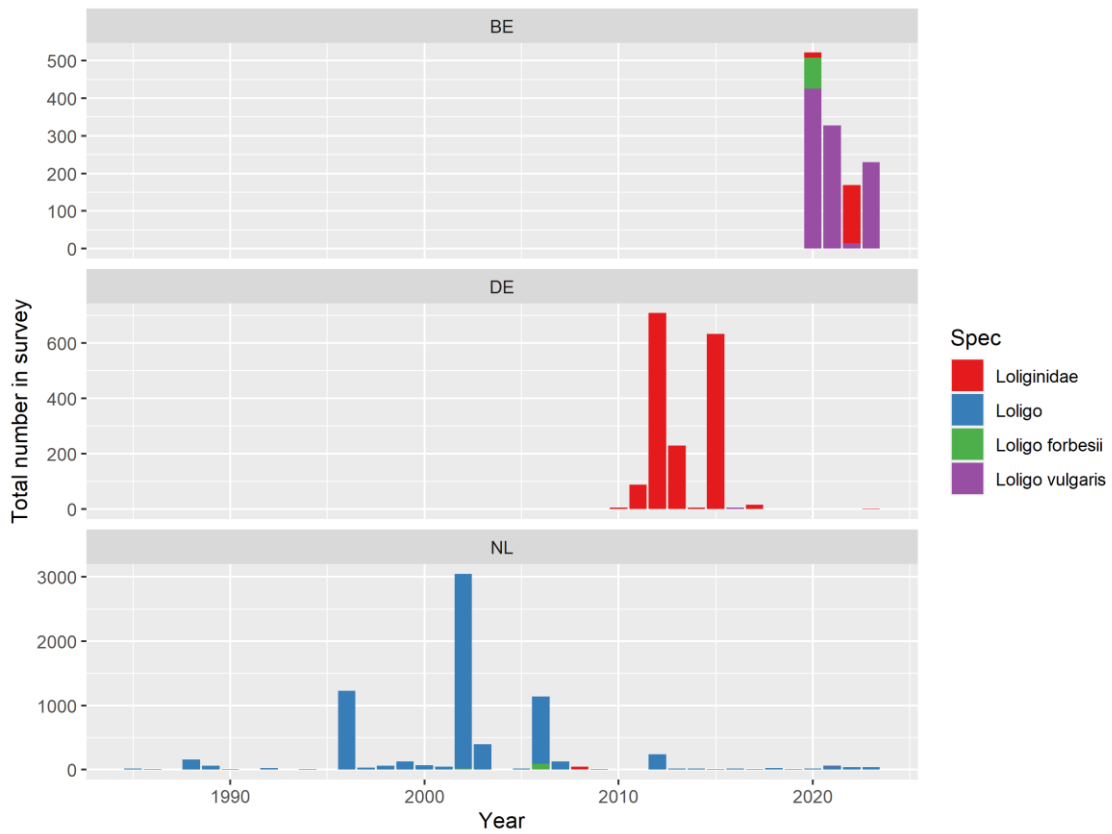

Figure A10.3: Entries of different *Loliginidae* species into the DYFS database over time.
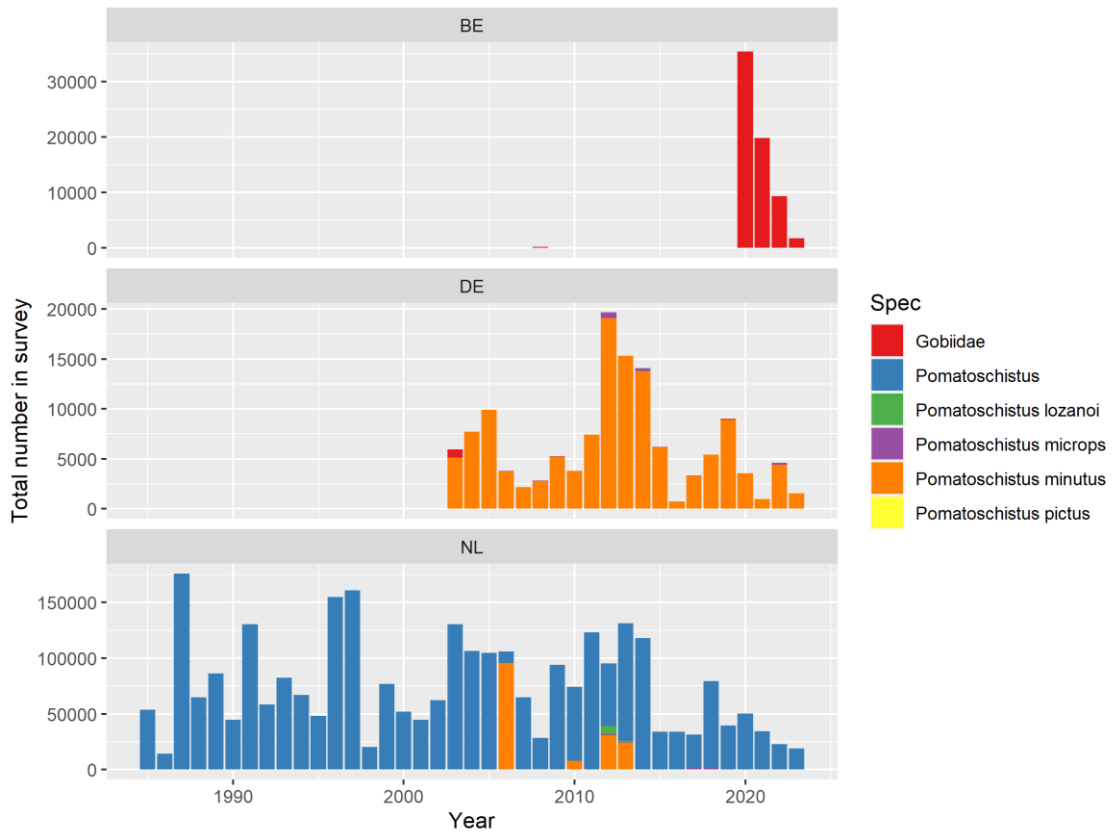
Figure A10.4: Entries of different *Pomatoschistus* species and *Gobiidae* into the DYFS database over time.
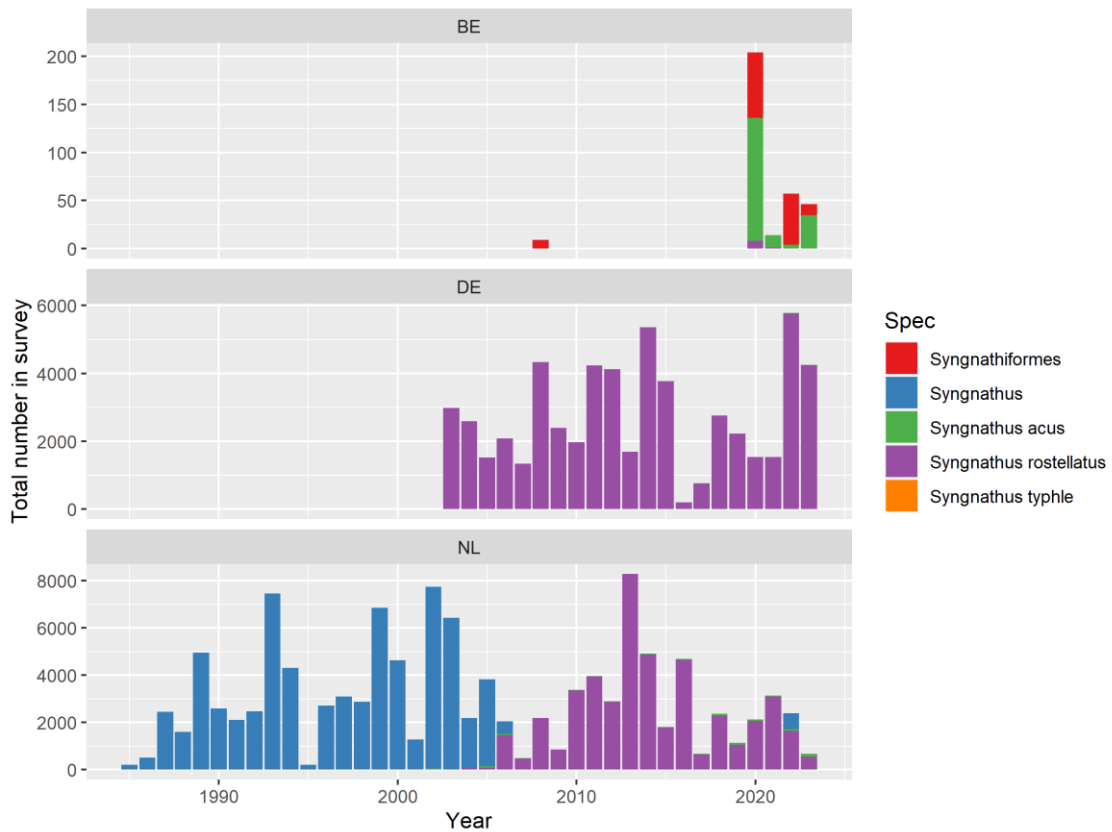

Figure A10.5: Entries of different *Syngnathus* species into the DYFS database over time.

Annex 11: Evaluation of towed distance in relation to duration

Recording of distance varies; sometimes from a bridge log, sometimes based on the calculated distance -during export, based on positions. It is recommended that only data that have been logged are reported to DATRAS, and values like standard survey speed or calculated distance based on lat-lon are not submitted.
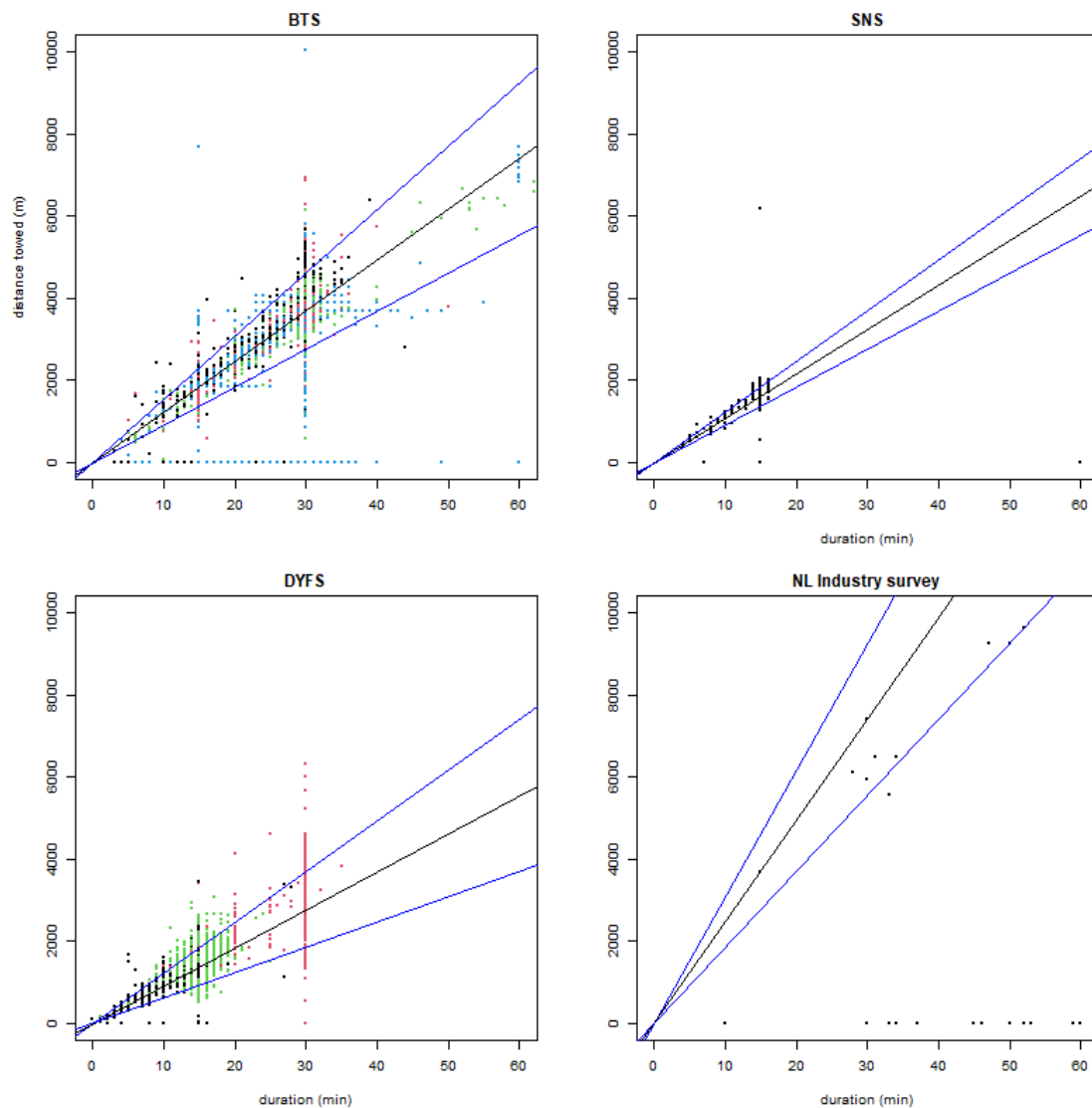

Figure A.11.1: Reported distance vs. towing duration for BTS, SNS, DYFS and Netherlands industry survey on Turbot and Brill The colours show the different countries (black=Netherlands; blue=UK; green=Germany; red=Belgium). Black line=average survey speed, blue lines=upper and lower limit of survey speed.

Table A.11.1: Values to be checked in DATRAS for BTS, SNS, DYFS and Netherlands industry survey on Turbot and Brill (valid hauls only)

Country	Survey-year	Ship	StNo-HaulNo	Issue
BE	BTS-2005	11BE	7-29	Check Distance towed (5520)
BE	BTS-2006	11BE	113-25	Check Distance towed (5690)
BE	BTS-2009	11BE	25-27	Check Distance towed (6296)
BE	BTS-2010	11BE	83-12	Check Distance towed (6925)
BE	BTS-2011	11BE	28-32	Check Distance towed (6875)
BE	BTS-2015	11TQ	2-4	Check Distance towed (5737)
BE	BTS-2017	11BE	80-51	Check Distance towed (591)
BE	DYFS-1986	11BR	37-16	Check Distance towed (2350) in 15 mins
BE	DYFS-2002	11BR	1-28	Check Distance towed (2350) in 30 mins
BE	DYFS-2006	11BR	92-19	Check Distance towed (2410) in 30 mins
BE	DYFS-2011	11BR	26-9	Check Distance towed (3322)
DE	BTS-1993	06S1	33-33	Check Distance towed (82)
DE	BTS-1994	06S1	15-15	Check Distance towed (-16668)
DE	BTS-2000	06S1	15-15	Check Distance towed (56592)
DE	BTS-2000	06S1	2-2	Check Distance towed (15313)
GB	BTS-1989	74RY	27-45	Check Distance towed (263)
GB	BTS-1990	74RY	22-59	Check Distance towed (7688)
GB	BTS-1992	74RY	407-157	Check Distance towed (10042)
GB	BTS-1992	74RY	8-96	Check Distance towed (7678)
GB	BTS-1992	74RY	5-102	Check Distance towed (7491)
GB	BTS-1992	74RY	7-100	Check Distance towed (7349)
GB	BTS-1992	74RY	3-97	Check Distance towed (7347)
GB	BTS-1992	74RY	14-103	Check Distance towed (7344)
GB	BTS-1992	74RY	6-101	Check Distance towed (7317)
GB	BTS-1992	74RY	15-104	Check Distance towed (7295)
GB	BTS-1992	74RY	16-106	Check Distance towed (7165)
GB	BTS-2010	74E9	425-101	Check Distance towed (171)
GB	BTS-2010	74E9	512-169	Check Distance towed (0)

GB	BTS-2012	74OJ	K2-42	Check Distance towed (21115)
GB	BTS-2012	74OJ	K2-42	Check Distance towed (21115)
GB	BTS-2023	74E9	17-87	Check Distance towed (0)
NL	DYFS-2011	646A	634_52-52	Check Distance towed (3449)
NL	DYFS-2020	64ST	620_27-172	Check Distance towed (3332) and HaulDur (28)
NL	DYFS-2020	64ST	617_71-71	Check Distance towed (3386) and HaulDur (27)
NL	DYFS-2022	64LC	638028-28	Check Distance towed (33)
NL	SNS-2021	64SS	630009-9	Check Distance towed (6197 m in 14 mins)