Institut für Seefischerei (TI-SF)

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Cruise Report
FRV „Solea“ cruise 855
06.10. - 23.10.2025

Hydroacoustic survey for the assessment of small pelagics in the Baltic Sea

(GERAS – German Acoustic Autumn Survey /BIAS – Baltic International Acoustic Survey)

Cruise Leader: Dr. Matthias Schaber/Lea Hartkens (TI-SF)

Summary

The cruise was part of an international hydroacoustic survey providing information on stock parameters of small pelagic fishes in the Baltic Sea, coordinated by the ICES Working Group of International Pelagic Surveys (WGIPS) and the ICES Baltic International Fish Survey Working Group (WGBIFS). Further WGBIFS contributors to the Baltic survey are national fisheries research institutes of Sweden, Poland, Finland, Latvia, Estonia and Lithuania. FRV “Solea” participated for the 38th time. The survey area covered the western Baltic Sea including Kattegat, Belt Sea, Sound and Arkona Sea (ICES Subdivisions (SD) 21, 22, 23 and 24). The survey effort was similar to 2024.

Altogether, 1206 nautical miles of hydroacoustic transects were covered (100% coverage of planned transects). For species allocation and identification as well as to collect biological data for an age stratified abundance estimation of the target species herring and sprat, altogether 47 fishery hauls were conducted. Vertical hydrography profiles were measured on 82 stations.

Mean NASC values recorded were below the long term-survey mean in 19 out of 27 rectangles, with 6 rectangles yielding higher mean NASC values. On ICES subdivision scale, mean NASC values were about 25% higher than in the previous year in SD 24 (Arkona Sea) while they were distinctly lower (-22%, -28% and -76%) in SD 21 (Kattegat), SD 22 (Belt Sea) and SD 23 (the Sound), respectively. In comparison with the previous survey, the mean NASC per rectangle in 2025 was higher than in 2024 (partly significantly) in 9 rectangles. In two rectangles the mean NASC was in the range of 2024. In the 16 remaining rectangles, mean NASC values were mostly clearly below the values measured in 2024.

Verteiler:

Schiffsführung FFS „Solea“, “Walther Herwig III“
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BM für Landwirtschaft, Ernährung und Heimat (BMLEH)
BA für Seeschifffahrt und Hydrographie (BSH), Hamburg
Deutscher Angelfischerverband e.V.
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Deutscher Fischereiverband Hamburg
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Fahrtteilnehmer*innen

1. Cruise objectives

The survey has the main objective to annually assess the clupeoid resources of herring and sprat in the Baltic Sea in autumn. The reported acoustic survey is conducted every year to supply the ICES Herring Assessment Working Group for the Area South of 62°N (HAWG) and Baltic Fisheries Assessment Working Group (WGBFAS) with an index value for the stock size of herring and sprat in the Western Baltic area (Kattegat/Subdivisions 21 and Subdivisions 22, 23 and 24).

The following objectives were planned for SB855

- Hydroacoustic measurements for the assessment of small pelagics in the Kattegat and western Baltic Sea including Belt Sea, Sound and Arkona Sea (ICES Subdivisions 21, 22, 23 and 24)
- (Pelagic) trawling according to hydroacoustic registrations
- Hydrographic measurements on hydroacoustic transects and after each fishery haul
- Identification and recording of species- and length-composition of trawl catches
- Collection of biological samples of herring, sprat and additionally sardine, European anchovy and cod for further analyses

1.1 Survey design

ICES statistical rectangles were used as strata for all Subdivisions (ICES, 2017, 2025). The area was limited by the 10 m depth line. The survey area in the Western Baltic Sea is characterized by a number of islands and sounds. Consequently, parallel transects would lead to an unsuitable coverage of the survey area. Therefore, a zig-zag track was adopted to cover all depth strata regularly and sufficiently. Overall, the covered regular cruise track length was 1206 nautical miles (2024: 1207 nmi) (Figure 1).

2. Cruise narrative and preliminary results

2.1 Cruise narrative

This cruise represented the 38th subsequent GERAS survey. Loading of scientific equipment and embarkation of scientific crew took place on October 6th in Rostock-Marienehe. FRV “Solea” left port in the early evening of that day for the calibration of the echosounders, which took place the next morning southeast of Fehmarn Island in mostly favorable conditions. In general, survey operations were conducted during nighttime as in the previous surveys to account for a more pelagic distribution of clupeids at that time. Due to the weather forecast indicating rough conditions in the eastern SD 24, survey operations started in the evening of October 7th in the relatively sheltered SD 22. In partly inclement conditions that however did not require an interruption of survey operations, SD 22 was accomplished after 5 nights and the survey continued in SD 21 from October 12th until October 15th. Afterwards, the Sound (SD 23) was covered on October 16th before the survey was interrupted for one night to allow for an exchange of scientific staff in Copenhagen. Afterwards, FRV “Solea” left Copenhagen and continued survey operations in SD 24 (Arkona Sea) from October 18th until the accomplishment of the survey on October 23nd. Later that day, FRV “Solea” returned to Rostock-Marienehe, where the survey ended. All transects were covered as planned.

Altogether, the following survey schedule was accomplished:

Belt Sea	(SD 22)	7.-11.10.
Kattegat	(SD 21)	12.-15.10.
Sound	(SD 23)	16.10.
Arkona Sea	(SD 24)	18.-23.10.

Total survey time	15 nights (plus 2 nights of transport/port call for crew exchange)
Fishery hauls	47
CTD-casts	82
Hydroacoustic transects	1206 nmi

2.2 Hydroacoustics

2.2.1 Calibration

All transducers (38, 70, 120 and 200 kHz) were calibrated in CW and FM mode from a drifting vessel southeast of Fehmarn Island in the Mecklenburg Bight on October 7th. Overall calibration results were considered very good based on calculated RMS values. Resulting transducer parameters were applied for the post-processing of hydroacoustic survey data.

2.2.2 Echo recording

All acoustic investigations were performed during night time to account for the more pelagic distribution of clupeids during that time. Hydroacoustic data were recorded with a Simrad EK80 scientific echosounder with hull-mounted 38, 70, 120 and 200 kHz transducers at a standard ship speed of 10 kn. Post-processing and analysis of hydroacoustic data were conducted with Echoview 16 software (Echoview Software Pty Ltd, 2025). Mean volume backscattering values (S_v) were integrated over 1 nmi intervals from 10 m below the surface to ca. 0.5 m over the seafloor (NASC - Nautical Area Scattering Coefficient). Interferences from surface turbulence, bottom structures and scattering layers were removed from the echogram. In post-processing, no species-specific NASC values were allocated to echo registrations, but a MIX category was used for the combined acoustic backscatter per EDSU. The transducer settings applied were in accordance with the specifications provided in ICES (2015, 2017).

Figure 2 depicts the spatial distribution of mean NASC values (5 nmi intervals) measured on the hydroacoustic transects covered in 2025. In general, the majority of these NASC measurements can be allocated to clupeids, but in some areas/rectangles, significant contributions of other organisms (e.g. three-spined stickleback, *Gasterosteus aculeatus*) to the measurements were recorded, which will be accounted for in the further analyses. Accordingly, the NASC values recorded and presented represent a mixed category. Altogether, 27 ICES statistical rectangles were covered in the 2025 survey (with some of these rectangles comprising areas that are allocated to different subdivisions, which accordingly can lead to the total of 30 rectangles in following comparisons). On ICES subdivision scale, mean NASC values were about 25% higher than in the previous year in SD 24 (Arkona Sea) while they were distinctly lower (-22%, -28% and -76%) in SD 21 (Kattegat), SD 22 (Belt Sea) and SD 23 (the Sound), respectively.

Compared with the long-term survey mean (1991-2024), the mean NASC measured in 2025 was below average in 19 out of 27 rectangles, with 6 rectangles yielding higher mean NASC values. In comparison with the previous survey, the mean NASC per rectangle in 2025 was higher than in 2024 (partly significantly) in 9 rectangles. In two rectangles the mean NASC was in the range measured in the previous year. In the 16 remaining rectangles, mean NASC values were mostly clearly below the values measured in 2024.

In the rectangles covered in SD 21, mean NASC values measured were distinctly higher than those measured in the previous year in the central and southern parts of the Kattegat (41G0, 41G1, 42G1), while in the remaining rectangles along the Swedish coast of the Kattegat and in the northern Kattegat the mean NASC per 1 nmi EDSU measured was similar to the values measured in the previous year (two rectangles) or distinctly lower (two rectangles). In general, aggregations seemed more clustered in the southern and central parts. It has to be noted that some of the rectangles where distinctly higher NASC values were measured are only covered by few miles of transects – even small aggregations of fishes at otherwise comparatively low recordings can accordingly contribute significantly to the average NASC in these rectangles.

In SD 22, the mean overall NASC values recorded were distinctly lower than in the previous years in all but two out of 11 rectangles surveyed. While noticeable low NASC values were recorded in most parts of this subdivision, single large aggregations were detected e.g. in rectangle 38G1 that significantly increased the mean NASC of the corresponding rectangles.

As in the previous years, no distinct aggregations of big herring that could be observed in the inner Sound area of SD 23 prior to 2016 were detected. The mean NASC per rectangle in SD 23 was significantly lower than in the previous year in all 3 rectangles SD 23 is comprised of and in total over 80% lower than the 5-year average (2020-2024). As in recent years, a notable aggregation of herring was detected in rectangle 41G2 located at the narrow isthmus in the northern Sound that contributed to the NASC values recorded in that rectangle, albeit at a much lower level than in 2023 and 2024.

In SD 24, mean NASC values were again (mostly distinctly) higher than the levels measured in 2024 in 5 out

of 9 rectangles (similar to 2024 in one rectangle). Lower values were recorded in 37G2 (eastern Mecklenburg Bight), 37G4 (transition area between Rügen Island and the Bornholm Basin area that is usually shallow and does not contribute significantly to the overall NASC recorded in the SD) and 38G2 (southwestern Arkona Sea).

2.3 Biological sampling (S. Haase, Thünen-OF)

For species allocation and identification as well as to collect biological data for an age stratified abundance estimates of the target species herring and sprat, altogether 47 fishery hauls were conducted. Fishery hauls according to ICES Subdivision (Figure 1):

SD	Hauls (n)
21	14
22	14
23	4
24	15

Altogether, 1168 individual herring (*Clupea harengus*) and 732 sprat (*Sprattus sprattus*) were frozen for further investigations (e.g. determining sex, maturity, age). Additionally, also European anchovy (*Engraulis encrasicolus*) and sardines (*Sardina pilchardus*) were collected. However, the samples were not yet analysed at the writing of this report. Results of catch compositions by Subdivision are presented in Tables 1-4. In total, 39 different species were recorded. Out of 47 hauls in total, herring were caught in 44, sprat in 42, anchovies in 27 and sardines in 6. As in the previous years, SD 23 again showed the highest mean herring catch rates per station (kg 0.5 h^{-1}) in 2025, which however is based on a single haul targeting an aggregation of large, adult herring in the Sound. Sprat showed the highest mean catch rate (kg 0.5 h^{-1}) in subdivision 24 and the lowest in subdivision 23. Anchovies were present in all subdivisions, albeit in partly much lower numbers than in previous years. Sardines were caught in 6 hauls from Subdivisions 21 (Kattegat) in distinctly higher numbers than in the previous years. Figure 3 depicts a representation of the standardized catch per haul of clupeids and other pelagic species that contributed to acoustic registrations.

Altogether, the following species were sampled and processed:

Species	**Length measurements (n)**	**Prevalence (n of hauls)**
Agonus cataphractus	1	1
Alloteuthis sp.	629	17
Ammodytes sp.	10	1
Aphia minuta	382	26
Belone belone	5	4
Callionymus lyra	1	1
Carcinus sp.	6	3
Clupea harengus	4,625	44
Crangon crangon	47	4
Ctenolabrus rupestris	12	3
Cyclopterus lumpus	10	8
Engraulis encrasicolus	1,124	27
Eutrigla gurnardus	11	5
Gadus morhua	31	12
Gasterosteus aculeatus	1,090	34
Gobius niger	13	3
Leander sp.	2	1
Limanda limanda	142	17
Loligo sp.	4	3
Meganyctiphanes norvegica	53	1

Melanogrammus aeglefinus	25	1
Merlangius merlangus	79	16
Myoxocephalus scorpius	1	1
Pandalus borealis	9	1
Pholis gunnellus	1	1
Platichthys flesus	32	14
Pleuronectes platessa	315	15
Pomatoschistus minutus	79	21
Sardina pilchardus	442	6
Scomber scombrus	206	13
Sepiola sp.	7	3
Solea vulgaris	2	2
Spinachia spinachia	2	1
Sprattus sprattus	4,741	42
Squalus acanthias	53	1
Syngnathus typhle	2	2
Trachinus draco	67	9
Trachurus trachurus	92	22
Trisopterus minutus	6	2

Figure 4 shows the relative length-frequency distributions of herring and sprat in ICES subdivisions 21, 22, 23 and 24 for the years 2024 and 2025. Compared to results from the previous survey in 2024, the following conclusions for **herring** can be drawn:

- In 2025, catches showed a bi-modal length distribution with modes at ca. 14 and 18 cm in SD 21. Smaller herring <12 cm were missing from the trawl hauls.
- As in the previous year, catches in SD 22 were dominated by the incoming year class (≤15 cm), but with a lower contribution of herring between 9 and 12 cm than in 2024. There was a larger amount of herring between 15 and 20 cm compared to the last year.
- In SD 23, catches were dominated by the incoming year class (≤10 cm). Still, a significant contribution of herring >22 cm was again recorded in a similar proportion than in the previous year. Herring >25 cm in 2025 were only present in SD 23.
- Catches in SD 24 showed almost the same length distributions in 2025 as in 2024 and were clearly dominated by the incoming year class (≤15 cm). No herring <10 cm were caught in SD 24 in 2025. Similar to the previous years, herring larger than ca. 25 cm were absent.

Relative length-frequency distributions of **sprat** in the years 2025 and 2024 (Figure 4) can be characterized as follows:

- Contrary to the previous year, the incoming year class (≤10 cm) was almost absent in catches in SD 21. Similar to previous years, catches were dominated by larger sprat, with a mode at 12 cm.
- In 2025, catches in SD 22 showed a bimodal length distribution. Contrary to the previous year, the incoming year class at a length range 7-9.5 cm (mode 8.5 cm) was less pronounced. Instead, there was a higher proportion of sprat between 11 and 13.5 cm.
- SD23 was dominated by smaller sprat between 5 and 8 cm with a mode at 6 cm. The proportion of sprat larger than 8 cm was smaller compared to 2024 where sprat in SD 23 showed a wide length distribution.
- In SD 24, catches of sprat showed a bimodal distribution with a small contribution of the incoming year class (≤10 cm, mode at ca. 8.5 cm) and a notable contribution of larger, older sprat (>10 cm, mode at ca. 12 cm).
- Like in 2024, the contribution of the incoming year class (≤10 cm) remained to be comparatively high in SD 23 but was much smaller in SDs 22 and 24.

2.4 Hydrography

Vertical profiles of temperature, salinity and oxygen concentration were measured with a SeaBird SBE CTD-probe on a station grid covering the whole survey area. Hydrography measurements were either conducted directly after a trawl haul or, in case of no fishing activity, in regular intervals along the cruise track. Altogether, 82 CTD casts were conducted during this survey (Figure 5).

Surface temperatures ranged from ca. 12°C in the southern Arkona Sea (SD 24) to ca. 14.5°C in the western Belt Sea (SD 22). In general, surface temperatures in the western and northern survey areas (Belt Sea, Kiel Bight, Kattegat) were distinctly higher than in the Arkona Sea. Bottom temperatures ranged from around 7°C in the deep eastern parts of SD 24 (Bornholm Basin) to almost 16°C in the western Kattegat/northern Belt Sea area. Overall, bottom temperatures were also distinctly higher in the Kattegat and western Baltic than further east and often exceeded surface temperatures in these areas.

As usual, due to the hydrographic nature of the western Baltic Sea, surface salinities showed a large gradient (from ca. 7 PSU in the southeastern Arkona Sea to ca. 28 PSU in the Kattegat). Other than in 2023 and similar to the previous year, surface salinities in the southwestern parts of the survey did not exceed 20 PSU but were higher than in the previous year at around 17 to 18 PSU in the Kiel Bight. Salinity near the seafloor ranged from ca. 8 PSU in the Arkona Sea to almost 35 PSU in the deep parts of the Kattegat. Especially in the Sound (SD 23), a very strong stratification with steep salinity gradients was again observed.

Surface waters were well oxygenated throughout the survey area. In contrast, pronounced oxygen depletion was again measured in the Mecklenburg Bight (SD 22), around Fehmarn and the coastal areas of the Kiel Bight south of the Little Belt (SD 22). In some of those regions, lowest oxygen concentrations measured near the seafloor were below 0.5 ml/l and occasionally in the anoxic range.

3. Survey participants

Name	Function	Institute
Dr. M. Schaber (6.-17.10.)	Cruise Leader (Hydroacoustics, Hydrography)	TI-SF
L. Hartkens (18.-23.10.)	Cruise Leader (Hydroacoustics, Hydrography)	TI-SF
V. Hennings	Fishery biology	TI-OF
B. Huwer (6.-17.10.)	Fishery biology	DTU-Aqua (DK)
S. Kjelstrup (18.-23.10.)	Fishery biology	DTU-Aqua (DK)
L. Le Gall	Fishery biology	TI-OF
M. Koth	Fishery biology	TI-OF
T. Peters (18.-23.10.)	Fishery biology, Hydroacoustics	TI-SF
K. Schienbein (6.-17.10.)	Fishery Biology	TI-SF

4. References

Echoview Software Pty Ltd (2025) Echoview software, version 16.0.287. Echoview Software Pty Ltd, Hobart, Australia.

ICES (2017). SISP Manual of International Baltic Acoustic Surveys (IBAS). Series of ICES Survey Protocols SISP 8 – IBAS. 47pp. http://doi.org/10.17895/ices.pub.3368

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5. Acknowledgements

I hereby thank the crew of FRV “Solea” and Captain M. Wenske as well as all participants for their outstanding cooperation and commitment that enabled the safe and successful accomplishment of this survey.

(Dr. M. Schaber, TI-SF / Scientist in charge)

Figures

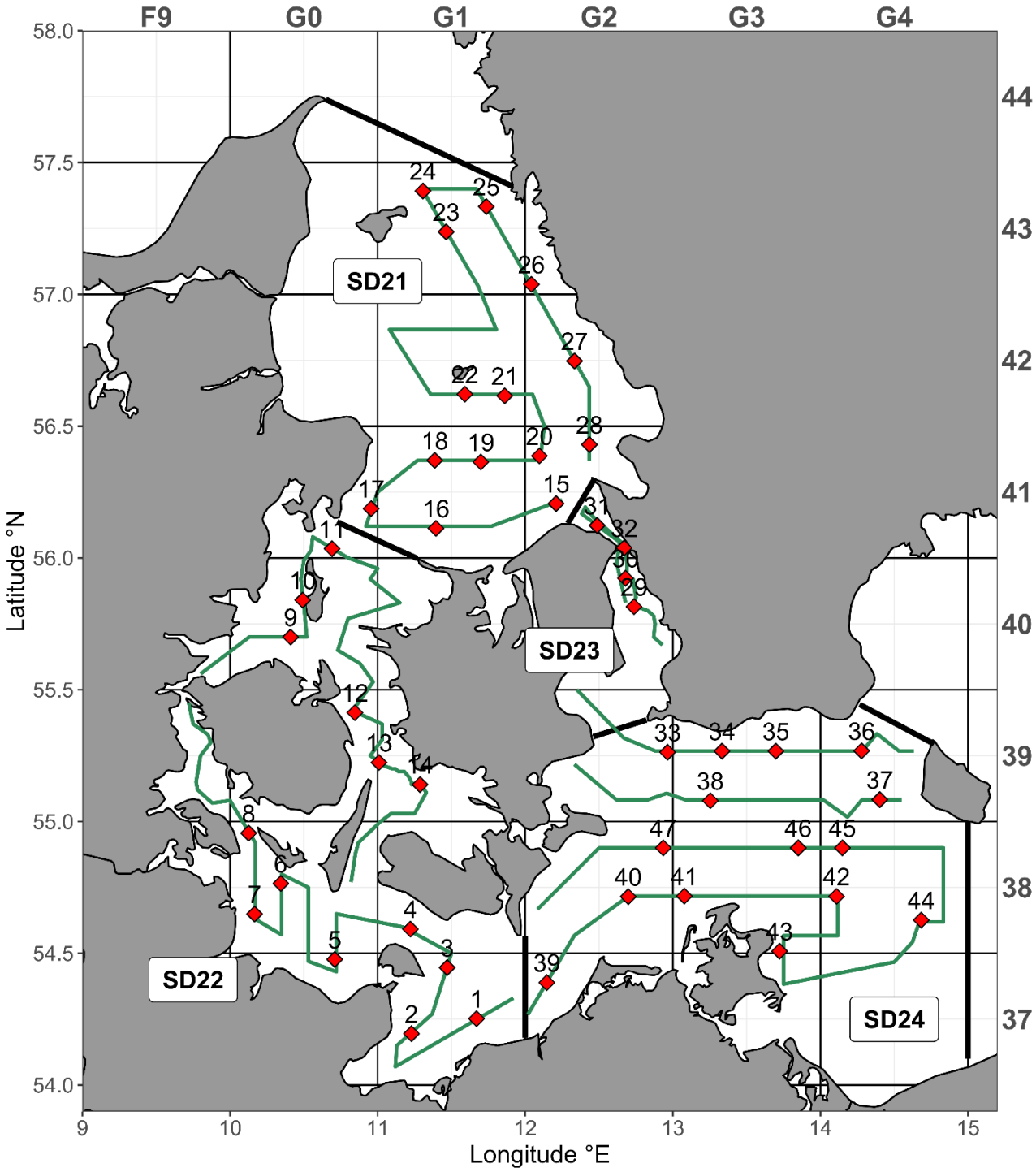

Figure 1: FRV "Solea" cruise 855/2025. Cruise track (dark green lines) and fishery hauls (red diamonds). ICES statistical rectangles are indicated in the top and right axis. Thick black lines separate ICES subdivisions (SD).

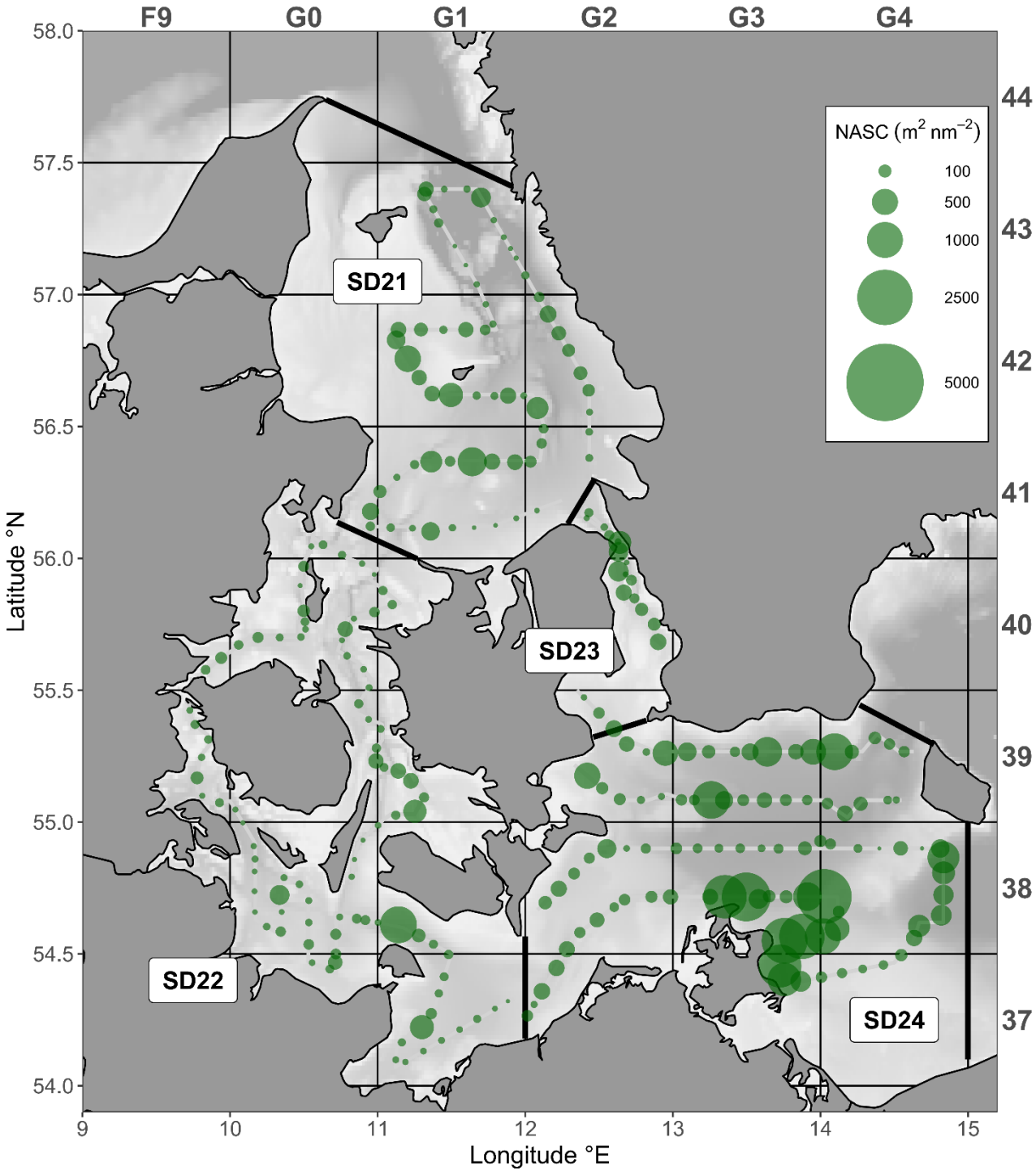

Figure 2: FRV "Solea" cruise 855/2025. Cruise track (light grey lines) and mean NASC (5 nmi intervals, dots). ICES statistical rectangles are indicated in the top and right axis. Thick black lines separate ICES subdivisions.

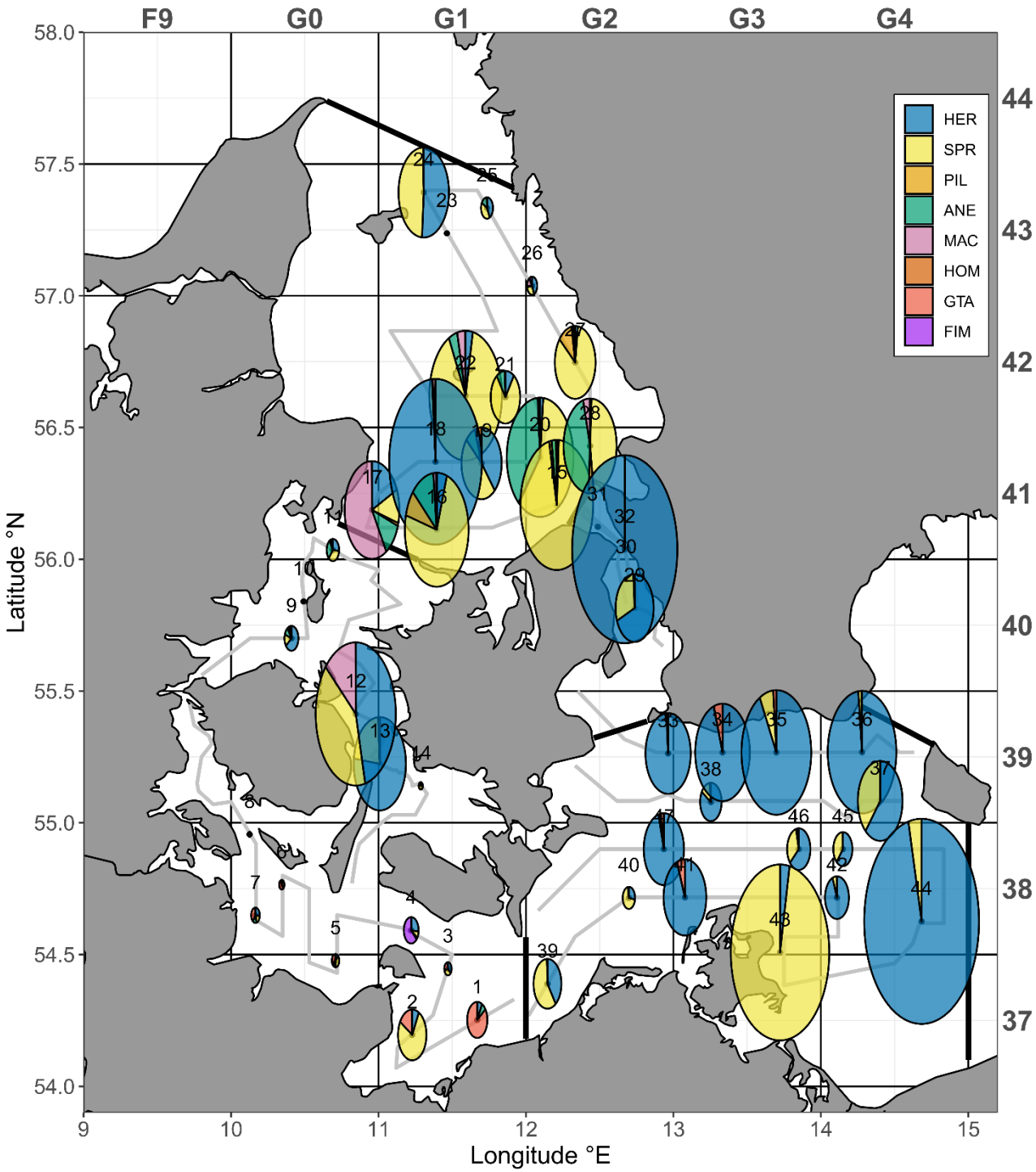

Figure 3: FRV "Solea" cruise 855/2025. Catch per haul, small pelagic species (pie size = log scale of CPUE in kg 30min^{-1}). HER = Herring (*Clupea harengus*), SPR = Sprat (*Sprattus sprattus*), PIL = Sardine (*Sardina pilchardus*), ANE = European anchovy (*Engraulis encrasicolus*), MAC = Mackerel (*Scomber scombrus*), HOM = Horse mackerel (*Trachurus trachurus*), GTA = Three-spined stickleback (*Gasterosteus aculeatus*), FIM = Transparent goby (*Aphia minuta*). ICES statistical rectangles are indicated in the top and right axis. Thick black lines separate ICES subdivisions. Thin grey lines indicate cruise track.

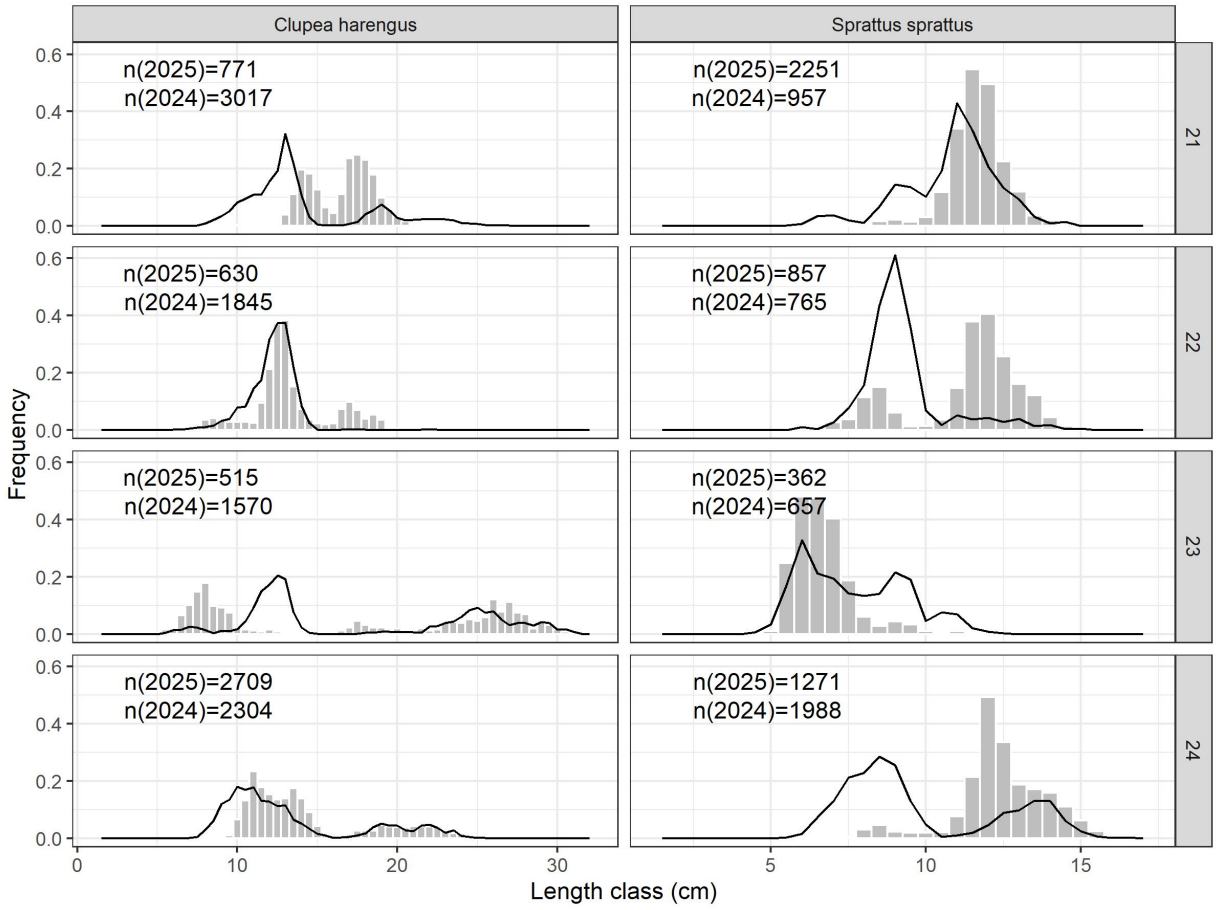

Figure 4: FRV "Solea" cruise 855/2025. Herring (*Clupea harengus*, left) and sprat (*Sprattus sprattus*, right) length-frequency distribution (bars) compared to the previous year (cruise 840/2024, lines).

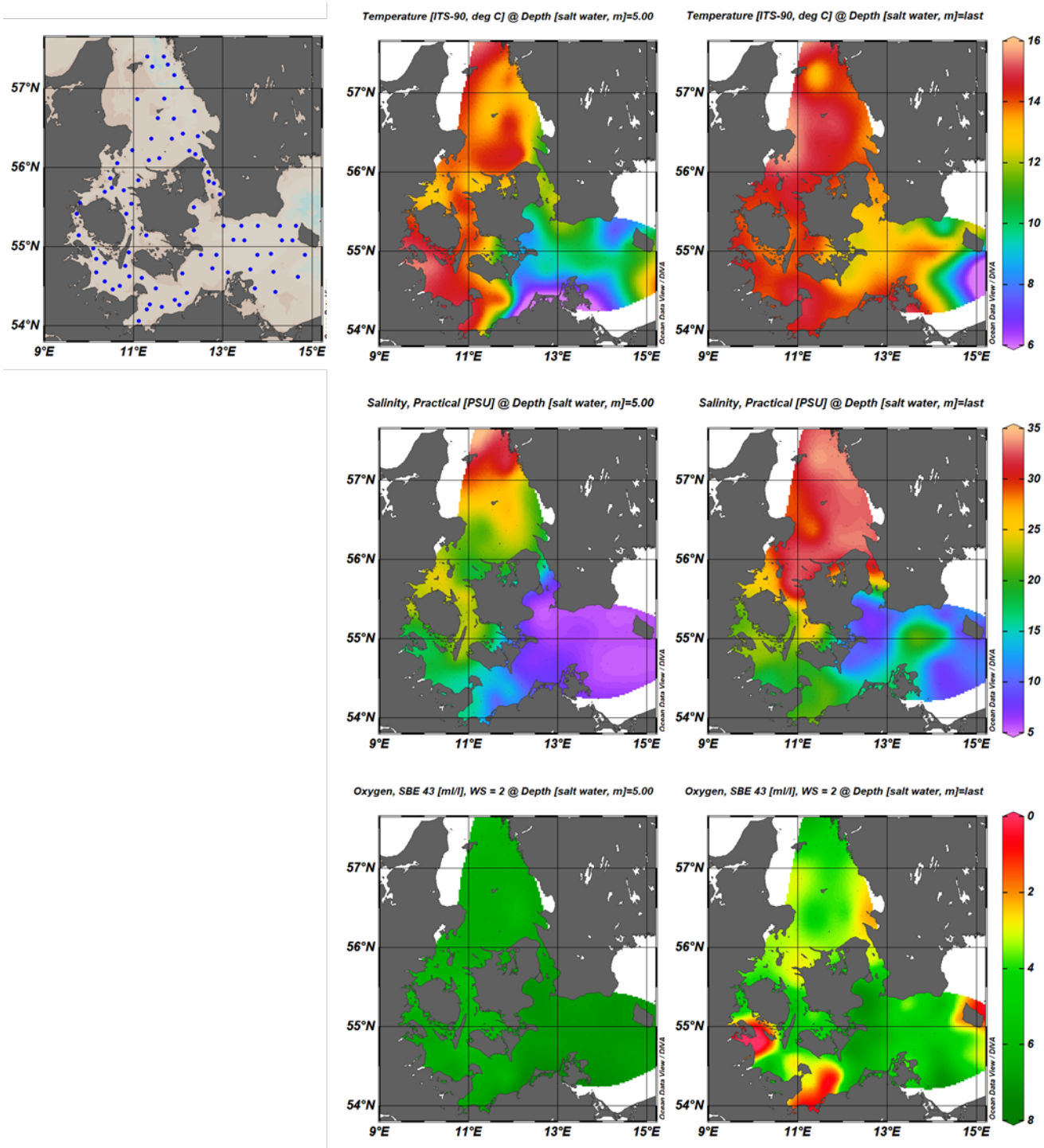

Figure 5: FRV "Solea" cruise 855/2025: Hydrography. CTD stations (n=82) are depicted as blue dots in the area map (top left). Temperature (°C, top panels), salinity (PSU, middle panels) and oxygen concentration (ml/l, lower panels) at the surface (left) and near the seafloor (right).

Tables

Table 1: FRV "Solea" cruise 855/2025: Catch composition (kg 0.5 h^{-1}) by haul in SD 21 (+ = <0.01 kg).

Haul No.	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Species / ICES Rectangle	41G2	41G1	41G0	41G1	41G1	41G2	42G1	42G1	43G1	43G1	43G1	43G2	42G2	41G2
ALLOTEUTHIS SP.	+	+	0.06		0.03	0.11		1.35		0.41	0.07	0.03	0.65	0.11
APHIA MINUTA	+	+	+					+		+	+	0.06	0.03	
BELONE BELONE								0.23						
CALLIONYMUS LYRA														0.03
CARCINUS MAENAS										+	0.02			
CLUPEA HARENGUS	0.34	1.26	2.74	108.27	2.58	0.43	0.33	1.23		6.09	0.35	0.30	0.15	0.11
CRANGON CRANGON											0.02			
CYCLOPTERUS LUMPUS					2.00									
ENGRAULIS ENCRASICOLUS	0.80	2.88	1.64		0.55	10.72	0.32	1.51		+	0.13	+	0.03	6.17
EUTRIGLA GURNARDUS												+	+	
GASTEROSTEUS ACULEATUS		+					+					+	+	+
LIMANDA LIMANDA								0.90			0.07			0.02
LOLIGO SP.						+				+		+		
MEGANYCTIPHANES NORVEGICA											0.19			
MERLANGIUS MERLANGUS		0.15				0.43		1.30		+	0.19		0.56	0.25
PANDALUS BOREALIS											0.03			
PLEURONECTES PLATESSA								0.14						
POMATOSCHISTUS MINUTUS											+	+	+	
SARDINA PILCHARDUS	0.43	1.81	0.15			0.09							0.77	0.44
SCOMBER SCOMBRUS	0.09	0.37	8.84	0.97	0.18	0.24		1.41				0.11	0.12	0.56
SEPIOLA SP.								+			0.02			
SPRATTUS SPRATTUS	37.46	18.06	1.68	0.31	3.18	16.94	2.78	34.68		5.79	0.34	0.19	5.78	6.47
SQUALUS ACANTHIAS									2501.85					
TRACHINUS DRACO				0.93		0.47	0.09	1.31				0.11	0.41	0.11
TRACHURUS TRACHURUS	+	0.03	+	0.04	0.18	0.09	0.02	0.05		0.03	+	+	0.02	0.03
TRISOPTERUS MINUTUS											+	0.02		
TOTAL	39.12	24.56	15.11	110.52	8.71	29.51	3.54	44.11	2501.85	12.33	1.41	0.82	8.52	14.30

Table 2: FRV "Solea" cruise 855/2025: Catch composition (kg 0.5 h^{-1}) by haul in SD 22 (+ = <0.01 kg).

Haul No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Species / ICES Rectangle	27G1	27G1	27G1	38G1	37G0	38G0	38G0	38G0	40G0	40G0	41G0	39G0	39G1	39G1
AGONUS CATAPHRACTUS														+
ALLOTEUTHIS SP.									+	+	0.06			0.06
AMMODYTES SP.				+										
APHIA MINUTA		+	+	0.70	+	+	+		+	+	+		+	+
BELONE BELONE														0.06
CARCINUS MAENAS													+	
CLUPEA HARENGUS	0.14	0.25	0.17	0.30	0.06	0.03	0.15		0.66		0.23	26.48	10.11	0.02
CRANGON CRANGON														+
CTENOLABRUS RUPESTRIS			0.04	+										
ENGRAULIS ENCRASICOLUS	0.13		+	+	0.05	+	0.08	+	0.11		0.26	+	0.08	0.03
EUTRIGLA GURNARDUS	0.15			+										
GADUS MORHUA	+						0.03							
GASTEROSTEUS ACULEATUS	1.52	0.53	0.12	+	0.15	0.2	0.21	0.15	0.06	+			+	+
GOBIUS NIGER			0.02	+										+
LEANDER ADSPERSUS														+
LIMANDA LIMANDA	0.08	0.35	0.98	3.96	0.16	0.4	0.13	0.04			0.12		0.04	+
MERLANGIUS MERLANGUS			+			+								
MYOXOCEPHALUS SCORPIUS				0.03										
PHOLIS GUNNELLUS														+
PLATICHTHYS FLESUS	0.19					0.08		0.62	0.25					
PLEURONECTES PLATESSA	0.21	0.54	0.22	1.54	0.35	1.14	0.32	0.13						+
POMATOSCHISTUS MINUTUS			+	+	+				+				+	+
SCOMBER SCOMBRUS											0.04	7.75		
SOLEA VULGARIS							+							
SPINACHIA SPINACHIA														+
SPRATTUS SPRATTUS		2.45	0.15	0.09	0.17	0.08	0.11		0.16		0.31	23.03	2.92	0.18
SYNGNATHUS TYPHLE			+						+					
TRACHINUS DRACO														0.02
TRACHURUS TRACHURUS				+	0.03				0.04		0.03	0.02	0.05	
TOTAL	2.41	4.11	1.69	6.62	0.97	1.88	1.03	0.93	1.27	0.00	1.06	57.29	13.20	0.36

Table 3: FRV "Solea" cruise 855/2025: Catch composition (kg 0.5 h^{-1}) by haul in SD 23 (+ = <0.01 kg).

Haul No.	29	30	31	32
Species / ICES Rectangle	40G2	40G2	41G2	41G2
ALLOTEUTHIS SP.		0.03	0.03	
APHIA MINUTA	+	+	+	
CLUPEA HARENGUS	4.06	0.08	+	207.37
CRANGON CRANGON		+		
CTENOLABRUS RUPESTRIS		+		
ENGRAULIS ENCRASICOLUS	0.03		+	
EUTRIGLA GURNARDUS		0.64		
GADUS MORHUA		2.23		
GASTEROSTEUS ACULEATUS	+	+	+	
LIMANDA LIMANDA		0.21		
MELANOGRAMMUS AEGLEFINUS		6.80		
MERLANGIUS MERLANGUS		0.05		
PLEURONECTES PLATESSA		0.68		
POMATOSCHISTUS MINUTUS	+	+		
SCOMBER SCOMBRUS			0.06	
SEPIOLA SP.		0.02		
SPRATTUS SPRATTUS	1.77	0.04	+	
TRACHINUS DRACO			0.20	
TRACHURUS TRACHURUS	0.02		+	
TOTAL	5.88	10.76	0.29	207.37

Table 4: FRV "Solea" cruise 855/2025: Catch composition (kg 0.5 h^{-1}) by haul in SD 24 (+ = <0.01 kg).

Haul No.	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Species / ICES Rectangle	39G2	39G3	39G3	39G4	39G4	39G3	37G2	38G2	38G3	38G4	37G3	38G4	38G4	38G3	38G2
APHIA MINUTA		+	+					+	+						
BELONE BELONE				0.02										0.03	
CLUPEA HARENGUS	8.80	14.17	30.76	30.94	5.32	1.65	1.24	0.24	7.25	2.21	4.56	325.44	1.00	1.44	6.41
CRANGON CRANGON									+						
CYCLOPTERUS LUMPUS	0.47	0.53	0.31	0.45		0.26		0.20	0.52						
ENGRAULIS ENCRASICOLUS														0.03	
GADUS MORHUA		+		0.13	0.43		0.12	0.12				2.96	0.86	0.33	+
GASTEROSTEUS ACULEATUS	+	0.77	0.48	0.06	+	0.04	0.02	0.02	0.46	+	0.06		+	0.05	0.16
LIMANDA LIMANDA							0.23	0.08							
MERLANGIUS MERLANGUS				0.29	1.26						0.14	0.12	1.35	3.06	
PLATICHTHYS FLESUS	0.22	0.68		0.10		0.51	0.72	0.24	0.77	0.32		0.36		0.98	
PLEURONECTES PLATESSA			0.11	0.13			10.65	0.46							
POMATOSCHISTUS MINUTUS	+	+		+			+	+	+		+	+		+	+
SOLEA VULGARIS								0.31							
SPRATTUS SPRATTUS	0.11	0.03	2.16	0.50	3.34	0.28	1.85	0.61	+	0.14	142.14	12.53	0.63	0.74	0.12
TRACHURUS TRACHURUS								+							
TOTAL	9.60	16.17	33.81	32.60	10.34	2.74	14.84	2.28	9.00	2.67	146.90	341.41	3.84	6.65	**6.70**