Institut für Seefischerei (TI-SF)

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Cruise Report
FRV DANA, 07/2024
31.01 to 19.02.2024
IBTS Q1 2024

Cruise Leader: Dr. Hermann Neumann

Summary

The cruise was part of the International Bottom Trawl Survey (IBTS), which is an internationally coordinated ICES program aiming to provide fish population and ecosystem data as well as biological parameters of commercial fish species for stock assessment purposes. The cruise has been moved to FRV DANA (Denmark) due to ongoing repairs on Walther Herwig III. Sampling of fish was conducted by trawl hauls in allocated ICES statistical rectangles by means of the ICES standard bottom trawl GOV. In total, 50 GOV hauls were taken during the cruise (50 planned hauls) accompanied by 50 CTD profiles. Standardized total catches of the GOV hauls were on average about 407 kg/30min. Highest pre-recruit number were found for sprat <20cm (32941 ind./hr.) and lowest for cod <25cm (22 ind./hr.). In addition, 102 MIK plankton samples were taken (100 planned hauls) providing abundance estimates for large herring larvae (0-ringers) of the autumn spawning stock components. Standard length (SL) of herring larvae from the night time MIK sampling varied between 16- and 41mm (German data). The index from the 2024 survey (corresponding to the 2023 year-class) is 62.47. Additional work was done on stomach collection (571 samples), cod liver worms (179 samples), haddock gill parasites (866 samples) and cod finclips for genetic investigations (187 samples). On 35 MIK stations jellyfish was recorded additionally and 12 eDNA samples were taken to test this method as alternative for fish diversity assessment.

Verteiler:

Schiffsführung FFS „Solea" „Walther Herwig III"
BA für Landwirtschaft und Ernährung (BLE) Fischereiforschung
BM für Ernährung und Landwirtschaft (BMEL), Ref. 614
BA für Seeschifffahrt und Hydrographie (BSH), Hamburg
Deutscher Angelfischerverband e.V.
Deutsche Fischfang-Union, Cuxhaven
Deutscher Fischereiverband Hamburg
Doggerbank Seefischerei GmbH, Bremerhaven
Erzeugergemeinschaft der Deutschen Krabbenfischer GmbH
Euro-Baltic Mukran
GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel
Kutter- und Küstenfisch Sassnitz
LA für Landwirtschaft, Lebensmittels. und Fischerei (LALLF)
LFA für Landwirtschaft und Fischerei MV (LFA)
Landesverband der Kutter- u. Küstenfischer MV e.V.
Leibniz-Institut für Ostseeforschung Warnemünde
Thünen-Institut - Institut für Fischereiökologie
Thünen-Institut - Institut für Seefischerei
Thünen-Institut - Institut für Ostseefischerei
Thünen-Institut - Pressestelle
Thünen-Institut - Präsidialbüro
Thünen-Institut - Reiseplanung Forschungsschiffe, Dr. Rohlf
Fahrtteilnehmer*innen

1. Objectives and methods

The International Bottom Trawl Survey (IBTS) is an internationally coordinated ICES program. The survey aims to provide ICES assessment and science groups with consistent and standardized data for examining spatial and temporal changes in (a) the distribution and relative abundance of fish and fish assemblages; and (b) of the biological parameters of commercial fish species for stock assessment purposes.

The main objectives are to:

- determine the distribution and relative abundance of pre-recruits of the main commercial species with a view of deriving recruitment indices;
- monitor changes in the stocks of commercial fish species independently of commercial fisheries data;
- monitor the distribution and relative abundance of all fish species and selected invertebrates;
- collect data for the determination of biological parameters for selected species;
- collect hydrographical and environmental information;
- determine the abundance and distribution of late herring larvae.

Sampling of fish was conducted by trawl hauls in allocated ICES statistical rectangles by means of the ICES standard bottom trawl GOV during daytime. One GOV haul per rectangle was applied with 30 minutes towing duration at 4 knots. Fish sampling was accompanied by physical measurements (e.g. temperature, salinity and conductivity) via a CTD mounted directly onto the CTD-rosette system in every rectangle. Additionally, water bottle samples in selected rectangles were taken for microzooplankton sampling. During nighttime, two plankton hauls per each rectangle were conducted with a standardized 2 m midwater ring trawl (MIK) to a maximum depth of 100 m.

2. Cruise schedule

FRV “DANA” was embarked and prepared for the cruise on Wednesday, 31/01/24 in Esbjerg. Trawling started on Friday morning, 02/02/24, at rectangle 38F8 (Fig. 1) and continued until 18.02 except for two one-day interruptions due to bad weather (04 + 09.02). We finished the survey at Sunday, 18/02/24 in Hirtshals and managed a total of **50 GOV hauls, 50 CTD profiles and 102 MIK plankton samples were taken (Table 1).**

3. Preliminary results

Standardized total catches of the GOV hauls were between 18 kg (40F6) and 1663 kg (44F3) per 30 min trawling time, on average about 407 kg. Total number (ind./30min) and distribution of important species (pre-recruits) caught during the survey were given in Figure 2. Table 2 shows the number of biological samples taken during the IBTS Q1 2024.

One important objective of the IBTS Q1 is to determine the distribution and relative abundance of pre-recruits of the main commercial species with a view of deriving recruitment indices. Figure 3 shows the total number of pre-recruits caught during the survey. Highest pre-recruit number were found for sprat <20cm (32941 ind./hr.) and lowest for cod <25cm (22 ind./hr.).

The herring larvae from the MIK sampling of Germany measured between 16- and 41mm standard

length (SL). The index from the 2024 survey (corresponding to the 2023 year-class) is 62.47 and is lower than 2023 and below the long-term average of 99.5. No sardine larvae were found in the MIK samples in 2024 contrary to previous years.

Additional work:

- 541 stomach samples following the proposed sampling scheme
- 187 cod finclips for genetic investigations
- 866 inspected haddocks for gill parasite recording
- 179 inspected cods for recording liver worms
- On 35 MIK stations jellyfish was recorded
- 12 eDNA samples for diversity assessment

For further details and results of the complete survey with participations from France, the Netherlands, Denmark, Scotland, Sweden, Norway, and Germany, please refer to the CSR (cruise summary report) site of BSH as well as to the respective chapter of this year's IBTSWG report.

4. Participants

Name	Institution	Function
1. Dr. Hermann Neumann	TI-SF	Cruise leader
2. Dr. Holger Haslob	TI-SF	Scientist/Fish+MIK+Data
3. Annika Elsheimer	TI-SF	Technician/Fish+Data
4. Andrij Martynenko	TI-SF	Technician/CTD
5. Sakis Kroupis	TI-SF	Technician/MIK
6. Sergej Schachray	TI-SF	Technician/MIK
7. Samira Peter	TI-SF	Technician/Fish
8. Svea Winning	TI-SF	Technician/Fish
9. Felix Bügler	TI-SF	HiWi/Fish
10. Kira Kremer	TI-SF	HiWi/Fish
11. Jan Zimmermann	TI-SF	HiWi/Fish
12. Nina Müller	TI-SF	HiWi/Fish

5. Acknowledgement

Thanks to captain and crew of FRV "DANA" for their great support and hospitality and to all participants for their reliable and responsible teamwork.

(Dr. H. Neumann)

6. Tables and Figures

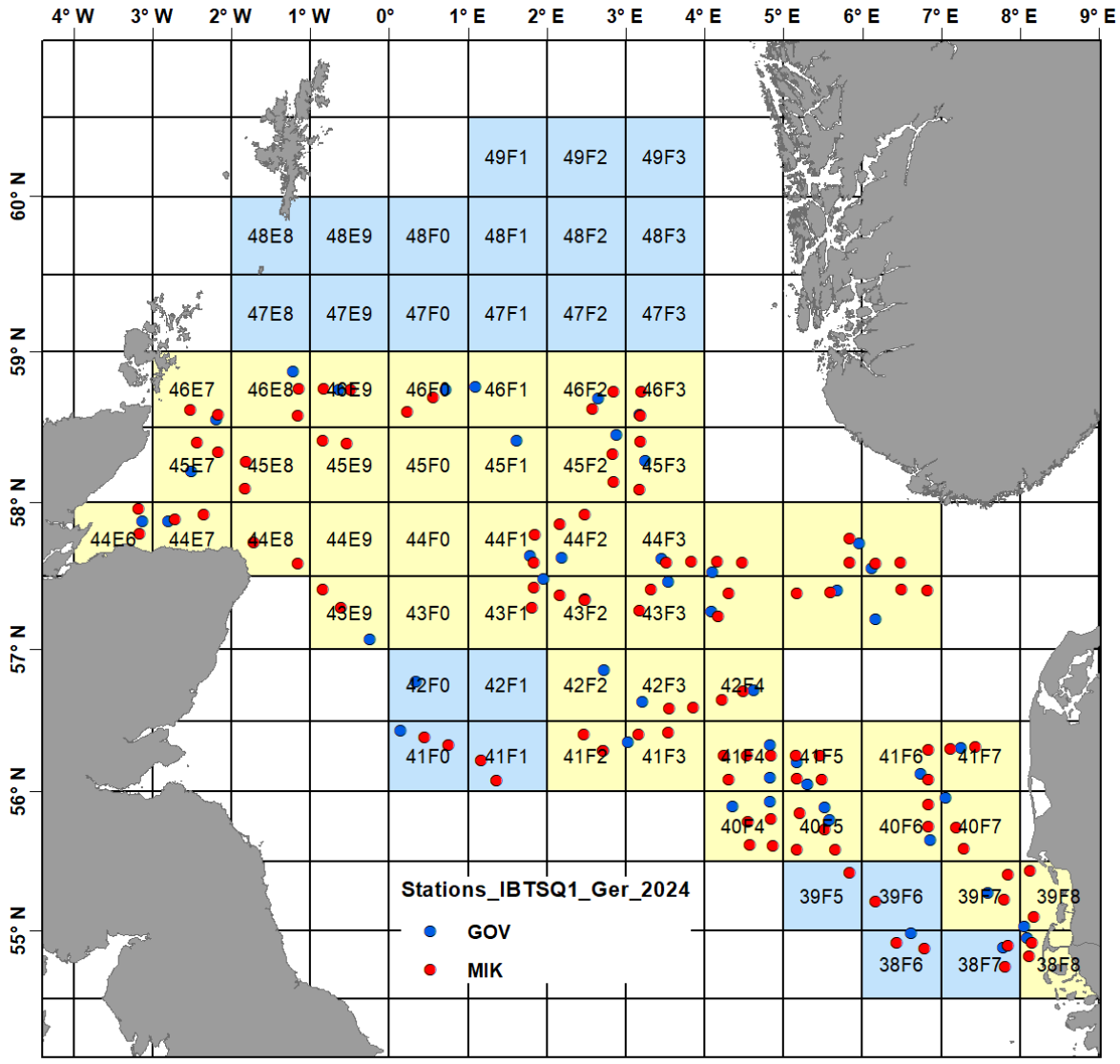

Fig. 1: DANA 07/2024 sampling stations. Blue dots: combined CTD and GOV-trawl stations, red dots: MIK stations.

Table 1 Stations fished (aim: to complete 50 valid GOV and 100 MIK tows in 2024)

ICES Divisions	Strat.	Gear	Towsplanned	Valid	Add.	Inv.	% stations fished	comments
27.4	N/A	GOV	50	47	0	3	94 %	
27.4	N/A	MIK	100	102	2	0	102 %	

Strat = strata; Add = Additional tows; inv = Invalid

Table 2 Number of biological samples (maturity and age material)

SPECIES	AGE	SPECIES	AGE
Clupea harengus	580	* *Microstomus kitt*	217
Engraulis encrasicolus	5	*Pleuronectes platessa*	496
* *Eutrigla gurnardus*	0	*Pollachius virens*	98
Gadus morhua	184	* *Scophthalmus maximus*	2
* *Lophius piscatorius*	15	*Sardina pilchardus*	1
* *Merluccius merluccius*	33	*Scomber scombrus*	39
Melanogrammus	845	* *Scophthalmus rhombus*	1
Merlangius merlangus	614	*Sprattus sprattus*	152
* *Micromesistius*	3	*Trisopterus esmarkii*	202

* Maturity only.

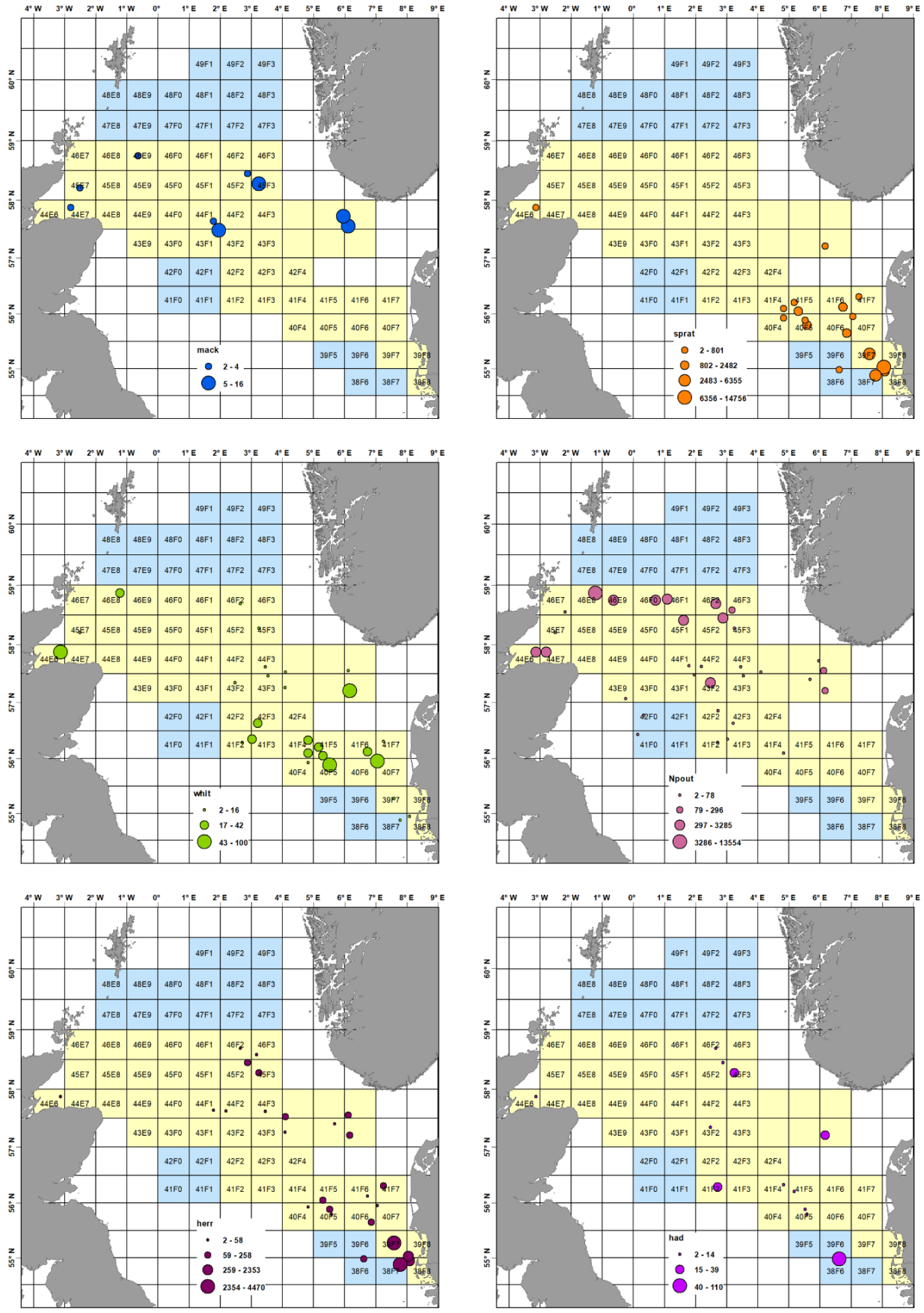

Fig. 2: Number [ind. / 30min] and distribution of pre-recruit Mackerel (< 25 cm; mack), Sprat (< 10 cm; sprat) Whiting (< 20 cm; whi), Norway pout (< 15 cm; Npout), Herring (< 20 cm; herr); Haddock (< 20 cm; had) caught at IBTS Q1 2024.

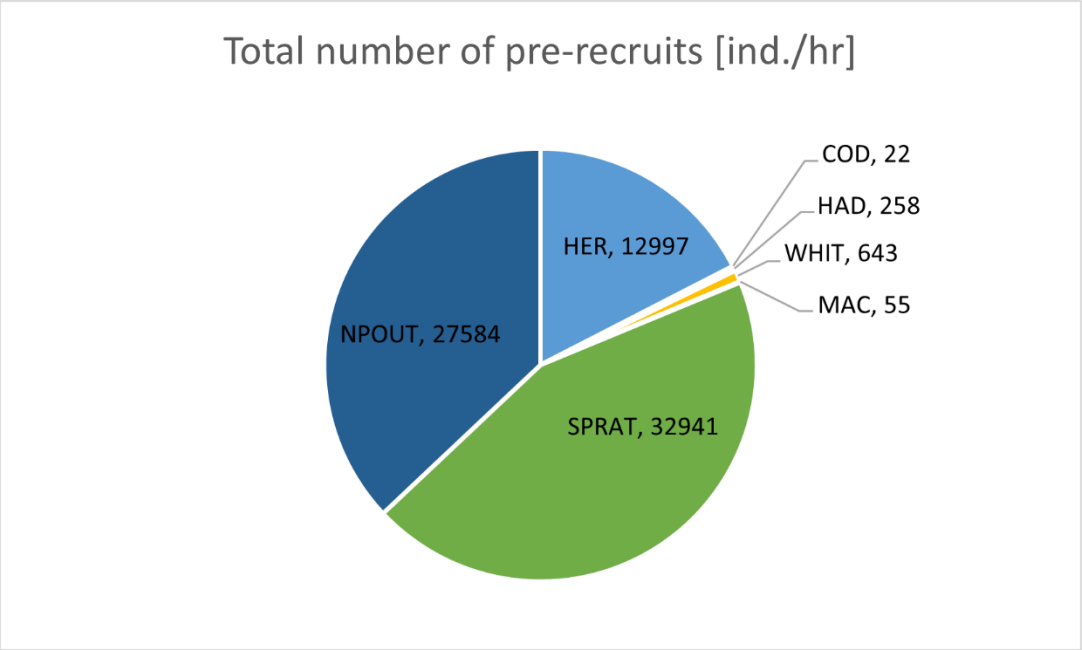

Fig. 3: Summed number per hour of pre-recruit Herring (< 20 cm); Cod (< 25 cm); Haddock (< 20 cm); Whiting (< 20 cm); Norway pout (< 15 cm); Sprat (< 10 cm); Mackerel (< 25 cm) caught at IBTS Q1 2024.