

**Cruise Report**  
**FRV Walther Herwig III, WH 464**  
**27/01 to 16/02/2023**  
**IBTS Q1 2023**

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 data and biological parameters of commercial fish species for stock assessment purposes. Sampling of fish was conducted by trawl hauls in allocated ICES statistical rectangles by means of the ICES standard bottom trawl GOV. In total, 22 GOV hauls were taken during the cruise (67 planned hauls) accompanied by 22 CTD profiles. Standardized total catches of the GOV hauls were on average about 485 kg/30min. Highest pre-recruit number were found for herring <20cm (256685 ind./hr.) and lowest for cod <25cm (16 ind./hr.). In addition, 80 MIK plankton samples were taken (134 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 12- and 34mm (German data). In total, abundance of large herring larvae in the potential nurseries was lower than last year. The index from the 2023 survey (corresponding to the 2022 year-class) is 90.8 and is a bit below the long-term average of 100.7. Additional work was done on stomach collection (63 samples), cod liver worms (53 samples), haddock gill parasites (1006 samples) and starry smooth hound genetics (25 samples).

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## 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 “Walther Herwig III” was embarked and prepared for the cruise on Friday, 20/01/23. The begin of the survey was delayed by 7 days due to problems with the steering gear. Trawling started on Wednesday morning, 28/02/23, at rectangle 38F6 (Fig. 1) and continued until 08.02 except for a three-day interruption due to bad weather (29-31.01). During fishing operations off Scotland on Wednesday, 08/02/23, the port winch broke. From 9 to 11 February, unsuccessful attempts were made to repair the winch in Aberdeen. From 12 February until the end of the cruise only the outstanding MIK stations southward from Aberdeen were completed. We finished the survey at Thursday, 16/02/23. In total, we lost 19 days due to technical issues of FRV “Walther Herwig III” and could only managed **22 GOV hauls, 22 CTD profiles and 80 MIK plankton samples were taken.**

## 4. Preliminary results

Standardized total catches of the GOV hauls were between 40 kg (40F6) and 1383 kg (39F7) per 30 min trawling time, on average about 485 kg. Only one haul was above 1000 kg. Total number (ind./30min) and distribution of important species caught during the survey were given in Figure 2. 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 herring <20cm (256685 ind./hr.) and lowest for cod <25cm (16 ind./hr.).

The herring larvae from the MIK sampling of Germany measured between 12- and 34mm standard length (SL). Considering all participating nations, the smallest larvae in 2023 were again caught in ICES Division 7.d and in the Southern Bight. In the southeastern and eastern part of the North Sea, the potential nurseries, abundance of larger herring larvae in 2023 was lower than in the two previous years. The index from the 2023 survey (corresponding to the 2022 year-class) is 90.8. This corresponds to an average index value, and is a bit below the long-term average of 100.7 (in the time-series since 1992). As in last year, sardine larvae were found in the MIK samples. This year they were not only found in the southern samples, but also in the northern samples.

Additional work:

- ICES coordinated stomach collection was planned for cod, horse mackerel and a group of rarely caught species resulting in 61 cod, 1 brill and 1 turbot stomach samples.
- IBTSWG coordinated investigation on cod liver worms and haddock gill parasites (53 investigated cods and 1006 haddocks)
- Genetic investigation aiming on the correct identification of starry smooth hound in the North Sea (25 samples for Uni Rostock/Ozeaneum Stralsund)
- TI SF+OF coordinated squid sampling (34kg cephalopods)

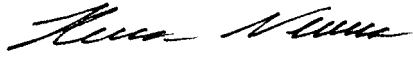
For further details and results of the complete survey with participations from France, the Netherlands, Denmark, Scotland, Sweden, Norway, and Germany, please refer to the CSR (cruise summary report) site of BSH as well as to the respective chapter of this year's IBTSWG report.

## 5. Participants

<b>Name</b>	<b>Institution</b>	<b>Function</b>
1. Dr. Hermann Neumann	TI-SF	Cruise leader
2. Annika Elsheimer	TI-SF	Technician/Fish+Data
3. Andrij Martynenko	TI-SF	Technician/CTD
4. Sakis Kroupis	TI-SF	Technician/MIK
5. Sergej Schachray	TI-SF	Technician/MIK
6. Samira Kadhim	TI-SF	Technician/Fish
7. Tina Stein	TI-SF	Technician/Fish
8. Simon Wieser	TI-SF	HiWi/Fish
9. Sylvan Nicola Rentel	TI-SF	HiWi/Fish
10. Jonas Cesian	TI-SF	HiWi/Fish
11. Lina Becker	TI-SF	HiWi/Fish
12. Sarah Mayr	TI-SF	HiWi/Fish

## 6. Acknowledgement

Thanks to Captain Arne Schwegmann and FRV "Walther Herwig III" crew members for their great support and hospitality and to all participants for their reliable and responsible teamwork.



(Dr. H. Neumann)

## 7. Tables and Figures

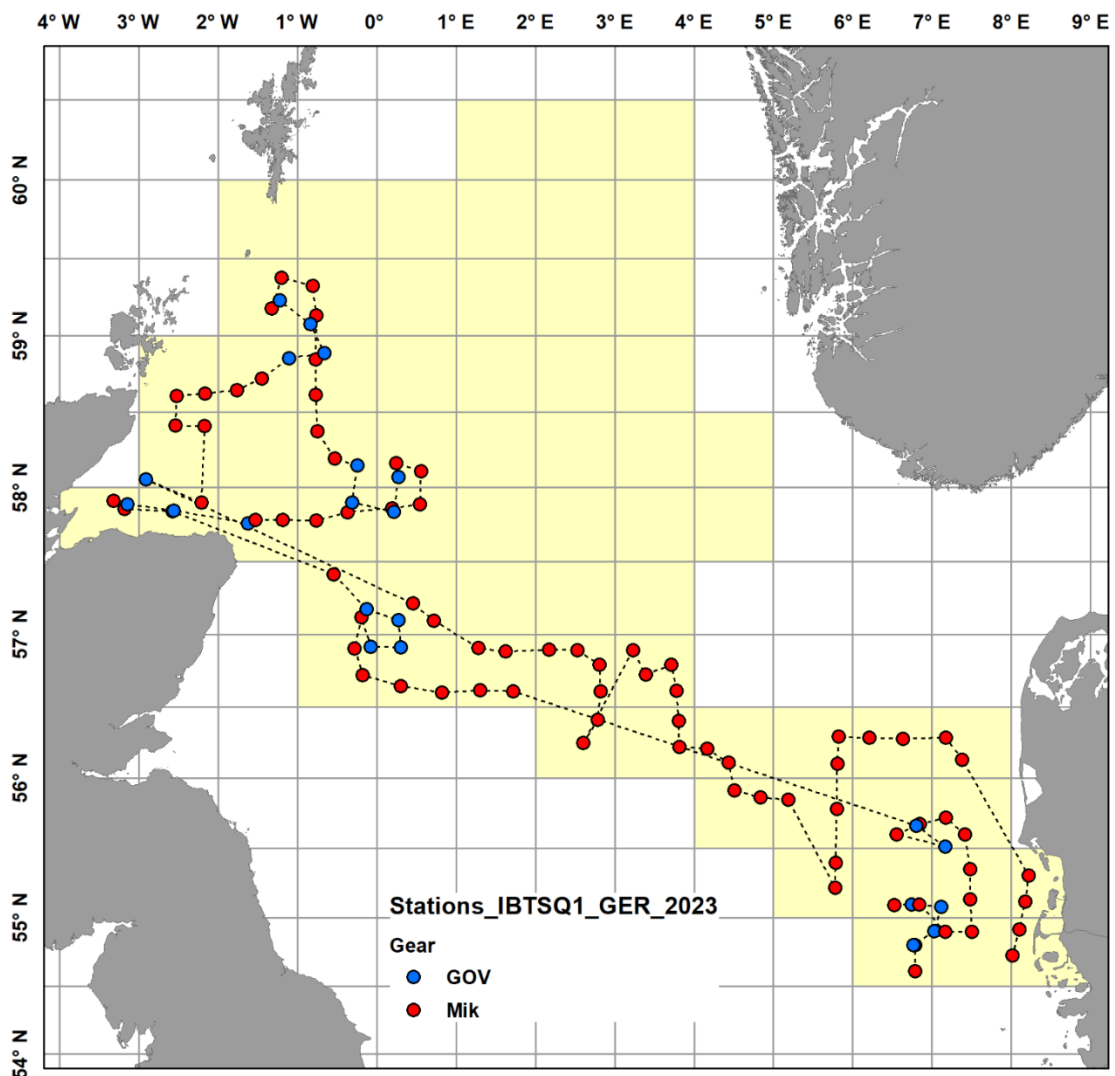


Fig. 1: WH443 cruise track with sampling stations. Blue dots: combined CTD and GOV-trawl stations, red dots: MIK stations. The dotted line indicates the traveled routes between stations.

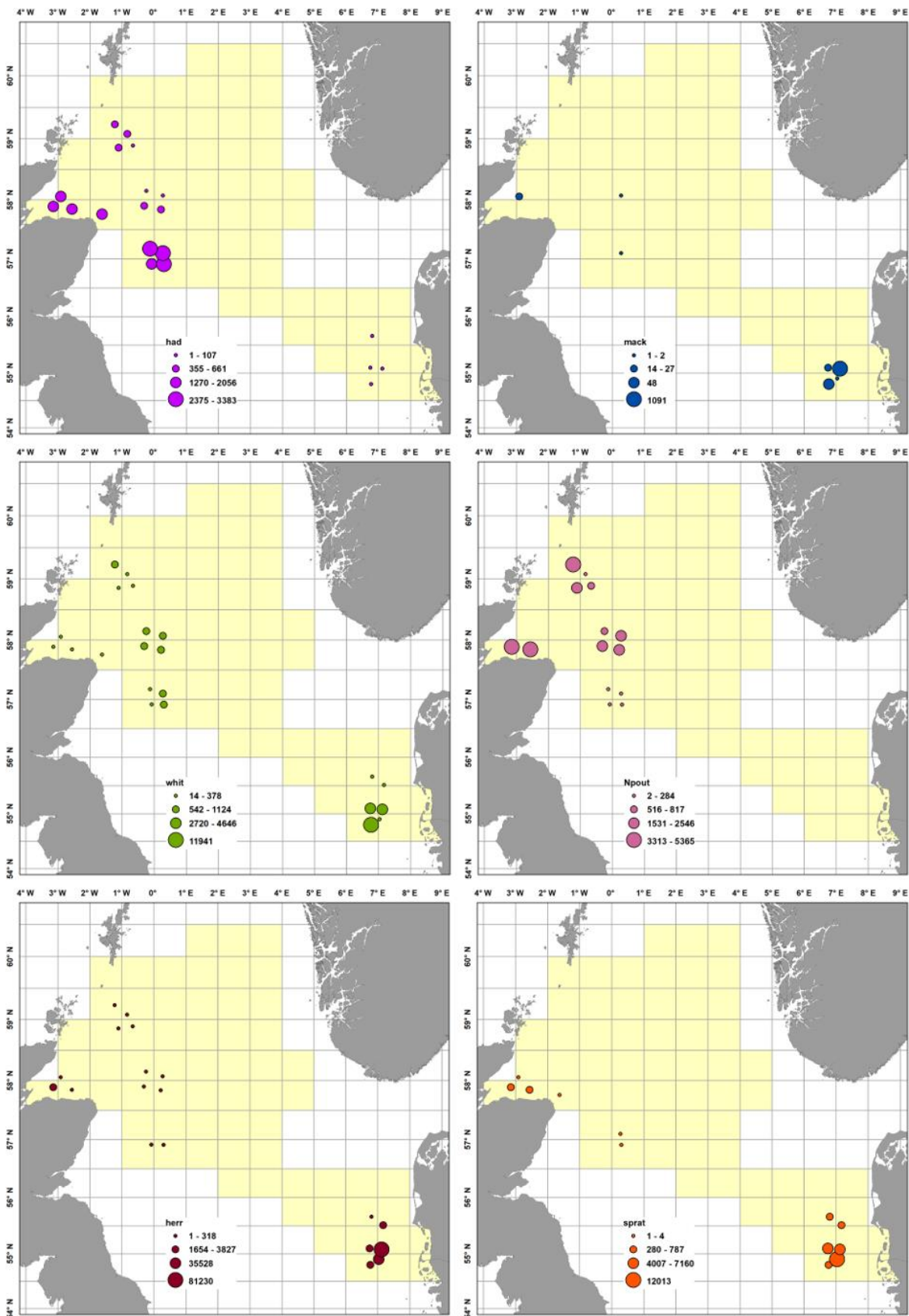


Fig. 2: Number [ind. / 30min] and distribution of Haddock (had); Mackerel (mack); Whiting (whi); Norway pout (Npout); Herring (herr) and Sprat (sprat) caught at IBTS Q1 2023.

### Total number of pre-recruits [ind./hr]

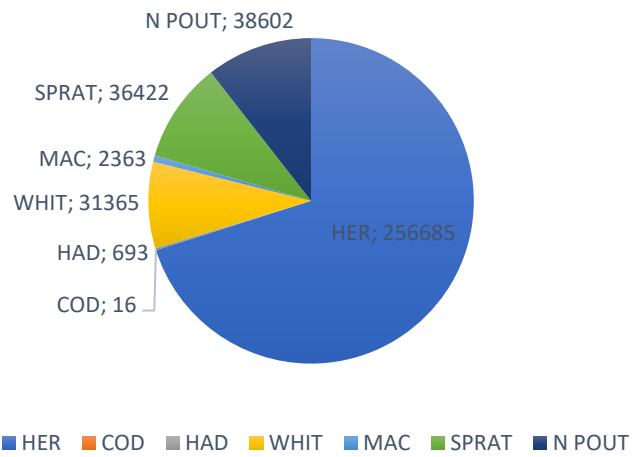


Fig. 3: Summed number per hour of pre-recruit Herring (< 20 cm); Cod (< 25 cm); Haddock (< 20 cm); Whiting (< 20 cm); Norway pout (< 15 cm); Sprat (< 10 cm); Mackerel (< 25 cm) caught at IBTS Q1 2023.