

Survey Report
FRV Walther Herwig III, WH 458
18 July to 16 August 2022

IBTS and GSBTS

Chief scientist: Dr. Matthias Bernreuther

Summary

Survey WH 458 covered fisheries research representing the German contribution to the International Bottom Trawl Survey (IBTS) in quarter 3, and was planned to be one component of the two-ship operation in the German Small-scale Bottom Trawl Survey (GSBTS). Both surveys use the same principle fishing methods but at different spatial scales, applying a GOV otter board trawl (Grande Ouverture Verticale). All fishing hauls were accompanied by hydrographic measurements and investigations of benthic epifauna, infauna and sediments. Bycatch of marine litter in the GOV is reported.

In order to fully cover the international IBTS programme, the GSBTS component of the survey had to be cancelled due to time constraints.

The survey started on 18 July 2022 in Bremerhaven, starting with the IBTS on 21 July. Due to covid-19 infections, 'Walther Herwig III' returned to Bremerhaven on 23 July. The survey continued on 06 August and the remaining program was successfully completed on 15 August. The 'Walther Herwig III' returned to Bremerhaven on 16 August 2022.

Verteiler:

Schiffsführung FFS „Solea“
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, Dr. Welling
Thünen-Institut - Präsidialbüro
Thünen-Institut - Reiseplanung Forschungsschiffe, Dr. Rohlf
Fahrteilnehmer*innen

Number of stations sampled during WH 458

	Hauls GOV	CTD casts	Hauls 2-m beam trawl	Van Veen sediment grab*	WP2 Zooplankton haul
IBTS	32	32	30	84*	20
Total**	32	32	30	84	20

*) Sediment samples from all stations in this column, infauna for selected areas.
**) No boxes (GSBTS) were sampled in Q3 2022, due to time constraints.

Methods

1. Bottom Trawl Survey (Thünen Institute of Sea Fisheries, TI-SF)

The qualitative and quantitative composition of the fish fauna caught in demersal hauls was analysed from a total of 32 GOV hauls for the IBTS (survey track, see Fig. 1). Larger invertebrates of commercial interest were quantified as specified in the IBTS manual. In addition, other benthic macro-invertebrates from the by-catch of the GOV otter board trawl were analysed for selected IBTS stations. During all hauls, the GOV was equipped with Marport sensors to monitor net geometry as required for the IBTS survey. Data from the IBTS hauls taken in the wider German Bight are to be combined with international data covering the entire North Sea for the assessment of commercially important fish stocks and for analyses on the non-commercial fish species. IBTS data have been uploaded to the ICES DATRAS system.

2. Hydrography (TI-SF)

A total of 32 hydrographic casts were performed with a Seabird CTD to record vertical profiles of temperature, salinity and oxygen concentration at the fishing stations. For a subset of stations, water samples for calibration of the oxygen probe were processed aboard through Winkler titration, and another subset of samples was taken to the laboratory in Bremerhaven for calibration of the salinity probe.

3. Epibenthos (Senckenberg Research Institute, Wilhelmshaven)

Epibenthos was sampled within ICES rectangles of the wider German Bight (30 rectangles of the regular German IBTS), applying a 2m-beam trawl. Samples were sieved over 5-mm and 2-mm mesh. The 5-mm fraction was analysed aboard, the 2-mm fraction was preserved in 4-% formaldehyde for analysis in the laboratory ashore.

4. Sediments, benthic infauna (Senckenberg Research Institute, Wilhelmshaven)

Investigations of epibenthos were accompanied by sampling of sediments using a 0.1-m² Van Veen grab. Additional grabs were taken to sample benthic infauna in the ICES rectangles.

5. Zooplankton (Senckenberg Research Institute, Hamburg)

Zooplankton was sampled using a WP2 net on 20 selected stations of the survey area (Fig. 1).

6. Marine litter (TI-SF)

Marine litter bycatch from the GOV hauls was reported according to the ICES standards on all fishing stations. Data have been prepared for uploading to the ICES database.

Survey schedule

The FRV 'Walther Herwig III' departed on 20 July 2022 from Bremerhaven, Germany, two days later than planned, due to a covid-19 infection. On 21 July, the scientific program started with sampling for the IBTS, which continued only until 22 July when one of the scientific crew members was tested positive for covid-19 and the vessel returned to port to disembark the positively tested crew members on 23 July. Due to several subsequent covid-19 cases, the survey did not continue until 06 August with the IBTS sampling. Due to the loss of time, the GSBTS part of the program had to be cancelled and the two northernmost rectangles of the program were taken over by Norway. The IBTS sampling continued until 15 August, covering the remaining rectangles in the German Bight area. FRV 'Walther Herwig III' returned to Bremerhaven on 16 August 2022

Preliminary Results

Fish fauna in bottom trawls (Thünen Institute of Sea Fisheries)

IBTS samples

40 fish species were recorded in the IBTS hauls in the southern North Sea, of which the six most abundant ones were sprat, herring, whiting, haddock, horse mackerel and dab. After the survey, the IBTS data set has been quality-checked, supplemented with age readings, and uploaded to the ICES database DATRAS.

Epibenthos (Senckenberg Research Institute)

IBTS rectangles

The abundance of species increased from the coast to offshore areas while the biomass of the species decreased towards northern areas. The most common invertebrate species were the starfishes *Astropecten irregularis* and *Asterias rubens*, the swimming crab *Liocarcinus holsatus* and the hermit crab *Pagurus bernhardus*. Common fishes were the goby *Pomatoschistus minutus*, dab *Limanda limanda* and solenette *Buglossidium luteum*. No exceptional changes compared to recent years have been noted for these dominant species.

Survey participants

<i>Name</i>	<i>Institution</i>	<i>Area of responsibility</i>
Dr. Matthias Bernreuther	Thünen Institute, TI-SF	Fisheries biology/ Chief scientist
Samira Peter	TI-SF	Fisheries biology
Sakis Kroupis	TI-SF	Fisheries biology
Andriy Martynenko	TI-SF	Hydrography
Omowunmi Idowu	TI-SF	Data processing
Sarah Mayr	TI-SF	Fisheries biology
Jan Zimmermann	TI-SF	Fisheries biology
Abigail Deac	TI-SF	Fisheries biology
Hanna Robitschko	TI-SF	Fisheries biology
Dr. Raquel Marques	Senckenberg am Meer	Plankton
Ramona Ohde	Senckenberg am Meer	Benthos
Anna Wiemers	Senckenberg am Meer	Benthos

Acknowledgements

We are grateful to Captain Stefan Meier and to the vessel's crew for their hard work and continuous support during the survey.



Dr. Matthias Bernreuther, Chief scientist

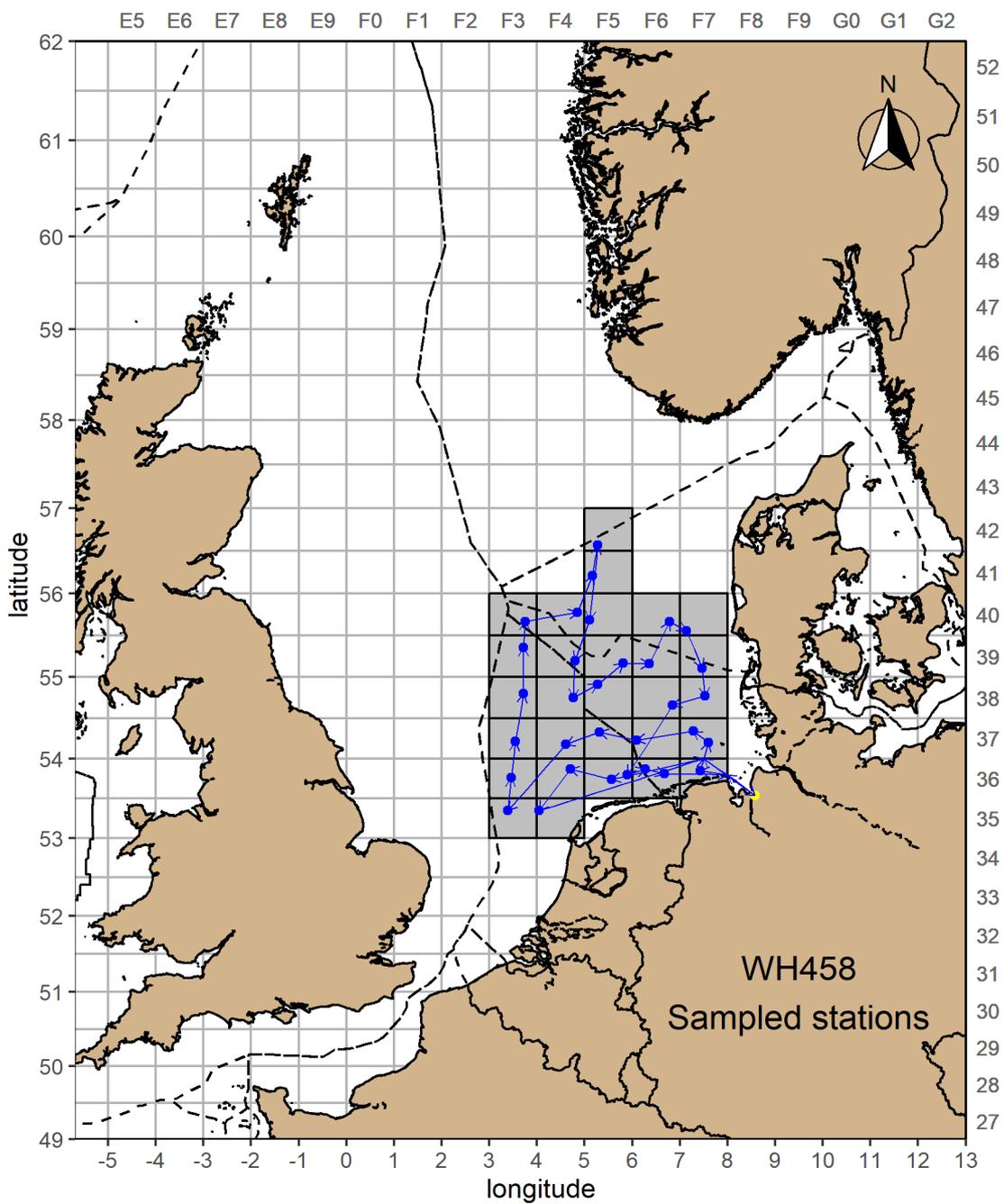


Fig. 1: Survey track of WH 458, IBTS, 18 July to 16 August 2022 (line). Blue points: Fishing hauls for IBTS; Grey areas: ICES rectangles sampled for the IBTS.