

Cruise Report
FRV Walther Herwig III
Cruise 420
14.09.-19.09.2018

Cruise Leader: Dr. Norbert Rohlf

International Herring Larvae Survey in the North Sea

Summary

The cruise is part of the German contribution to the international herring larvae surveys in the North Sea (IHLS). These surveys are conducted during the autumn and winter herring spawning activity. The ICES coordinated studies monitor the spatial distribution and abundance of herring larvae on an annual basis. The survey time series dates back to 1972. Almost all countries surrounding the North Sea have participated in the history of the IHLS, while in recent years the Netherlands and Germany contribute most to the surveys. The resulting survey index is used as an estimator of herring spawning stock biomass and provides valuable information for herring stock assessment and the fixation of fishing quotas.

The survey started in the Orkney/Shetland area on the southernmost grid. Unfortunately, after 28 hauls the cruise had to be abandoned due to severe technical problems of the research vessel. The survey could not be continued; the vessel had to steam back to Bremerhaven. The amount of obtained samples is too low to set the results into any context.

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TI - Seefischerei

per E-Mail:

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2. Research programme

The cruise is a component of the international herring larvae surveys. Parts of ICES area 4a should be sampled by double oblique tows with the "Nackthai" (modified GULF III sampler), resulting in herring larval abundance estimates and spatial distribution.

In total, 28 plankton tows were done within the IHLS framework. Physical measurements, e.g. temperature, salinity and conductivity, were conducted via a CTD mounted directly onto the gulf sampler. Sampling was achieved according to the manual of the herring larvae surveys.

3. Narrative

FRV "Walther Herwig III" left Bremerhaven with the high tide on Friday afternoon, 09/14/18. The area under investigation was reached in the early Sunday morning, 09/16/18. Wind speed was relatively high, between 7-8 Beaufort, but waves were not that high. The first plankton tows could be done as planned, while weather conditions improved over night. The next morning, after 27 valid hauls, all filed work had to be stopped due to severe engine problems. Some exploratory trials concerning engine control yielded no solution. Thus, the cruise could not be continued. The vessel had to steam back to Bremerhaven, where the cruise ended on Wednesday, 09/19/18.

4. Preliminary results

Fish eggs and larvae were sorted from the plankton samples after the end of the cruise. Herring larvae were counted and their abundance per square metre estimated. Length measurements are still in progress and thus length-frequency plots cannot be shown yet.

The number of obtained samples is too low for any kind of comparison. The cruise track and the spatial distribution of herring larvae are given in Figure 1. Figure 2 depicts the distribution of near-bottom water temperature and salinity. Abundance estimates and available physical water parameters are listed in Table 1.

5. Participants

Name	Institution	Function
1. Norbert Rohlf	TI-SF	Cruise leader
2. Birgit Suer	TI-SF	Technician
3. Michael Sasse	TI-SF	Technician
4. Bünyamin Kekec	TI-SF	Technician
5. Frieda Beußel	TI-SF	Technician
6. Jessica Pickhard	TI-SF	Student
7. Knut Heinatz	TI-SF	Student

6. Acknowledgement

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

7. Tables and Figures

Table 1: Main data of Ichthyoplankton hauls made during WH 420.

Stat. Nr.	Haul Nr.	Lat. (° N)	Long.	E/W	Date (UTC)	Time (UTC)	Duration (min)	Water depth (m)	Catch depth (m)	Flow (m³)	Hela (n/m²)	Surface		Bottom	
												T (°C)	Sal (psu)	T (°C)	Sal (psu)
448	1	58°05.37	001°09.30	W	16.09.18	04:51	17.21	99	95	90.5	9	12.57	34.85	10.38	34.84
449	2	58°05.19	001°29.86	W	16.09.18	06:02	invalid					12.72	34.77	10.85	34.96
450	3	58°05.29	001°29.67	W	16.09.18	06:37	13.29	79	75	69.2	29	12.73	34.77	10.97	34.65
451	4	58°05.65	001°49.26	W	16.09.18	07:46	15.43	87	84	84.5	9	12.81	34.68	12.36	34.40
452	5	58°05.62	002°09.55	W	16.09.18	08:55	11.03	66	64	58.7	1	13.05	34.58	13.06	34.17
453	6	58°04.99	002°29.82	W	16.09.18	09:58	10.10	64	61	53.4	0	13.14	34.55	13.12	34.30
454	7	58°04.99	002°49.70	W	16.09.18	11:01	6.30	46	43	35.4	1	13.14	34.56	13.14	34.27
455	8	58°03.95	003°10.04	W	16.09.18	12:03	6.40	48	45	37.0	0	13.05	34.55	13.03	33.91
456	9	58°04.97	003°29.80	W	16.09.18	13:05	5.43	44	41	30.4	0	12.92	34.56	12.90	34.07
457	10	58°14.70	003°10.55	W	16.09.18	14:28	9.05	62	59	51.1	1	13.09	34.53	13.09	34.04
458	11	58°19.09	002°44.57	W	16.09.18	16:00	7.25	54	51	41.9	9	13.07	34.60	13.07	34.17
459	12	58°14.98	002°30.22	W	16.09.18	16:47	7.52	55	52	45.0	1	13.06	34.58	13.08	34.33
460	13	58°14.87	002°10.62	W	16.09.18	17:43	9.37	63	60	55.2	2	13.06	34.60	12.98	34.13
461	14	58°15.50	001°50.95	W	16.09.18	18:43	17.10	96	92	98.6	36	12.69	34.79	12.06	34.60
462	15	58°15.02	001°30.92	W	16.09.18	19:45	21.09	129	120	116.6	123	12.58	34.88	10.32	34.80
463	16	58°14.72	001°10.97	W	16.09.18	20:52	16.46	100	97	93.1	230	12.53	34.94	10.36	34.74
464	17	58°25.25	001°09.38	W	16.09.18	21:56	19.49	100	96	116.4	41	12.32	34.97	10.61	34.68
465	18	58°25.04	001°29.81	W	16.09.18	23:06	18.45	102	99	109.6	229	12.51	34.90	10.37	34.69
466	19	58°24.95	001°49.82	W	17.09.18	00:14	18.45	99	96	107.8	193	12.49	34.93	11.76	34.31
467	20	58°24.90	002°10.13	W	17.09.18	01:22	13.43	81	78	80.3	25	13.03	34.63	12.56	34.13
468	21	58°24.85	002°29.58	W	17.09.18	02:26	10.10	61	58	56.8	11	13.00	34.64	13.02	33.96
469	22	58°24.76	002°49.70	W	17.09.18	03:29	10.46	66	63	61.2	5	13.03	34.62	13.04	33.84
470	23	58°34.74	002°50.36	W	17.09.18	04:30	10.09	67	64	58.9	71	12.95	34.65	12.95	33.85
471	24	58°34.84	002°30.77	W	17.09.18	05:27	13.03	77	74	71.8	61	12.96	34.66	12.78	33.96
472	25	58°34.99	002°11.07	W	17.09.18	06:27	11.00	76	72	61.5	63	12.71	34.80	12.61	34.50
473	26	58°35.00	001°50.88	W	17.09.18	07:26	14.48	96	92	80.8	239	12.66	34.90	11.52	34.62
474	27	58°34.97	001°30.98	W	17.09.18	08:39	18.03	110	107	97.0	91	12.40	34.96	10.01	34.84
475	28	58°34.46	001°09.46	W	17.09.18	09:49	18.56	106	103	112.2	35	12.29	34.99	10.35	34.52

N. Rohlf

(Dr. Norbert Rohlf)

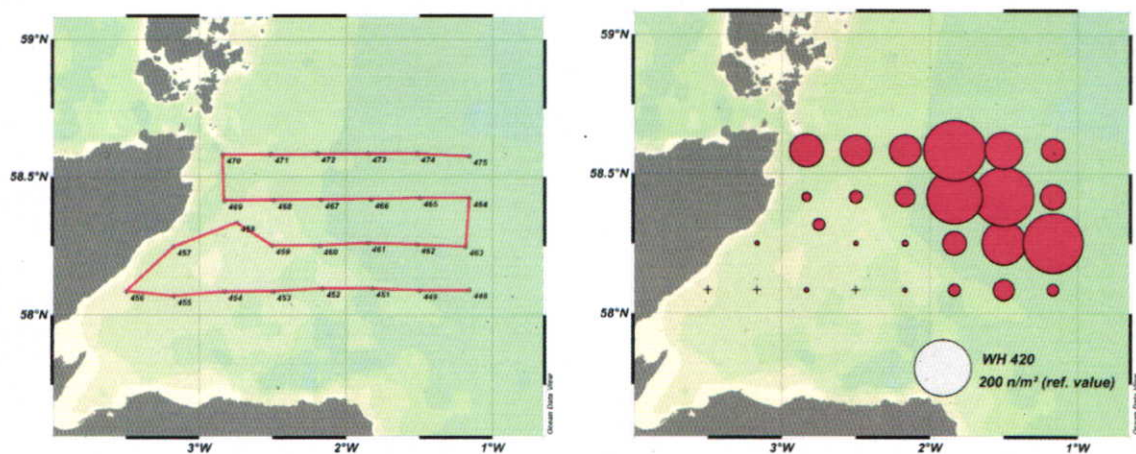


Figure 1: Cruise track in the Orkney/Shetlands area (by station number, left panel) and corresponding abundance of herring larvae (n/m^2 , right panel). The size of the grey circle corresponds to 200 larvae per square metre. Crosses denote zero catch of herring larvae.

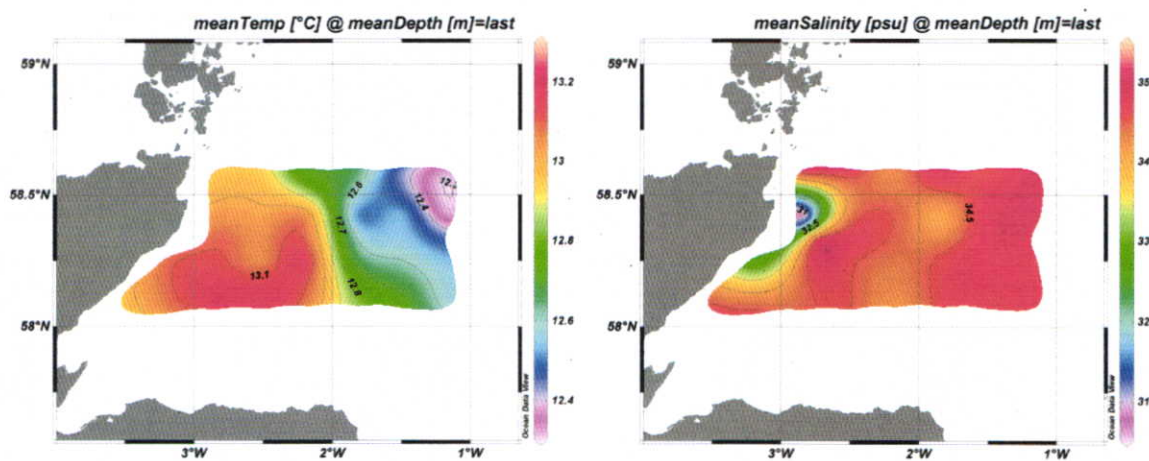


Figure 2: Distribution of near-bottom temperature ($^{\circ}\text{C}$, left panel) and salinity (psu, right panel) in the area under investigation