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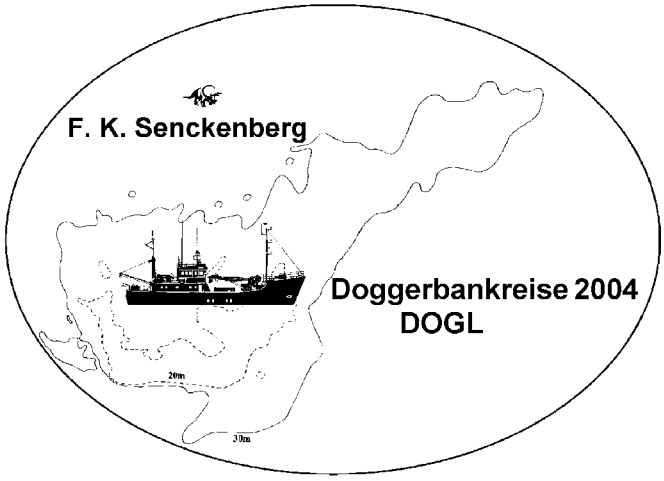
Report on the 2004 Dogger Bank cruise with R. V. Senckenberg

2. – 12. 8. 2004



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Contents:

Frankfurt a. M., August 2004

1. Aims and setting

The interannual variability of the epibenthic fauna of the Dogger Bank is a long term project of the Senckenberg-Institute since 1990. This project aims at gathering basic data which may form background information for understanding presumed environmental changes. Therefore the study refers to 37 stations (see map in Annex) that are, whenever possible, sampled on a yearly basis in the same season with the same gear. The fauna is recorded quantitatively from each sample in order to allow studies on relative abundance.

The present cruise forms the 12th of the series and gets the suffix DOG-L. All former cruises were labelled after the alphabet with one letter starting with DOG-A in 1991. The first in 1990 was called DOG without any suffix.

2. Narrative

Station 14 was reached on August 3, 2004 at 16.50 MESZ (UTC+2). At this and the following stations salinity and water temperature were measured with a probe (WTW Cond 340i) in a depth of 20m and at the surface. Subsequently one sample with a 0.2m² Van Veen grab and a beam-trawl were taken, respectively. Until the end of the day four stations were sampled (14, 13a, 4, 3). At the following day (August 4, 2004) nine stations (5, 6, 7, 8, 9, 10, 11,12, 17) could be sampled. Work was continued on the next day (August 5, 2004) from 06.00 on and 12 stations were sampled (18, 20, 16, 22, 15, 23, 26, 21, 28, 27, 24, 25). During the next day (August 6, 2004) 11 stations were sampled (32, 33, 31, 29, 30, 35, 34, 36, 37, 38, 39). On the same day the last station (40) situated on the tail-end in the German sector was reached. As in earlier years, a continuous trawling at a time distance of 3 hours between the samples was performed in order to gather information about the diurnal dynamics of the benthic fauna. The first sample was taken at 23.23. Sampling continued until August 8, 2004, 12.30. Because of increasing wind the last 3 samples were not taken. The vessel then proceeded to the Loreley-Bank east of Helgoland, which was reached on August 9, 2004 at 10.45. The Ring-Dredge was deployed on 3 stations in order to collect larger endofauna. Sampling continued in the Helgoland trench (German Bight). The aim of this work was to collect epibenthos-material in order to complement to life-cycle studies of decapod crustaceans of the German Bight. For this purpose the beam-trawl was deployed once, after this, the vessel headed back towards Helgoland, which was reached on August 9, 2004 at 17.05. For the next two days work in the German Bight was continued, on August 10, 2004 again at Loreley Bank using the ring dredge and the beam trawl. On August 11, 2004 several trawl samples were taken at the Helgoland trench.

The vessel headed back to her home port Wilhelmshaven on August 12, 2004 at 06.00 local time. On the way back sampling for foreshore fauna was undertaken off the Island of Wangerooge using the ring dredge and one trawl sample as taken in the Jade Bay close to Niedersachsenpier. The vessel reached Wilhelmshaven on the same day at 14.20.

3. Methods:

For measuring environmental parameters a conductivity probe (WTW Cond 340i) was used. The Probe was lowered to 20m depth, where salinity and temperature were recorded. Then it was hauled to the sea surface where a second measurement was taken.

Endobenthos was sampled with a 0.2m² Van Veen grab. The sample was washed with sea water through sieves with a minimum mesh size of 1 mm. The fauna was preserved in 4% formalin-seawater for subsequent study at the home laboratory.

Epibenthos was collected with a 2m beam trawl with a tickler chain and a chain in the bottom rope. The minimum mesh size in the cod-end was 1 cm, so that animals above that size were collected quantitatively. The trawl was towed for 1 nautical mile at a speed of 2,5 knods. The sample was secured quantitatively (as far as possible) and washed through a set of

sieves with 1 cm maximum and 1 mm minimum mesh size, respectively. The 1 cm-fraction was identified and counted on board the vessel, organisms not readily identifiable were preserved and taken back to the home laboratory. The smaller fractions were also preserved and taken back for qualitative analysis.

Work in the German Bight was performed with a ring-dredge equipped with a net of 1 cm mesh-size. The sand-sample was washed to separate endobenthos from the sediment. Besides this, the beam trawl was used in the Helgoland Trench.

4. Station list

Abbreviations: BMT = Beam Trawl, HTR = Helgoland trench, LB = Loreley-Bank, RD = Ring-Dredge, VV = Van Veen grab.- Temperature and salinity measurements were taken at VV-positions.

Station	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
3	VV	54°47,80'N 01°25,70'E		24,2		23.03	3. VIII. 2004
3	BMT	54°36,00'N 01°54,15'E	54°35,48'N 01°52,44'E	22,5	25,8	06.20-06.40	4. VIII. 2004
4	VV	54°28,60'N 01°53,50'E		20,2		21.30	3. VIII. 2004
4	BMT	54°28,80'N 01°52,16'E	54°29,60'N 03°52,40'E	20,5	20,6	21.43-22.07	3. VIII. 2004
5	VV	54°35,80'N 01°54,50'E		22,2		06.05	4. VIII. 2004
5	BMT	54°36,95'N 01°42,43'E	54°37,94'N 01°42,45'E	23,5	22,6	07.37-08.02	4. VIII. 2004
6	VV	54°36,80'N 01°43,16'E		22,8		07.30	4. VIII. 2004
6	BMT	54°45,35'N 01°43,70'E	54°45,41'N 01°41,9'E	27,7	28,1	09.18-09.44	4. VIII. 2004
7a	VV	54°44,50'N 01°43,70'E		27,6		09.07	4. VIII. 2004
7a	BMT	54°47,91'N 01°25,67'E	54°48,75'N 01°24,19'E	24,1	24,2	11.08-11.27	4. VIII. 2004
8	VV	54°53,20'N 01°19,80'E		28,2		12.20	4. VIII. 2004
8	BMT	54°53,90'N 01°19,60'E	54°54,40'N 01°20,80'E	28,1	27,8	12.35-13.00	4. VIII. 2004
9	VV	54°59,40'N 01°37,90'E		29,9		14.28	4. VIII. 2004
9	BMT	54°59,60'N 01°38,60'E	54°39,90'N 01°39,90'E	27,9	29,1	14.44-15.07	4. VIII. 2004
10	VV	54°55,80'N 01°45,80'E		25,3		15.55	4. VIII. 2004
10	BMT	54°55,30'N 01°46,30'E	54°54,50'N 01°47,80'E	24,5	24,5	16.10-16.33	4. VIII. 2004

Station	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
11	VV	54°46,20'N 01°59,64'E		30,6		18.07	4. VIII. 2004
11	BMT	54°46,00'N 01°59,11'E	54°45,11'N 02°00,78'E	30,9	33	18.15-18.42	4. VIII. 2004
12	VV	54°41,97'N 02°11,70'E		26,4		19.45	4. VIII. 2004
12	BMT	54°41,95'N 02°12,06'E	54°42,96'N 02°11,45'E	25,2	23,8	19.52-20.20	4. VIII. 2004
13a	VV	54°27,30'N 02°17,80'E		18,2		19.13	3. VIII. 2004
13a	BMT	54°27,15'N 02°16,70'E	54°27,30'N 02°15,00'E	18,1	17,9	19.25-19.50	3. VIII. 2004
14	VV	54°31,07'N 02°41,95'E		23,8		17.00	3. VIII. 2004
14	BMT	54°31,00'N 02°40,80'E	54°30,80'N 02°38,80'E	23,2	22,1	17.12-17.40	3. VIII. 2004
15	VV	54°40,25'N 02°24,29'E		21,5		11.50	5. VIII. 2004
15	BMT	54°39,99'N 05°29,56'E	54°40,60'N 02°31,30'E	21,6	20,9	11.57-12.23	5. VIII. 2004
16	VV	54°48,11'N 02°18,70'E		23,6		09.05	5. VIII. 2004
16	BMT	54°47,70'N 02°19,01'E	54°47,33'N 02°20,75'E	23,6	23,6	09.13-09.20	5. VIII. 2004
17	VV	54°49,80'N 02°05,83'E		22,5		21.20	4. VIII. 2004
17	BMT	54°51,24'N 02°05,37'E	54°52,32'N 02°05,76'E	23,2	23,6	21.35-22.00	4. VIII. 2004
18	VV	54°58,75'N 02°04,84'E		26,5		06.00	5. VIII. 2004
18	BMT	54°59,038'N 02°05,00'E	54°58,50'N 02°06,80'E	27,9	27,3	06.10-06.38	5. VIII. 2004
20	VV	54°56,25'N 02°18,50'E		28		07.35	5. VIII. 2004
20	BMT	54°56,038'N 02°18,40'E	54°55,01'N 02°18,50'E	27,2	27	07.47-08.15	5. VIII. 2004
21	VV	54°52,20'N 02°88,68'E		22,5		16.16	5. VIII. 2004
21	BMT	54°52,64'N 02°36,32'E	54°53,51'N 02°36,00'E	23,1	23,9	16.30-16.55	5. VIII. 2004
22	VV	54°46,22'N 02°31,25'E		24,5		10.30	5. VIII. 2004
22	BMT	54°45,92'N 02°32,14'E	54°44,83'N 02°31,97'E	24,1	23,5	10.40-11.10	5. VIII. 2004

Station	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
23	VV	54°44,01'N 02°44,09'E		19,6		13.40	5. VIII. 2004
23	BMT	54°04,60'N 02°45,70'E	54°45,30'N 02°46,30'E	19,6	19,7	13.53-14.18	5. VIII. 2004
24	VV	54°55,98'N 02°56,22'E		23,5		20.15	5. VIII. 2004
24	BMT	54°55,80'N 02°56,40'E	54°54,95'N 02°57,14'E	23,5	23,1	20.20-20.47	5. VIII. 2004
25	VV	54°49,47'N 03°02,70'E		29,1		21.37	5. VIII. 2004
25	BMT	54°49,58'N 03°02,80'E	54°50,58'N 03°03,30'E	29	28,2	21.45-22.12	5. VIII. 2004
26	VV	54°49,98'N 02°48,35'E		20,5		15.00	5. VIII. 2004
26	BMT	54°50,66'N 02°47,00'E	54°50,96'N 02°45,70'E	20,6	19,6	15.15-15.41	5. VIII. 2004
27	VV	54°57,10'N 02°52,50'E		23,6		14.25	5. VIII. 2004
27	BMT	54°57,00'N 02°52,92'E	54°56,57'N 02°54,47'E	24,1	24,2	19.32-19.58	5. VIII. 2004
28	VV	54°59,43'N 02°37,55'E		26,6		17.40	5. VIII. 2004
28	BMT	54°59,95'N 02°37,98'E	54°59,68'N 02°39,53'E	26,9	25,7	17.55-1815	5. VIII. 2004
29	VV	55°07,51'N 02°48,28'E		27,8		10.25	6. VIII. 2004
29	BMT	55°07,76'N 02°41,06'E	55°08,41'N 02°42,70'E	28,1	27,5	10.37-11.00	6. VIII. 2004
30	VV	55°12,06'N 02°54,28'E		32,1		11.58	6. VIII. 2004
30	BMT	55°12,36'N 02°55,40'E	55°12,44'N 02°56,98'E	32,5	33,3	12.10-12.38	6. VIII. 2004
31	VV	55°05,20'N 02°55,32'E		29,9		08.50	6. VIII. 2004
31	BMT	55°05,20'N 02°54,87'E	55°05,48'N 02°52,88'E	31,4	27,6	09.00-09.30	6. VIII. 2004
32	VV	54°54,92'N 03°05,17'E		23,5		06.00	6. VIII. 2004
32	BMT	54°54,99'N 03°05,30'E	54°55,83'N 03°05,77'E	23,5	22,9	06.05-06.27	6. VIII. 2004
33	VV	55°00,92'N 03°09,67'E		24,6		07.15	6. VIII. 2004
33	BMT	55°01,33'N 03°09,43'E	55°01,70'N 03°08,13'E	24,6	24,6	07.25-07.48	6. VIII. 2004

Station	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
34	VV	55°06,48'N 03°27,38'E		28,5		15.16	6. VIII. 2004
34	BMT	55°06,66'N 03°28,03'E	55°07,56'N 03°27,11'E	28,2	27,5	15.25-15.53	6. VIII. 2004
35	VV	55°10,70'N 02°10,33'E		29,5		13.38	6. VIII. 2004
35	BMT	55°10,52'N 03°11,26'E	55°10,19'N 03°12,97'E	29,5	29,5	13.42-14.08	6. VIII. 2004
36	VV	55°17,69'N 03°19,00'E		27,7		17.12	6. VIII. 2004
36	BMT	55°18,18'N 03°18,80'E	55°18,88'N 03°20,22'E	27,9	27,8	17.20-1748	6. VIII. 2004
37	VV	55°22,90'N 03°33,01'E		32,5		18.56	6. VIII. 2004
37	BMT	55°23,06'N 03°33,54'E	55°23,08'N 03°35,60'E	32,5	30,5	19.05-19.33	6. VIII. 2004
38	VV	55°22,58'N 03°47,91'E		29,2		20.30	6. VIII. 2004
38	BMT	55°22,76'N 03°48,098'E	55°23,48'N 03°49,02'E	29,5	29,3	20.38-21.02	6. VIII. 2004
39	VV	55°28,55'N 03°57,73'E		31,4		21.55	6. VIII. 2004
39	BMT	55°28,816'N 03°58,47'E	55°28,58'N 04°00,39'E	31,3	30,3	22.04-22.30	6. VIII. 2004
40-1	VV	55°28,17'N 04°08,68'E		30,3		23.1	6. VIII. 2004
40-1	BMT	55°27,70'N 04°08,71'E	55°26,58'N 04°08,7'E	30,2	29,7	23.23-23.55	6. VIII. 2004
40-2	BMT	55°26,60'N 04°08,75'E	55°27,637'N 04°08,731'E	29,4	29,5	03.00-03.25	7. VIII. 2004
40-3	BMT	55°26,607'N 04°08,72'E	55°26,654'N 04°08,718'E	29,6	29,5	06.00-06.25	7. VIII. 2004
40-4	BMT	55°26,51'N 04°08,72'E	55°27,60'N 04°08,70'E	29,8	29,8	08.57-09.25	7. VIII. 2004
40-5	BMT	55°27,68'N 04°08,71'E	55°27,55 04°08,705'E	30,2	29,5	11.55-12.25	7. VIII. 2004
40-6	BMT	55°26,57'N 04°08,72'E	55°27,62'N 04°08,7'E	29,3	30,3	15.00-15.28	7. VIII. 2004
40-7	BMT	55°27,70'N 04°08,69'E	55°26,50'N 04°08,688'E	29,6	29,4	17.55-18.23	7. VIII. 2004
40-8	BMT	55°26,46'N 04°08,74'E	55°27,60'N 04°08,74'E	29,7	29,7	21.04-21.34	7. VIII. 2004
40-9	BMT	55°27,68'N 04°08,67'E	55°26,54'N 04°08,72'E	29,9	29,5	23.50-00.17	7.-8. VIII. 2004

Station	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
40-10	BMT	55°27,00'N 04°08,73'E	55°27,7'N 04°08,60'E	29,4	29,5	03.00-03.25	8. VIII. 2004
40-11	BMT	55°27,63'N 04°08,66'E	55°27,74'N 04°08,57'E	28,2	28,9	05.55-06.25	8. VIII. 2004
40-12	BMT	55°26,66'N 04°08,725'E	55°27,701'N 04°08,78'E	30	30,1	09.03-09.31	8. VIII. 2004
40-13	BMT	55°27,65'N 04°08,70'E	55°26,51'N 04°08,70'E	30,3	29,8	12.02-12.30	8. VIII. 2004
LB1	RD	54°12,70'N 08°00,95'E		24,1		10.45-10.55	9. VIII. 2004
LB2	RD	54°11,98'N 08°00,55'E		23,1		11.42-11.48	9. VIII. 2004
LB3	RD	54°11,89'N 08°01,30'E		23		12.00-12.12	9. VIII. 2004
LB4	RD	54°12,60'N 08°03,08'E		23,5		09.45-09.50	10. VIII. 2004
LB5	RD	54°12,99'N 08°02,13'E		13,5		12.00-12.02	10. VIII. 2004
LB6-1	RD	54°13,80'N 08°01,28'E		14,4		13.16-13.18	10. VIII. 2004
LB6-2	RD	54°13,77'N 08°01,26'E		14,2		13.25-13.28	10. VIII. 2004
LB7	BMT	54°12,03'N 08°00,36'E	54°11,79'N 08°01,65'E	11,5	15,2	13.53-14.13	10. VIII. 2004
LB8	BMT	54°13,60'N 08°01,13'E	54°14,32'N 08°02,03'E	14,4	16,3	14.48-15.14	10. VIII. 2004
LB9	BMT	54°13,60'N 07°58'00’E	54°13,70'N 07°58,50'E	14	14,2	15.45-15.52	10. VIII. 2004
LB10	BMT	54°14,45'N 07°56,13'E	54°15,070'N 07°57,060'E	19,5	19,7	16.16-16.37	10. VIII. 2004
LB10	RD	54°14,60'N 07°56,31'E		19,5		16.48-16.54	10. VIII. 2004
HTR1	BMT	54°08,50'N 07°51,96'E	54°08,50'N 07°53,3'E	51,9	52,5	14.17-14.35	9. VIII. 2004
HTR2	BMT	54°08,50'N 07°51,8'E	54°08,50'N 07°53,55'E	53,7	53,9	09.35-09.58	11. VIII. 2004
HTR3	BMT	54°08,55'N 07°52,67'E	54°08,55'N 07°53,00'E	53,2	53,9	14.10-14.15	11. VIII. 2004
HTR4	BMT	54°08,85'N 07°50,92'E	54°08,75'N 07°51,35'E	54,8	55,6	16.08-16.14	11. VIII. 2004
HTR5	BMT	54°08,26'N 07°54,61'E	54°08,38'N 07°54,93'E	57,8	52,5	17.18-17.23	11. VIII. 2004
HTR6	BMT	54°09,70'N 07°58,64'E	54°09,96'N 07°58,96'E	34,5	24,4	17.58-18.03	11. VIII. 2004

Station	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
DB1	RD	53°49,65'N 07°56,78'E		8,9		08.35-08.43	12. VIII. 2004
DB2	RD	53°49,68'N 07°56,69'E		9,1		08.45-08.55	12. VIII. 2004
DB3	RD	53°49,64'N 07°57,66'E		6,8		09.10-09.17	12. VIII. 2004
DB4	RD	53°49,60'N 07°57,56'E		7,1		09.24-09.28	12. VIII. 2004
DB5	RD	53°48,23'N 07°56,8'E		9,8		09.46-09.52	12. VIII. 2004
D65	BMT	53°35,42'N 08°10,80'E	53°34,74'N 08°11,05'E	14,8	10,7	12.56-13.17	12. VIII. 2004

4. Temperature and salinity data

The temperature and salinity data were measured as accurate as possible in order to get an idea on the actual values. Due to technical problems a CTD was not available during the cruise so that a high accuracy of data cannot be guaranteed.

Stat. No.	Temp [°C] Surface	Temp [°C] 20 m	Salinity [ppt] Surface	Salinity [ppt] 20 m
3	16.5	16.5	34.6	34.6
4	16.8	16.4	34.6	34.6
5	16.5	16.5	34.6	34.6
6	16.3	16.0	34.6	34.6
7a	16.3	15.6	34.5	34.6
8	17.3	14.8	34.5	34.6
9	17.1	15.1	34.6	34.6
10	18.3	15.5	34.7	34.6
11	17.9	15.7	34.7	34.6
12	17.4	16.6	34.7	34.7
13a	17.1	17.0	34.6	34.6
14	17.9	17.0	34.5	34.4
15	17.4	17.3	34.7	34.7
16	17.7	16.3	34.7	34.7
17	18.5	16.4	34.7	34.7
18	18.0	15.6	34.8	3.7
20	18.0	15.4	34.7	34.7
21	18.0	16.3	34.7	34.7
22	17.3	16.6	34.7	34.7
23	17.4	17.3	34.7	34.7
24	17.4	17.3	34.7	34.7
25	18.5	15.0	34.8	34.7
26	17.3	17.2	34.6	34.5
27	17.3	16.9	34.7	34.7

Stat. No.	Temp [°C] Surface	Temp [°C] 20 m	Salinity [ppt] Surface	Salinity [ppt] 20 m
28	18.5	15.4	34.7	34.6
29	18.4	16.4	34.7	34.7
30	18.6	16.6	34.7	34.7
31	17.9	15.9	34.7	34.7
32	17.8	16.4	34.7	34.7
33	17.8	16.5	34.7	34.7
34	18.7	15.1	34.7	34.7
35	18.8	15.6	34.8	34.7
36	19.0	15.3	34.8	34.7
37	18.4	15.1	34.7	34.7
38	19.2	15.0	34.8	34.7
39	19.1	15.0	34.8	34.7
40	19.2	15.9	34.8	34.8