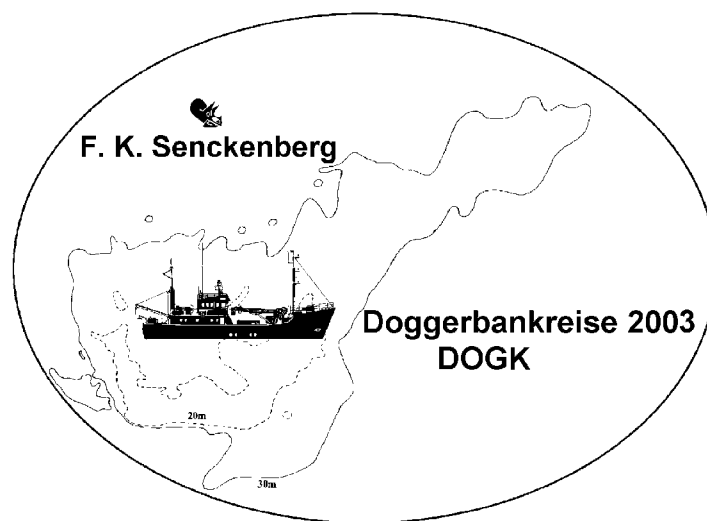


Report on the 2003 Dogger Bank cruise with R. V. Senckenberg

29. 7. – 8. 8. 2003



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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 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 11th of the series and gets the suffix DOG-K. All former cruises were labelled after the alphabet with one letter starting with DOG-A in 1991, after 1990 was called DOG without any suffix.

2. Narrative and methods

Station 14 was reached on July 30, 2003 at 13.10 MESZ (UTC+2). At this and the following stations environmental parameters were measured with a CTD-probe lowered to just above the sea bed, hydrographic data were recorded for the whole water column during heaving and subsequently one sample with the beam-trawl was taken. Until the end of the day four stations were sampled (14, 13a, 4, 3). At the following day (July 31, 2003) seven stations (5, 6, 7, 8, 9, 10, 11) could be sampled. Work was continued on the next day from 07.00 on and 6 stations were sampled (12, 17, 18, 20, 16, 22). On August 2, 2003 8 stations followed (15, 23, 26, 21, 28, 27, 24, 25). During the next day again eight stations were sampled (32, 33, 31, 29, 30, 35, 34, 36). On August 4, 2003 the vessel completed work on the remaining 3 stations, which could be fully sampled (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 11.55. Sampling continued until August 6, 2003, 12.19.

After finishing work on the Dogger Bank the vessel proceeded to the Loreley-Bank east of Helgoland, which was reached on August 7, 2003 at 08.00. 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 5 times.

The vessel reached her home port Wilhelmshaven on August 8, 2003 at 03.00 local time.

For measuring environmental parameters a CTD probe was used. The CTD was lowered to just above the sea bed and hydrographic data were recorded for the whole water column during heaving. This report contains a table presenting bottom water temperature and salinity at each station. The full data set is available from the chief scientist upon request.

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 2,8 knots. The sample was secured quantitatively (as far as possible) and washed through a set of sieves with 1cm 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.

3. Station list

Stat. No	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
3	CTD	54°36,130'N 01°56,243'E		24,1	24,1	20.36	30. VII. 2003
3	BMT	54°36,224'N 01°55,294'E	54°36,170'N 01°53,561'E	24,3	23,6	20.47-21.10	30. VII. 2003
4	CTD	54°28,723'N 01°52,725'E		19,8	19,8	18.50	30. VII. 2003
4	BMT	54°28,718'N 01°51,730'E	54°28,673'N 01°50,010'E	19,6	19,9	19.00-19.23	30. VII. 2003
5	CTD	54°37,096'N 01°42,866'E		23,1	23,1	07.02	31. VII. 2003
5	BMT	54°37,110'N 01°42,010'E	54°37,069'N 01°40,314'E	22,4	24,1	07.15-07.36	31. VII. 2003
6	CTD	54°45,517'N 01°44,929'E		31,2		09.05	31. VII. 2003
6	BMT	54°45,450'N 01°43,998'E	54°45,509'N 01°42,232'E	25,3	26,8	09.17-09.40	31. VII. 2003
7	CTD	54°48,022'N 01°27,969'E		24,1		11.00	31. VII. 2003
7	BMT	54°48,009'N 01°27,025'E	54°48,056'N 01°25,360'E	24,8	27,7	11.13-11.35	31. VII. 2003
8	CTD	54°54,051'N 01°19,668'E		26,7		13.51	31. VII. 2003
8	BMT	54°54,111'N 01°18,952'E	54°54,110'N 01°17,192'E	29,3	32,8	14.03-14.27	31. VII. 2003
9	CTD	54°59,589'N 01°38,432'E		28,3		16.28	31. VII. 2003
9	BMT	54°59,705'N 01°39,036'E	54°59,684'N 01°40,870'E	26,4	30	16.43-17.07	31. VII. 2003
10	CTD	54°55,533'N 01°46,360'E		26,6		17.51	31. VII. 2003
10	BMT	54°55,124'N 01°46,979'E	54°54,277'N 01°48,068'E	25,8	27,9	18.07-18.29	31. VII. 2003
11	CTD	54°45,895'N 01°59,980'E		32,3		20.05	31. VII. 2003
11	BMT	54°45,523'N 02°00,523'E	54°44,597'N 02°01,326'E	31,8	33,5	20.25-20.47	31. VII. 2003
12	CTD	54°42,214'N 02°13,190'E		23,9		07.15	1. VIII. 2003
12	BMT	54°41,622'N 02°12,968'E	54°40,550'N 02°12,677'E	23,9	26,1	07.25-07.52	1. VIII. 2003
13a	CTD	54°27,037'N 02°17,082'E		16,8	16,8	15.31	30. VII. 2003
13a	BMT	54°27,271'N 02°16,167'E	54°27,547'N 02°14,629'E	17,3	17,5	16.37-17.00	30. VII. 2003
14	CTD	54°30,878'N 02°41,145'E		23,5	23,5	13.10	30. VII. 2003

Stat. No	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
14	BMT	54°30,890'N 02°40,502'E	54°31,000'N 02°38,800'E	21,8	22	13.28-13.48	30. VII. 2003
15	CTD	54°39,379'N 02°28,288'E		20,8		07.15	2. VIII. 2003
15	BMT	54°39,754'N 02°29,047'E	54°40,307'N 02°30,569'E	21,1	21,4	07.25-07.45	2. VIII. 2003
16	CTD	54°47,912'N 02°19,119'E		22,5		17.45	1. VIII. 2003
16	BMT	54°47,318'N 02°18,924'E	54°46,361'N 02°19,602'E	21,9	22,5	17.55-18.18	1. VIII. 2003
17	CTD	54°50,851'N 02°06,028'E		22,6		09.37	1. VIII. 2003
17	BMT	54°50,693'N 02°05,170'E	54°50,982'N 02°03,377'E	23,5	23,8	09.47-10.10	1. VIII. 2003
18	CTD	54°59,835'N 02°06,490'E		27,8		11.40	1. VIII. 2003
18	BMT	54°59,505'N 02°05,680'E	54°59,621'N 02°03,979'E	27,6	28,2	11.50-12.17	1. VIII. 2003
20	CTD	54°56,676'N 02°19,710'E		29		14.41	1. VIII. 2003
20	BMT	54°56,292'N 02°19,683'E	54°55,217'N 02°19,746'E	25,9	28,3	14.51-15.16	1. VIII. 2003
21	CTD	54°51,883'N 02°36,285'E		23,5		12.59	2. VIII. 2003
21	BMT	54°52,363'N 02°36,228'E	54°53,367'N 02°36,356'E	23,2	24,1	13.10-13.33	2. VIII. 2003
22	CTD	54°46,646'N 02°32,304'E		24,5		20.35	1. VIII. 2003
22	BMT	54°46,061'N 02°32,642'E	54°45,120'N 02°33,129'E	22,7	23,6	20.50-21.10	1. VIII. 2003
23	CTD	54°43,930'N 02°45,993'E		20,8		09.20	2. VIII. 2003
23	BMT	54°44,410'N 02°46,220'E	54°45,325'N 02°46,546'E	20,7	21,1	09.33-09.53	2. VIII. 2003
24	CTD	54°55,917'N 02°56,374'E		23,5		18.46	2. VIII. 2003
24	BMT	54°55,646'N 02°56,949'E	54°54,898'N 02°58,242'E	22,7	22,8	18.58-19.20	2. VIII. 2003
25	CTD	54°49,382'N 02°02,693'E		29,5		20.20	2. VIII. 2003
25	BMT	54°49,068'N 03°03,350'E	54°48,361'N 03°04,569'E	30,5	32,7	20.30-20.52	2. VIII. 2003
26	CTD	54°50,562'N 03°49,388'E		22,1		10.50	2. VIII. 2003
26	BMT	54°50,601'N 02°48,481'E	54°50,729'N 02°46,708'E	21,9	21,1	11.03-11.25	2. VIII. 2003
27	CTD	54°57,198'N 02°52,917'E		29,1		16.33	2. VIII. 2003

Stat. No	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
27	BMT	54°57,076'N 02°53,581'E	54°56,782'N 02°55,516'E	23,7	24,1	16.44-17.11	2. VIII. 2003
28	CTD	55°00,258'N 02°36,860'E		27,7		14.41	2. VIII. 2003
28	BMT	55°00,263'N 02°37,629'E	55°00,333'N 02°39,516'E	26,3	27,6	14.52-15.14	2. VIII. 2003
29	CTD	55°07,289'N 02°39,889'E		28,6		12.26	3. VIII. 2003
29	BMT	55°07,657'N 02°40,398'E	55°08,351'N 02°41,698'E	27,1	28,3	12.36-12.58	3. VIII. 2003
30	CTD	55°12,385'N 02°54,751'E		32,1		14.12	3. VIII. 2003
30	BMT	55°12,565'N 02°54,751'E	55°12,639'N 02°57,363'E	32,4	33,3	14.24-14.46	3. VIII. 2003
31	CTD	55°05,449'N 02°55,245'E		30,4		10.38	3. VIII. 2003
31	BMT	55°05,607'N 02°54,349'E	55°05,925'N 02°52,680'E	27,7	29	10.50-11.12	3. VIII. 2003
32	CTD	54°55,539'N 03°05,203'E		23,1		07.15	3. VIII. 2003
32	BMT	54°55,437'N 03°05,991'E	54°55,388'N 03°07,793'E	24,9	28,9	07.25-07.45	3. VIII. 2003
33	CTD	55°01,458'N 03°11,154'E		25,9		08.47	3. VIII. 2003
33	BMT	55°01,561'N 03°10,188'E	55°01,943'N 03°08,577'E	25,3	25,4	09.00-09.20	3. VIII. 2003
34	CTD	55°06,252'N 03°49,410'E		28,5		18.00	3. VIII. 2003
34	BMT	55°06,534'N 03°28,562'E	55°07,170'N 03°27,121'E	28,1	28,2	18.14-18.38	3. VIII. 2003
35	CTD	55°10,771'N 03°11,081'E		29,1		15.58	3. VIII. 2003
35	BMT	55°10,590'N 03°11,726'E	55°09,863'N 03°13,182'E	29,1	29,1	16.09-16.34	3. VIII. 2003
36	CTD	55°17,968'N 03°19,198'E		28,7		20.10	3. VIII. 2003
36	BMT	55°18,387'N 03°18,877'E	55°19,349'N 03°18,258'E	28,5	28,9	20.20-20.43	3. VIII. 2003
37	CTD	55°22,772'N 03°33,447'E		31,1		07.10	4. VIII. 2003
37	BMT	55°23,085'N 03°34,034'E	55°23,032'N 03°35,816'E	30,5	31,1	07.20-07.40	4. VIII. 2003
38	CTD	55°22,546'N 03°47,345'E		29,5		08.55	4. VIII. 2003
38	BMT	55°22,569'N 03°48,138'E	55°23,237'N 03°49,484	29,4	29,5	09.05-09.25	4. VIII. 2003
39	CTD	55°28,932'N 03°57,553'E		31,9		10.35	4. VIII. 2003

Stat. No	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
39	BMT	55°28,873'N 03°58,467'E	55°28,547'N 04°00,016'E	30,8	31,9	10.45-11.05	4. VIII. 2003
40/1	CTD	55°28,085'N 04°08,603'E		30,3		11.55	4. VIII. 2003
40/1	BMT	55°27,624'N 04°08,691'E	55°26,536'N 04°08,741'E	30,1	30,2	12.05-12.29	4. VIII. 2003
40/2	BMT	55°27,591'N 04°08,687'E	55°26,532'N 04°08,720'E	29,4	29,9	15.15-15.37	4. VIII. 2003
40/3	BMT	55°27,531'N 04°08,571'E	55°26,561'N 04°08,310'E	29,7	29,7	18.00-18.22	4. VIII. 2003
40/4	BMT	55°27,565'N 04°08,621'E	55°26,533'N 04°08,745'E	29,8	29,9	20.55-21.16	4. VIII. 2003
40/5	CTD	55°28,120'N 04°08,425'E		30,3		23.50	4. VIII. 2003
40/5	BMT	55°27,618'N 04°08,638'E	55°26,524'N 04°08,755'E	29,9	30,1	00.00-00.20	5. VIII. 2003
40/6	BMT	55°27,580'N 04°08,737'E	55°26,503'N 04°08,770'E	29,5	29,7	03.01-03.24	5. VIII. 2003
40/7	BMT	55°27,652'N 04°08,470'E	55°26,506'N 04°08,700'E	29,5	29,7	06.00-06.23	5. VIII. 2003
40/8	BMT	55°27,552'N 04°08,590'E	55°26,540'N 04°08,664'E	29,8	29,9	09.00-09.20	5. VIII. 2003
40/9	BMT	55°27,634'N 04°08,610'E	55°26,521'N 04°08,712'E	29,9	30,2	11.59-12.24	5. VIII. 2003
40/10	BMT	55°27,583'N 04°08,582'E	55°26,538'N 04°08,744'E	29,7	29,9	15.01-15.25	5. VIII. 2003
40/11	BMT	55°27,579'N 04°08,617'E	55°26,550'N 04°08,678'E	29,5	29,5	17.55-18.18	5. VIII. 2003
40/12	BMT	55°27,550'N 04°08,615'E	55°26,515'N 04°08,726'E	29,5	29,7	20.56-21.17	5. VIII. 2003
40/13	BMT	55°27,560'N 04°08,627'E	55°26,536'N 04°08,766'E	29,9	29,9	00.00-00.21	6. VIII. 2003
40/14	BMT	55°27,577'N 04°08,625'E	55°26,531'N 04°08,702'E	29,7	29,9	02.59-03.25	6. VIII. 2003
40/15	BMT	55°27,607'N 04°08,615'E	55°26,523'N 04°08,724'E	29,5	29,6	06.00-06.24	6. VIII. 2003
40/16	BMT	55°27,563'N 04°08,619'E	55°26,531'N 04°08,747'E	29,8	29,9	09.00-09.22	6. VIII. 2003
40/17	BMT	55°27,538'N 04°08,661'E	55°26,522'N 04°08,728'E	29,9	30	11.57-12.19	6. VIII. 2003
LB03-1	RD	54°12,761'N 08°00,557'E		14,7		07.45	7. VIII. 2003
LB03-2	RD	54°12,036'N 008°00,440'E		13,3		08.20	7. VIII. 2003
LB03-3	RD	54°11,901'N 008°01,196'E		13,3		08.45	7. VIII. 2003
HTR03-1	BMT	54°08,565'N 07°53,332'E	54°08,493'N 07°51,752'E	53,6	55,7	10.00-10.23	7. VIII. 2003

Stat. No	Gear	Position start	Position end	Depth from (m)	Depth to (m)	Time (CEST)	Date
HTR03-2	BMT	54°08,501'N 07°53,130'E	54°08,626'N 07°51,548'E	52,5	53,2	11.10-11.33	7. VIII. 2003
HTR03-3	BMT	54°08,476'N 07°52,050'E	54°08,690'N 07°51,121'E	52,1	52,3	12.57-13.12	7. VIII. 2003
HTR03-4	BMT	54°08,560'N 07°53,514'E	54°08,651'N 07°52,418'E	54,3	55,5	14.20-14.35	7. VIII. 2003
HTR03-5	BMT	54°08,507'N 07°53,249'E	54°08,537'N 07°54,474'E	52,7	58,2	15.52-16.08	7. VIII. 2003

Abbreviations: BMT = Beam Trawl, HTR = Helgoland trench, LB = Loreley-Bank, RD = Ring-Dredge

4. Temperature and salinity data

The full temperature profiles are contained in an Excel-File on the CD presented with this report or can be obtained from the chief scientist upon request. The following table refers to the bottom water properties at each of the stations sampled.

Stat. No.	Temp [°C]	Salinity [ppt]
3	17.69	34.48
4	16.85	34.45
5	17.25	34.44
6	17.24	34.47
7	16.64	34.45
8	14.60	34.46
9	16.34	34.50
10	17.25	34.49
11	16.85	34.53
12	17.67	34.52
13a	17.48	34.45
14	18.42	34.56
15	18.11	34.54
16	18.03	34.57
17	17.75	34.54
18	17.69	34.50
20	16.26	34.61
21	17.53	34.56
22	18.08	34.59

Stat. No.	Temp [°C]	Salinity [ppt]
23	18.17	34.61
24	18.15	34.60
25	13.80	34.63
26	17.95	34.59
27	17.96	34.58
28	15.87	34.74
29	14.81	34.72
30	14.63	34.70
31	15.69	34.72
32	16.69	34.65
33	16.82	34.71
34	12.95	34.63
35	15.21	34.68
36	15.12	34.66
37	15.32	34.90
38	14.88	34.84
39	15.59	34.79
40/1	11.97	34.69
40/5	12.24	34.77