

**Cruise Report  
Cruise 242 RV 'Walther Herwig III'  
22.08. - 06.09.2002**

Chief Scientist: Dr. Thomas Lang

**Abstract**

As part of the regular activities of the Institute for Fishery Ecology of the Federal Research Centre for Fishery on biological effects of contaminants in marine fish species, studies were conducted in 9 North Sea and 4 Baltic Sea area. The North Sea areas included sampling sites on a transect from the inner German Bight to the central North Sea in order to measure possible effects of the Elbe flood in 2002 on contaminant levels and biomarkers.

In addition to the examination of North Sea dab (*Limanda limanda*) and Baltic Sea cod (*Gadus morhua*) for macroscopically visible external and internal diseases and parasites, numerous samples were taken for studies on pathological alterations in liver, spleen and gonads, contaminant-induced changes in enzyme activities, immune system and blood constitution, inorganic and organic contaminants and their metabolites, age composition, condition factors, and organosomatic indices. In addition, hydrographical measurements were carried out (water temperature, salinity, oxygen content). Fish samples were frozen for the detection of radioactive substances and for measurements of contaminants in the framework of the OSPAR-JAMP/CEMP and HELCOM-BMP monitoring programmes.

The results of the examination of dab for macroscopic lesions largely confirmed last year's findings. Dab from the platform areas P01 (Danfield) and P02 (Ekofisk) were characterised by elevated prevalences of lymphocystis, skin ulcerations (only area P01) and a green discolouration of the livers due to a parasitic infection of the bile ducts (only area P02). The decrease in the prevalence of liver tumours in North Sea dab has continued.

The prevalences of acute skin ulcerations in Baltic Sea cod were considerably lower than in previous years.

More comprehensive results will be available after subsequent analyses of samples.

**1. Objectives of the Cruise**

1. Studies on biological effects of contaminants in fish
2. Studies on the occurrence of fish diseases and parasites
3. Sampling of fish for chemical analysis of radioactive substances, heavy metals and organic contaminants
4. Hydrographical measurements (salinity, temperature, oxygen)
5. Sampling of livers and other organs of fish for subsequent histological and biochemical studies
6. Sampling on a transect from the inner German Bight to the central North Sea to detect changes related to the 3 Elbe flood 2002.

**2. Dates of the Cruise**

RV 'Walther Herwig III' left Bremerhaven on 22.08.2002, and studies were started in the morning of 23.08.2002 in areas GB1 and GB2 in the German Bight. Work in 7 other North Sea areas followed. On the 30.08., RV 'Walther Herwig III' sailed into the Baltic Sea, passing through the Kiel Channel. The work was continued on 31.08 in area B11 north of Rügen. After finalizing the studies

in the Baltic Sea, additional samples were taken in the inner German Bight at stations GB1 and GB2. According to plan, the cruise ended in the morning of 06.09. in Bremerhaven.

The location of the sampling areas and the cruise dates are shown in Figure 1 and Table 1a and 1b.

In 13 sampling areas (Fig. 1), a total of 65 fishing hauls were performed (see Table 1a). In the North Sea, the GOV was used, in the Baltic Sea a 140 ft bottom trawl with rock hoppers. Hydrographical measurements were made at 31 stations (see Table 1b).

### 3. Preliminary Results

#### 3.1 Dab (*Limanda limanda*)

In total, 5500 dab were examined for the occurrence of externally visible diseases and parasites and 770 dab for the occurrence of liver anomalies. Results are given in Table 4 and 5. In accordance to previous cruise, generally high prevalences of skin hyperpigmentation (increased aggregation of green to black pigment spots) were noted in areas N06 and N04. The prevalence in areas in the German Bight has increased compared to previous years. Dab from areas P01 and P02 showed elevated prevalences of lymphocystis, skin ulcerations (only in P01), *Stephanostomum baccatum* (parasite in the skin) and green discolouration of the livers (only in area P02).

Liver tumours were most prevalent at the Dogger Bank (area N04), off the Scottish coast (area N06) and in the German Bight (areas GB1 and GB2). However, prevalences were generally low. Dab in area N06 off the Scottish coast again showed a pronounced liver parasitism with nematodes and acanthocephalans. Nematodes in the body cavity were also prevalent at area P02.

A variety of samples were taken for subsequent chemical analysis of contaminants as well as for biological effects measurements. More comprehensive results will be available after all samples obtained have been processed.

#### 3.2 Cod (*Gadus morhua*)

1958 cod were examined for the occurrence of externally visible diseases and parasites; 1788 specimens in the Baltic Sea and 198 in the North Sea (see Table 6). The prevalences of acute/healing skin ulcerations were generally lower compared to previous years. The prevalence in area B11 was 2,6 %, while it was 12,9 % in December 2001. At the Dogger Bank (area N04, North Sea), a relatively high prevalence of 8,2 % was recorded. However, data for comparison are lacking because there were no studies in previous years in the North Sea due to a the low number of specimens caught associated with the collapse of the North Sea cod stock.

A marked difference between North Sea and Baltic Sea cod exists regarding the predominating grossly visible parasites. Whereas the parasitic copepod *Clavella adunca* dominates in the North Sea, *Cryptocotyle lingua* (metacercariae of a trematode in the skin causing black spots) dominates in the Baltic Sea. The parasitic copepod *Lernaecocera branchialis* is present in both the North Sea and the Baltic Sea; however, in the latter only in the western part.

#### 3.3 Miscellaneous

The mean catch data of the most frequent fish species are provided in Table 3; Table 4 gives results of the hydrographic measurements. Of particular interest are the oxygen data from the Baltic Sea, because in contrast to the expectations from the general oxygen deficiency recorded in summer 2002, no critical oxygen levels in the bottom water were recorded.

In areas GB1, 2, 3 and 4, that are located on a transect from the inner German Bight to the central North Sea in north-westerly direction, additional fish samples were taken for the measurement of contaminant residues (dab and flounder, *Platichthys flesus*) and for the measurement of biological effects of contaminants (only dab). These areas have been visited before in the course of the ICES Workshop on Biological Effects of Contaminants in Pelagic Ecosystems, BECPFLAG.

In areas GB1 and GB2, samples were taken at the beginning and at the end of the cruise in order to detect possible effects of the Elbe flood on fish from the German Bight.

### 4. Participants

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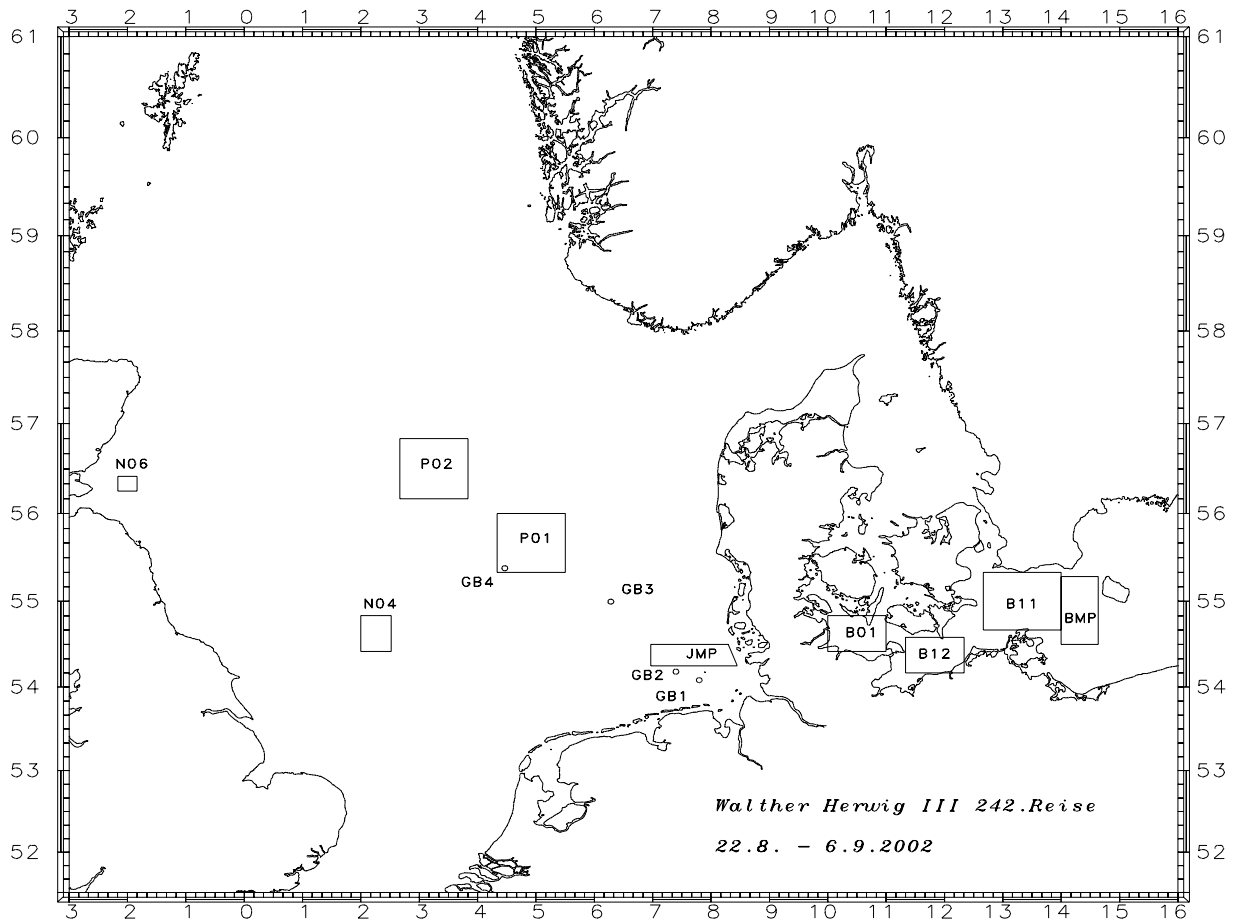
### **3. Acknowledgement**

Thanks are due to Captain Zimmermann and his crew and to the scientific staff for constructive work and a good atmosphere on board.

### **5. Annex**

6 Tables  
1 Figure

Dr. Thomas Lang  
(Scientist in charge)



**Figure 1:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Location of sampling areas

**Table 1a:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Location of fishery stations

DATE	STATION	AREA	ICES-RECTANGLE	LATITUDE	LONGITUDE
23.08.02	001	GB1	37F7	54°04,56N	07°51,98E
23.08.02	002	GB2	37F7	54°11,89N	07°33,29E
23.08.02	003	GB2	37F7	54°13,01N	07°28,10E
23.08.02	004	GB2	37F7	54°12,41N	07°32,63E
23.08.02	005	GB1	37F7	54°06,55N	07°46,55E
23.08.02	006	GB1	37F7	54°05,13N	07°51,20E
24.08.02	007	JMP	37F7	54°15,68N	07°29,79E
24.08.02	008	JMP	37F7	54°20,73N	07°28,29E
24.08.02	009	JMP	37F7	54°19,30N	07°31,07E
24.08.02	010	JMP	37F7	54°17,01N	07°31,76E
24.08.02	011	JMP	37F7	54°17,14N	07°30,06E
24.08.02	012	JMP	37F7	54°16,00N	07°29,54E
25.08.02	013	GB3	38F6	54°58,37N	06°21,93E
25.08.02	014	GB3	38F6	54°56,09N	06°16,87E
25.08.02	015	GB3	38F6	54°58,88N	06°23,14E
25.08.02	016	GB3	38F6	54°57,82N	06°18,48E
26.08.02	017	N04	38F2	54°30,01N	02°16,37E
26.08.02	018	N04	38F2	54°38,25N	02°15,93E
26.08.02	019	N04	38F2	54°39,97N	02°11,58E
26.08.02	020	N04	38F2	54°43,26N	02°07,92E
26.08.02	021	N04	38F2	54°45,33N	02°03,63E
27.08.02	022	N06	41E8	56°17,50N	01°57,18W
27.08.02	023	N06	41E7	56°18,57N	02°04,58W
27.08.02	024	N06	41E7	56°23,14N	02°08,43W
27.08.02	025	N06	41E7	56°17,16N	02°03,98W
27.08.02	026	N06	41E7	56°20,37N	02°00,96W
28.08.02	027	P02	41F2	56°17,28N	02°40,86E
28.08.02	028	P02	41F3	56°22,18N	03°03,22E
28.08.02	029	P02	42F2	56°31,35N	02°59,97E
28.08.02	030	P02	42F3	56°39,84N	03°11,96E
28.08.02	031	P02	42F3	56°30,94N	03°19,47E
29.08.02	032	GB4	39F4	55°23,57N	04°25,97E
29.08.02	033	GB4	39F4	55°24,21N	04°32,37E
29.08.02	034	P01	40F4	55°30,62N	04°40,82E
29.08.02	035	P01	40F4	55°37,25N	04°50,14E
29.08.02	036	P01	40F4	55°43,40N	04°50,96E
29.08.02	037	P01	40F4	55°41,00N	04°59,70E
31.08.02	038	B11	38G3	54°47,38N	13°06,82E
31.08.02	039	B11	38G3	54°43,68N	13°17,61E
31.08.02	040	B11	38G3	54°45,61N	13°20,50E
31.08.02	041	B11	38G3	54°46,26N	13°18,20E
31.08.02	042	B11	38G3	54°44,30N	13°10,63E
01.09.02	043	BMP	38G4	54°49,90N	14°06,52E

Table 1a: (continued)

DATE	STATION	AREA	ICES-RECTANGLE	LATITUDE	LONGITUDE
01.09.02	044	BMP	38G4	54°51,76N	14°01,51E
01.09.02	045	BMP	38G4	54°49,53N	14°06,30E
01.09.02	046	BMP	38G4	54°52,07N	14°01,60E
01.09.02	047	BMP	38G4	54°45,15N	14°01,02E
02.09.02	048	B12	37G1	54°19,91N	11°42,41E
02.09.02	049	B12	37G1	54°13,32N	11°35,97E
02.09.02	050	B12	37G1	54°19,08N	11°26,28E
02.09.02	051	B12	37G1	54°25,79N	11°22,99E
02.09.02	052	B12	37G1	54°21,98N	11°22,77E
02.09.02	053	B12	37G1	54°26,68N	11°22,00E
03.09.02	054	B01	38G0	54°33,66N	10°48,80E
03.09.02	055	B01	38G0	54°33,36N	10°42,13E
03.09.02	056	B01	38G0	54°31,70N	10°39,06E
04.09.02	057	GB1	37F7	54°06,84N	07°46,37E
04.09.02	058	GB1	37F7	54°04,80N	07°53,02E
04.09.02	059	GB1	37F7	54°06,51N	07°46,39E
04.09.02	060	GB1	37F7	54°04,57N	07°48,99E
04.09.02	061	GB1	37F7	54°08,13N	07°51,15E
05.09.02	062	GB2	37F7	54°12,02N	07°37,01E
05.09.02	063	GB2	37F7	54°12,97N	07°29,53E
05.09.02	064	GB2	37F7	54°12,75N	07°31,48E
05.09.02	065	GB2	37F7	54°12,27N	07°33,96E

**Table 1b:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Location of hydrography stations

DATE	STATION	AREA	ICES- RECTANGLE	LATITUDE	LONGITUDE
23.08.02	001	GB1	37F7	54°06,50N	07°44,46E
23.08.02	002	GB2	37F7	54°13,41N	07°26,81E
23.08.02	003	GB1	37F7	54°04,88N	07°52,52E
24.08.02	004	JMP	37F7	54°22,07N	07°32,29E
24.08.02	005	JMP	37F7	54°19,35N	07°31,14E
25.08.02	006	GB3	38F6	54°59,35N	06°22,44E
25.08.02	007	GB3	38F6	54°57,46N	06°16,30E
26.08.02	008	N04	38F2	54°39,39N	02°12,91E
26.08.02	009	N04	38F2	54°44,60N	02°04,51E
27.08.02	010	N06	41E7	56°23,03N	02°01,06W
27.08.02	011	N06	41E8	56°20,32N	01°58,79W
28.08.02	012	P02	41F3	56°26,54N	03°06,44E
28.08.02	013	P02	42F3	56°35,50N	03°13,30E
29.08.02	014	GB4	39F4	55°22,97N	04°33,68E
29.08.02	015	P01	40F4	55°34,19N	04°45,60E
29.08.02	016	P01	40F4	55°44,47N	04°59,20E
31.08.02	017	B11	38G3	54°46,08N	13°10,90E
31.08.02	018	B11	38G3	54°47,17N	13°10,77E
01.09.02	019	BMP	38G4	54°47,17N	14°01,24E
01.09.02	020	BMP	38G4	54°47,35N	14°01,48E
02.09.02	021	B12	37G1	54°16,72N	11°40,88E
02.09.02	022	B12	37G1	54°24,57N	11°24,13E
02.09.02	023	B12	37G1	54°21,11N	11°22,79E
02.09.02	024	B12	37G1	54°26,62N	11°24,01E
02.09.02	025	B12	37G1	54°22,38N	11°21,44E
03.09.02	026	B01	38G0	54°32,94N	10°41,25E
03.09.02	027	B01	37G0	54°29,51N	10°41,22E
04.09.02	028	GB1	37F7	54°04,71N	07°54,26E
04.09.02	029	GB1	37F7	54°07,87N	07°53,26E
05.09.02	030	GB2	37F7	54°12,85N	07°29,85E
05.09.02	031	GB2	37F7	54°11,40N	07°39,22E

**Table 2:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Mean catches per 1 h trawling of the most frequent fish species (n = number, kg = weight)

AREA	Cod	Whiting	Haddock	Herring	Sprat	Mackerel	Horse Mackerel	Dab	Plaice	Flounder
GB1	n	2676	-	21551	93470	407	1137	42	4	-
	Kg	154,0	-	239,0	958,0	153,0	16,0	3,0	-	-
GB2	n	390	-	22573	21638	725	25569	620	6	-
	Kg	25,0	-	291,0	217,0	188,0	312,0	31,0	-	-
GB3	n	252	-	6752	4332	21	410	282	12	-
	Kg	17,0	-	201,0	64,0	6,0	69,0	19,0	2,0	-
GB4	n	538	-	5286	2105	6	6	1467	9	-
	Kg	26,0	-	99,0	24	2,0	3,0	123,0	2,0	-
JMP	n	7	-	7947	-	1272	52306	1727	10	2
	kg	-	-	121,0	-	295,0	623,0	84,0	1,0	-
N04	n	98	-	13	201	262	4	965	7	-
	Kg	28,0	-	-	3,0	50,0	1,0	82,0	2,0	-
N06	n	326	2294	23	-	447	-	308	10	-
	Kg	24,0	85,0	3,0	-	144,0	-	22,0	2,0	-
P01	n	122	1	200	16	-	14	320	8	-
	Kg	7,0	-	5,0	-	-	5,0	27,0	2,0	-
P02	n	74	32	838	-	1	-	731	4	-
	Kg	3,0	8,0	30,0	-	-	-	50,0	2,0	-
B01	n	172	-	557	176	-	-	102	1	-
	Kg	41,0	-	19,0	3,0	-	-	9,0	-	-
B11	n	66	-	4464	1862	1	-	13	16	14
	Kg	3,0	-	23,0	12,0	0,145	-	2,0	4,0	5,0
B12	n	38	-	370	851	-	-	411	-	1
	Kg	2,0	-	4,0	12,0	-	-	22,0	-	-
BMP	n	4	-	225	2377	-	-	2	32	83
	Kg	1,0	-	15,0	26,0	-	-	-	15,0	33,0



**Table 3a:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Water depth, temperature (T), salinity (S) and O<sub>2</sub> saturation, North Sea  
(n.g.: no measurements)

Date	Area	Station	Depth (m)	T (°C)	S (PSU)	O <sub>2</sub> -Saturation
23.08.02	GB1	001	1,5	20,16	32,32	103,42
			34,5	17,62	32,73	74,97
23.08.02	GB2	002	1,0	18,77	32,92	85,62
			39,0	17,45	33,20	64,62
23.08.02	GB1	003	1,0	20,72	32,18	114,68
			41,0	17,53	32,59	66,08
24.08.02	JMP	004	1,0	19,67	30,75	104,69
			27,0	17,59	32,75	64,36
		005	1,5	20,38	32,00	126,20
			34,5	17,13	33,22	55,61
25.08.02	GB3	006	1,0	20,47	34,08	98,59
			43,0	15,27	34,35	67,42
		007	1,5	20,34	34,33	97,21
			42,0	15,42	34,38	71,75
26.08.02	N04	008	1,5	17,57	34,59	91,69
			26,0	17,65	34,59	92,17
		009	1,5	17,68	34,64	92,98
			30,5	17,58	34,64	95,35
27.08.02	N06	010	2,0	14,37	34,73	97,05
			51,5	13,06	34,81	84,20
		011	1,0	14,76	34,83	98,24
			53,5	12,94	34,82	83,74
28.08.02	P02	012	1,0	18,36	34,84	95,19
			71,0	6,88	35,07	68,43
		013	1,0	18,70	34,77	95,53
			68,0	6,98	35,04	68,62
29.08.02	GB4	014	1,5	19,51	34,56	97,45
			43,5	9,61	34,84	70,76
29.08.02	P01	015	1,5	19,86	34,78	95,61
			37,5	11,65	34,89	75,78
		016	n.g.	n.g.	n.g.	n.g.
			35,5	10,15	34,89	74,14
04.09.02	GB1	028	1,5	19,32	32,09	97,56
			41,0	18,25	32,99	61,50
		029	1,0	19,44	31,56	104,40
			51,0	18,09	33,12	59,88
05.09.02	GB2	030	1,5	19,14	31,50	104,69
			38,0	17,73	33,40	59,75
		031	n.g.	n.g.	n.g.	n.g.
			39,0	17,83	33,32	59,02

**Table 3b:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Water depth, temperature (T), salinity (S) and O<sub>2</sub> saturation, Baltic Sea  
(n.g.: no measurements)

Date	Area	Station	Depth (m)	T (°C)	S (PSU)	O <sub>2</sub> -Saturation
31.08.02	B11	17	1,5	20,58	7,44	93,54
			32,0	18,19	11,84	72,47
		18	1,0	20,44	7,33	93,46
			37,0	17,73	14,13	69,57
01.09.02	BMP	19	1,5	19,87	7,40	90,5
			37,0	15,20	8,62	57,87
		20	n.g.	n.g.	n.g.	n.g.
			37,0	16,12	8,82	71,12
02.09.02	B12	21	1,5	19,75	11,62	91,69
			24,5	11,31	23,87	36,16
		22	n.g.	n.g.	n.g.	n.g.
			21,5	14,40	24,83	41,84
		23	1,5	20,00	9,45	95,91
			21,0	13,46	24,99	25,68
		24	n.g.	n.g.	n.g.	n.g.
			22,5	14,48	24,98	32,61
		25	n.g.	n.g.	n.g.	n.g.
21,0	13,95		24,40	24,73		
03.09.02	B01	26	1,5	20,03	11,37	95,11
			21,0	16,15	21,20	60,75
		27	n.g.	n.g.	n.g.	n.g.
			19,0	16,03	21,31	76,57

**Table 4:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Prevalence of externally visible diseases and parasites of dab (*Limanda limanda*) from the North Sea and Baltic Sea

Area	N unt	Ly	Ep Hyp/Pap	Ulc Ak/Hei	Flo Ak/Hei	KieHy	Hyp Pig	Steph	Acanth	Lepe
B01	272	0,7	0,0	4,0	0,0	0,0	0,0	0,4	0,0	0,0
B12	660	0,3	0,0	0,3	0,0	0,0	0,0	0,5	0,0	0,0
GB1	268	0,0	4,1	1,9	0,0	0,0	9,0	8,6	3,7	1,9
GB2	853	1,4	5,6	0,7	0,4	0,1	9,4	7,3	10,6	8,8
GB3	535	0,2	3,9	0,7	0,4	0,0	7,3	29,9	7,1	6,4
P01	426	15,5	2,3	17,1	0,0	1,9	3,1	66,4	7,0	1,4
GB4	385	18,2	3,6	14,5	0,3	1,6	8,6	78,2	4,2	0,0
JMP	566	0,7	3,7	2,1	0,5	0,0	11,7	8,5	7,8	5,3
N04	514	3,3	3,5	8,6	0,2	0,0	28,2	40,3	8,4	5,6
N06	514	16,1	4,1	4,1	0,0	0,4	30,4	59,3	3,1	1,2
P02	507	20,9	2,8	2,0	0,2	0,0	3,0	96,8	3,0	0,8

**Table 5:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Prevalence of liver anomalies in dab (*Limanda limanda*) from the North Sea and Baltic Sea

Area	Length (cm)		N unt	Liver Nodules (mm)			Green Livers	Nema- todes	Kratzer
	from	to		> 2	> 5	>= 10			
B01	20	24	43	0,0	0,0	0,0	0,0	0,0	0,0
B01	25	40	39	0,0	0,0	0,0	0,0	0,0	0,0
GB1	20	24	31	6,5	0,0	0,0	0,0	3,2	0,0
GB1	25	40	3	33,3	33,3	33,3	0,0	0,0	0,0
GB2	20	24	50	2,0	0,0	0,0	0,0	0,0	0,0
GB2	25	40	11	36,4	9,1	9,1	0,0	0,0	0,0
GB3	20	24	50	0,0	0,0	0,0	0,0	0,0	0,0
GB3	25	40	25	4,0	4,0	0,0	0,0	16,0	0,0
P01	20	24	50	0,0	0,0	0,0	0,0	4,0	0,0
P01	25	40	50	4,0	2,0	0,0	2,0	16,0	2,0
GB4	20	24	50	8,0	2,0	2,0	0,0	2,0	0,0
GB4	25	40	43	4,7	4,7	2,3	0,0	11,6	0,0
JMP	20	24	61	3,3	1,6	0,0	0,0	1,6	0,0
JMP	25	40	2	0,0	0,0	0,0	0,0	0,0	0,0
N04	20	24	50	2,0	2,0	0,0	2,0	8,0	2,0
N04	25	40	50	6,0	2,0	0,0	0,0	16,0	0,0
N06	20	24	50	8,0	0,0	0,0	4,0	54,0	24,0
N06	25	40	29	6,9	3,4	3,4	6,9	72,4	31,0
P02	20	24	62	0,0	0,0	0,0	51,6	54,8	1,6
P02	25	40	26	0,0	0,0	0,0	57,7	38,5	3,8

**Table 6:** Cruise 242 RV 'Walther Herwig III', 22.08. – 06.09.2002:  
Prevalence of lexternally visible diseases and parasites in cod (*Gadus morhua*) from  
the North Sea and Baltic Sea

Area	N unt	Ulc Ak/Hei	Skel Def	PBT	NetzAb	Locera	Clav	Cryp
B01	472	3,6	0,2	0,0	0,2	0,2	0,0	49,6
B11	609	2,6	5,1	0,2	3,4	0,0	0,0	30,9
B12	18	11,1	0,0	0,0	5,6	5,6	0,0	22,2
BMP	661	5,1	5,0	0,3	3,2	0,3	0,0	14,2
N04	170	8,2	0,6	0,0	0,0	1,8	45,3	0,6
P02	28	3,6	0,0	0,0	7,1	0,0	28,6	0,0

**Abbreviations:**

N unt	= number of fish examined
Ly	= Lymphocystis
Ep Hyp/Pap	= Epidermal papilloma/hyperplasia
Ulc Ak/Hei	= Skin ulcerationen, acute/healing
Flo Ak/Hei	= Fin rot/erosion, acute/healing
KieHy	= X-cell gill disease
HypPig	= Hyperpigmentation
Skel Def	= Skeletal deformities
PBT	= Pseudobranchial pseudotumour (swelling)
Netz Ab	= Healed net injury
Kratzer	= Acanthocephaleans
<i>Steph</i>	= <i>Stephanostomum baccatum</i>
<i>Acanth</i>	= <i>Acanthochondria cornuta</i>
<i>Lepe</i>	= <i>Lepeophtheirus pectoralis</i>
<i>Locera</i>	= <i>Lernaeocera branchialis</i>
<i>Clav</i>	= <i>Clavella adunca</i>
<i>Cryp</i>	= <i>Cryptocotyle lingua</i>