

Report Cruise 234 RV WALTHER HERWIG III 30.11. - 21.12.2000

Scientist in Charge: Dr. Thomas Lang

1 Abstract

As in December 2000, the prevalence of lymphocystis in North Sea dab (*Limanda limanda*) was below levels recorded previously. The highest prevalence of 21,7 % was recorded in area N06 off the Scottish coast (Firth of Forth). Strikingly low prevalences of acute/healing skin ulcerations with maximum values of 3,3 % (area N06) and 2,8 % (Dogger Bank, area N04) were found. In contrast, prevalences of hyperpigmentation (green to black discolouration of the skin) were increased, with maximum levels of 42,5 % (area N04) and 37,7 % (area N06). In dab from the Baltic Sea, all externally visible diseases monitored occurred at much lower prevalences.

In cod from the Baltic Sea, prevalences of acute/healing skin ulcerations continued to occur at high prevalences, particularly in a region north and east of the island of Rügen (areas B10, B11, B03). Prevalences recorded were as high as 12,0 %, 12,9 % and 16,6 %, respectively. In the same areas, elevated prevalences of skeletal deformities were again recorded (6,6 %, 4,6 % and 5,6 %, respectively).

2 Programme

1. Studies on the occurrence of fish diseases and parasites
2. Studies on biological effects of contaminants in the framework of the EU-funded project BEEP
3. Sampling of fish, zooplankton, sediment and surface water 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. Studies on the occurrence of *Ichthyophonus* sp. in herring (*Clupea harengus*)

3 Cruise dates

RV Walther Herwig III left Bremerhaven on 30. November 2001 at 11:00 h heading for the Baltic Sea. After passing the North Sea/Baltic Sea Channel she arrived in Kiel, where five guest scientist taking part in the sampling programme for the EU-funded project BEEP were taken on board. Practical work started in the morning of 2. December in area B10 southeast of Rügen. The further dates can be seen in Fig. 1 und Tab. 1. After finishing the practical work in the Baltic, the RV returned to Kiel in the evening of 11. December, and the guest scientists left in the morning of 12. December. After the passage of the North Sea/Baltic Sea Channel, the work was continued in the North Sea in area N01 in the German Bight on 13. December. Studies were continued in five additional North Sea areas (see Fig. 1 und Tab. 1). Because of a storm that made further activities impossible the cruise was terminated in the evening of 20. December 2001 in Bremerhaven.

3.1 Fishery

Numbers and weights of cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting (*Merlangius merlangus*), plaice, (*Pleuronectes platessa*), common dab (*Limanda limanda*) und flounder (*Platichthys flesus*) caught per one hour of trawling are shown in Fig. 2 and Fig. 3 .

4 Preliminary results

4.1 Common dab (*Limanda limanda*)

3217 dab were inspected for the presence of externally visible diseases. The results are shown in Tab. 2. The prevalences of lymphocystis in the North Sea were in the range of 4,9 % (area N01) to 21,7 % (N06). In the Baltic Sea, the prevalences were lower with values of 1,4 % (area B01) and 2,0 % (area BEEP5). Prevalences of epidermal hyperplasia/papilloma in the North Sea were in the range of 1,0 % (area N05) und 6,0 % (area N04), whereas levels in the Baltic were 0,0 % (area BEEP5) and 0,4 % (area B01). Acute/healing stages of skin ulcerations were between 0,2 % (area N05) and 3,3 % (area N06) in the North Sea, and in the Baltic Sea, levels of 0,3 % (area BEEP5) and 0,2 % (area B01) occurred. Hyperplasia of the gills (X-cell-disease) were recorded in up to 3,3 % (area N22) and 4,2 % (area N06) of the North Sea dab. The most frequent externally visible anomaly of dab continued to be hyperpigmentation (green to black discolouration of the skin). Prevalences were in the range of 5,6 % (area P01) to 42,5 % (area N04). This condition was absent in Baltic Sea dab.

4.2 Cod (*Gadus morhua*)

In total, 2648 cod from the Baltic Sea were examined. Highest prevalences of acute/healing stages of skin ulcerations were recorded in areas B03 (16,8 %), B11 (12,9 %) and B10 (12,0 %). These values were considerably lower than in December 2000, but still elevated compared to long-term values recorded before 1998 (the year when prevalences drastically increased for the first time). The maximum recorded prevalences of grossly visible skeletal deformities were 6,6 % (area B10), 5,6 % (area B03) and 4,6 % (area B11). It was again noted that areas with maximum prevalences of skin ulcerations and skeletal deformities were identical. Pseudobranchial pseudotumours (X-cell-disease) were recorded in areas B05 (0,2 %) and B11 (0,6 %). The results of parasitological studies regarding prevalences of *Lernaecocera branchialis*, *Clavella adunca* und *Cryptocotyle lingua* are listed in Tab. 3. Because of the extremely low number of cod

caught in the North Sea (reflecting the generally poor condition of this stock) , no disease studies were performed.

4.3 Flounder (*Platichthys flesus*)

Prevalences of lymphocystis in Baltic Sea flounder (n = 682) were between 14,4 % (area B10) and 41,9 % (area B03), and those of acute/healing skin ulcerations between 0,0 % (area B09) und 16,7 % (area B05) (see Tab. 4).

4.4 Liver anomalies in dab and flounder

Baltic Sea

In Baltic Sea dab examined (n = 93), no liver nodules > 2 mm in diameter were noted. In Baltic flounder, only two specimens (18,2 %, n=11) from area B09 showed liver nodules (see Tab. 5 and Tab. 6). These finding confirm the results of studies carried out in previous years, indicating generally low prevalences of liver tumours in flatfish from the south-western Baltic Sea.

North Sea

582 dab were inspected for the occurrence of macroscopic liver anomalies. The results (see Tab. 5) confirm that prevalences of liver nodules/tumours continued to be low compared to the late 1980s and early 1990s. Highest levels in dab \geq 25 cm total length occurred in areas N04 (10,2 %), N01 (11,1 %) and N22 (13,6 %) auf. All macroscopic nodules were fixed for later histological and histochemical confirmation of the lesion. In addition to the macroscopic screening, tissues (liver, spleen) of 50 specimens per area were fixed for routine histopathology .

Regional hot spots of green liver discolouration (vcaused by parasitic infection with myxosporidians), liver nematodes and acanthocephaleans again were areas N05, N06 und N22. Prevalences and intensities were comparable to those observed in previous years.

5 Additional sampling

In the framework of the EU-funded project BEEP (,Biological Effects of Environmental Pollution in Marine Coastal Ecosystems'), four additional areas (BEEP1, 2, 3, 5) were visited in order to study biological effects of contaminants on Baltic flounder. Samples were taken for a wide range of biomarker techniques. In parallel, hydrographic measurements and sediment sampling for assessing sediment toxicity were carried out.

In areas B01, N01, N04, N06 und P01, liver tissue from 20 female dab each, size group 20-24 cm total length, was snap-frozen for enzymatic measurements (EROD and GST activities).

7 Participants

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8 Annexes

6 Tables
3 Figures

Dr. Thomas Lang

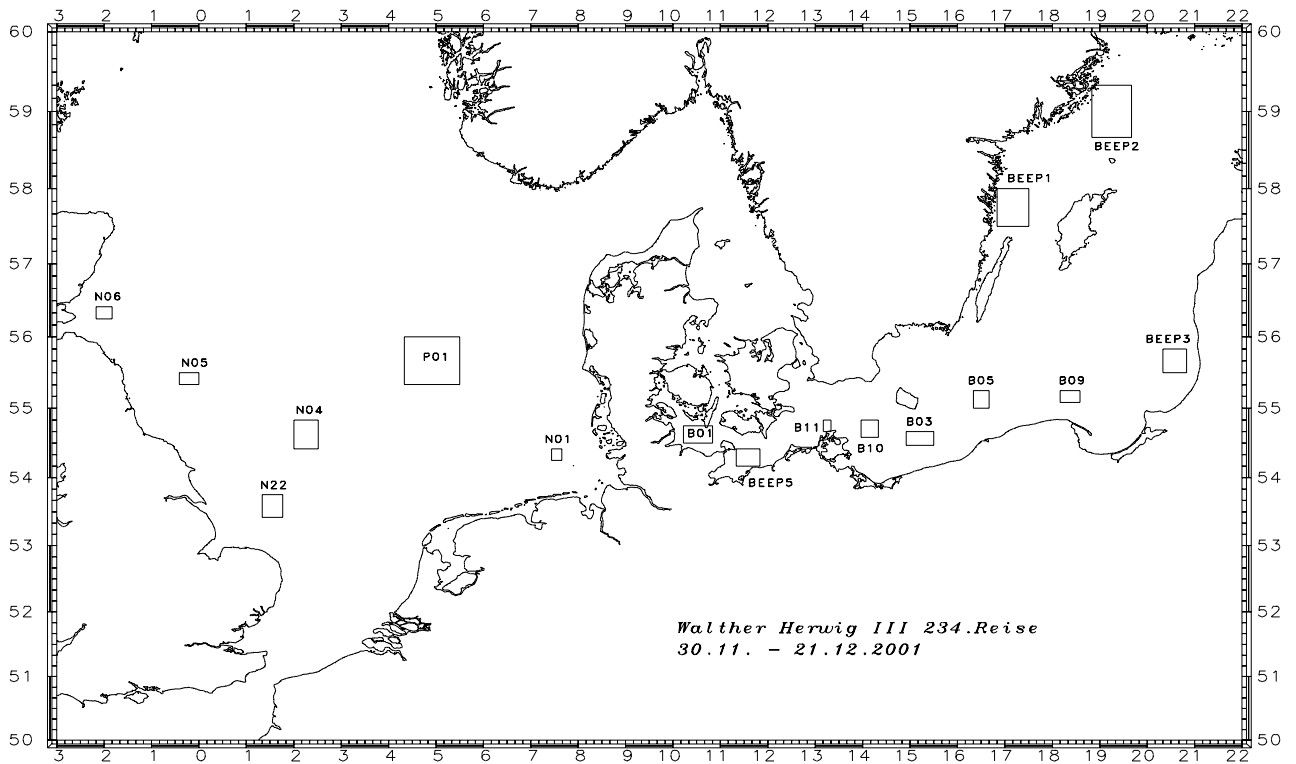


Fig. 1: Cruise 234 RV ,WALTHER HERWIG III', 30.11. – 21.12.2001, Location of sampling areas

**Tab. 1a: Cruise 234 RV ‚WALTHER HERWIG III‘, 30.11.- 21.12.2001
Location of fishing stations (position at ground)**

DATUM	STATION	GEBIET	ICES-RECTANGLE	GEOBREITE	GEOLÄNGE	SCHLEPP-DAUER (MIN.)
02.12.01	001	B10	38G4	54°38,90'N	14°08,29'E	60
02.12.01	002	B10	38G3	54°46,51'N	13°59,66'E	60
02.12.01	003	B10	38G4	54°41,42'N	14°02,84'E	84
02.12.01	004	B10	38G4	54°38,77'N	14°08,06'E	60
02.12.01	005	B10	38G3	54°46,42'N	13°59,80'E	60
02.12.01	006	B10	38G4	54°51,16'N	14°03,27'E	60
03.12.01	007	B05	39G6	55°10,15'N	16°21,60'E	60
03.12.01	008	B05	39G6	55°11,23'N	16°31,83'E	60
03.12.01	009	B05	39G6	55°12,76'N	16°38,30'E	77
03.12.01	010	B05	39G6	55°05,58'N	16°28,23'E	60
03.12.01	011	B05	39G6	55°07,25'N	16°37,66'E	60
03.12.01	012	B05	39G6	55°08,62'N	16°29,41'E	60
05.12.01	013	BEEP 1	44G7	57°30,20'N	17°13,20'E	74
07.12.01	014	BEEP 3	40H0	55°46,93'N	20°31,41'E	60
07.12.01	015	BEEP 3	40H0	55°42,90'N	20°38,63'E	94
07.12.01	016	BEEP 3	40H0	55°42,67'N	20°25,88'E	60
07.12.01	017	BEEP 3	40H0	55°41,26'N	20°33,92'E	60
07.12.01	018	BEEP 3	40H0	55°43,38'N	20°27,57'E	60
08.12.01	019	B09	39G8	55°15,09'N	18°29,61'E	61
08.12.01	020	B09	39G8	55°10,80'N	18°26,56'E	60
08.12.01	021	B09	39G8	55°13,26'N	18°18,84'E	60
08.12.01	022	B09	39G8	55°14,89'N	18°26,62'E	64
08.12.01	023	B09	39G8	55°11,74'N	18°27,24'E	60
08.12.01	024	B09	39G8	55°15,41'N	18°13,02'E	60
08.12.01	025	B09	39G8	55°12,20'N	18°21,37'E	60
09.12.01	026	B03	38G5	54°39,07'N	15°23,67'E	74
09.12.01	027	B03	38G5	54°39,22'N	15°11,10'E	60
09.12.01	028	B03	38G4	54°38,68'N	14°58,53'E	79
09.12.01	029	B03	38G5	54°37,44'N	15°06,30'E	60
09.12.01	030	B03	38G5	54°36,00'N	15°16,55'E	60
09.12.01	031	B03	38G5	54°38,12'N	15°23,46'E	60
09.12.01	032	B03	38G5	54°37,22'N	15°12,51'E	63
10.12.01	033	B11	38G3	54°46,46'N	13°19,93'E	71
10.12.01	034	B11	38G3	54°49,05'N	13°08,71'E	60
10.12.01	035	B11	38G3	54°45,59'N	13°19,01'E	60
10.12.01	036	B11	38G3	54°48,54'N	13°09,78'E	61
10.12.01	037	B11	38G3	54°49,30'N	13°17,43'E	60
10.12.01	038	B11	38G3	54°49,18'N	13°09,21'E	60
11.12.01	039	BEEP 5	37G1	54°13,42'N	11°45,72'E	65

Tab. 1a: (cont.)

DATUM	STATION	GEBIET	ICES-RECTANGLE	GEOBREITE	GEOLÄNGE	SCHLEPP-DAUER (MIN.)
11.12.01	040	BEEP 5	37G1	54°13,32'N	11°35,15'E	61
11.12.01	041	BEEP 5	37G1	54°16,34'N	11°44,55'E	60
11.12.01	042	BEEP 5	37G1	54°12,98'N	11°35,56'E	60
11.12.01	043	BEEP 5	37G1	54°12,98'N	11°43,32'E	60
11.12.01	044	BEEP 5	37G1	54°17,07'N	11°42,14'E	60
12.12.01	045	B01	38G0	54°35,53'N	10°33,60'E	60
12.12.01	046	B01	38G0	54°40,43'N	10°25,20'E	61
12.12.01	047	B01	38G0	54°35,24'N	10°25,22'E	57
12.12.01	048	B01	38G0	54°36,22'N	10°18,16'E	60
12.12.01	049	B01	38G0	54°39,17'N	10°26,72'E	60
14.12.01	050	N01	37F7	54°15,39'N	07°26,83'E	60
14.12.01	051	N01	37F7	54°20,72'N	07°28,83'E	60
14.12.01	052	N01	37F7	54°20,11'N	07°29,36'E	71
14.12.01	053	N01	37F7	54°15,47'N	07°26,26'E	60
14.12.01	054	N01	37F7	54°19,17'N	07°29,74'E	60
15.12.01	055	N04	38F2	54°43,67'N	02°25,82'E	60
15.12.01	056	N04	38F2	54°47,71'N	02°20,84'E	60
15.12.01	057	N04	38F2	54°46,61'N	02°13,75'E	60
15.12.01	058	N04	38F2	54°48,05'N	02°07,96'E	60
15.12.01	059	N04	38F2	54°46,02'N	02°02,65'E	64
16.12.01	060	N22	36F1	53°38,23'N	01°44,56'E	60
16.12.01	061	N22	36F1	53°37,69'N	01°45,74'E	60
16.12.01	062	N22	36F1	53°41,53'N	01°39,58'E	60
17.12.01	063	N06	41E8	56°17,69'N	01°56,19'W	60
17.12.01	064	N06	41E7	56°16,38'N	02°07,37'W	60
17.12.01	065	N06	41E7	56°23,79'N	02°00,31'W	60
17.12.01	066	N06	41E7	56°23,62'N	02°08,61'W	60
17.12.01	067	N06	41E7	56°18,68'N	02°08,42'W	60
18.12.01	068	N05	39E9	55°27,22'N	00°24,32'W	60
18.12.01	069	N05	39E9	55°20,30'N	00°21,26'W	60
18.12.01	070	N05	39E9	55°21,40'N	00°13,88'W	63
18.12.01	071	N05	39E9	55°24,82'N	00°09,73'W	60
19.12.01	072	P01	40F4	55°30,19'N	04°58,11'E	60
19.12.01	073	P01	39F4	55°22,77'N	04°58,81'E	60
19.12.01	074	P01	40F4	55°30,04'N	04°58,61'E	60
19.12.01	075	P01	40F5	55°35,61'N	05°03,98'E	57

**Tab. 1b: Cruise 234 RV ,WALTHER HERWIG III', 30.11.- 21.12.2001
Location of hydrography stations**

DATUM	STATION	GEBIET	ICES- RECTANGLE	GEOBREITE	GEOLÄNGE
02.12.01	001	B10	38G4	54°43,59'N	14°02,88 'E
02.12.01	002	B10	38G4	54°43,21'N	14°03,15 'E
03.12.01	003	B05	39G6	55°14,02'N	16°38,69'E
03.12.01	004	B05	39G6	55°06,95'N	16°36,57'E
04.12.01	005	BEEP 1	44G7	57°32,30'N	17°11,96'E
05.12.01	006	BEEP 1	44G7	57°36,06'N	17°10,91'E
05.12.01	007	BEEP 2	46G9	58°57,89'N	19°02,47 'E
06.12.01	008	BEEP 2	47G9	59°07,52'N	19°24,07'E
07.12.01	009	BEEP 3	40H0	55°43,12'N	20°38,48'E
07.12.01	010	BEEP 3	40H0	55°44,16'N	20°27,30'E
08.12.01	011	B09	39G8	55°12,93'N	18°18,42'E
08.12.01	012	B09	39G8	55°11,40'N	18°28,56'E
09.12.01	013	B03	38G5	54°38,45'N	15°03,12 'E
09.12.01	014	B03	38G5	54°35,63'N	15°13,86'E
10.12.01	015	B11	38G3	54°45,88'N	13°15,09'E
10.12.01	016	B11	38G3	54°49,36'N	13°17,81'E
11.12.01	017	BEEP 5	37G1	54°15,46'N	11°42,89'E
11.12.01	018	BEEP 5	37G1	54°12,49'N	11°43,78'E
12.12.01	019	B01	38G0	54°35,62'N	10°23,56'E
12.12.01	020	B01	38G0	54°32,97'N	10°30,58'E
14.12.01	021	N01	37F7	54°23,45'N	07°36,74'E
14.12.01	022	N01	37F7	54°19,09'N	07°30,15'E
15.12.01	023	N04	38F2	54°45,05'N	02°14,13'E
15.12.01	024	N04	38F1	54°46,33'N	01°59,66'E
16.12.01	025	N22	36F1	53°40,93'N	01°40,71'E
16.12.01	026	N22	36F1	53°38,69'N	01°43,80'E
17.12.01	027	N06	41E7	56°19,19'N	02°00,88 'W
17.12.01	028	N06	41E7	56°18,43'N	02°08,62 'W
18.12.01	029	N05	39E9	55°23,27'N	00°14,54'W
18.12.01	030	N05	39E9	55°24,44'N	00°06,86'W
19.12.01	031	P01	39F5	55°22,63'N	05°73,10'E
19.12.01	032	P01	40F5	55°31,19'N	05°06,06 'E

Tab. 1c: Cruise 234 RV ,WALTHER HERWIG III' 30.11.- 21.12.2001
Location of sediment sampling stations

DATUM	STATION	GEBIET	ICES- RECTANGLE	GEOBREITE	GEOLÄNGE
02.12.01	001	B10	38G4	54°45,30'N	14°02,01 'E
02.12.01	002	B10	38G4	54°45,34'N	14°02,28 'E
02.12.01	003	B10	38G3	54°49,28'N	13°55,64'E
03.12.01	004	B05	39G6	55°13,63'N	16°38,94'E
04.12.01	005	BEEP 1	44G7	57°32,34'N	17°11,87'E
05.12.01	006	BEEP 2	46G9	58°57,90'N	19°02,33'E
06.12.01	007	BEEP 2	47G9	59°07,52'N	19°24,15'E
07.12.01	008	BEEP 3	40H0	55°43,21'N	20°38,51'E
07.12.01	009	BEEP 3	40H0	55°36,77'N	20°23,80'E
08.12.01	010	B09	39G8	55°14,68'N	18°24,93'E
09.12.01	011	B03	38G5	54°38,48'N	15°03,29 'E
09.12.01	012	B03	38G4	54°39,58'N	14°55,58'E
10.12.01	013	B11	38G3	54°49,29'N	13°17,81'E
11.12.01	014	BEEP 5	37G1	54°15,39'N	11°42,83'E
11.12.01	015	BEEP 5	37G1	54°17,44'N	11°43,22'E
11.12.01	016	B01	38G0	54°41,04'N	10°24,92'E

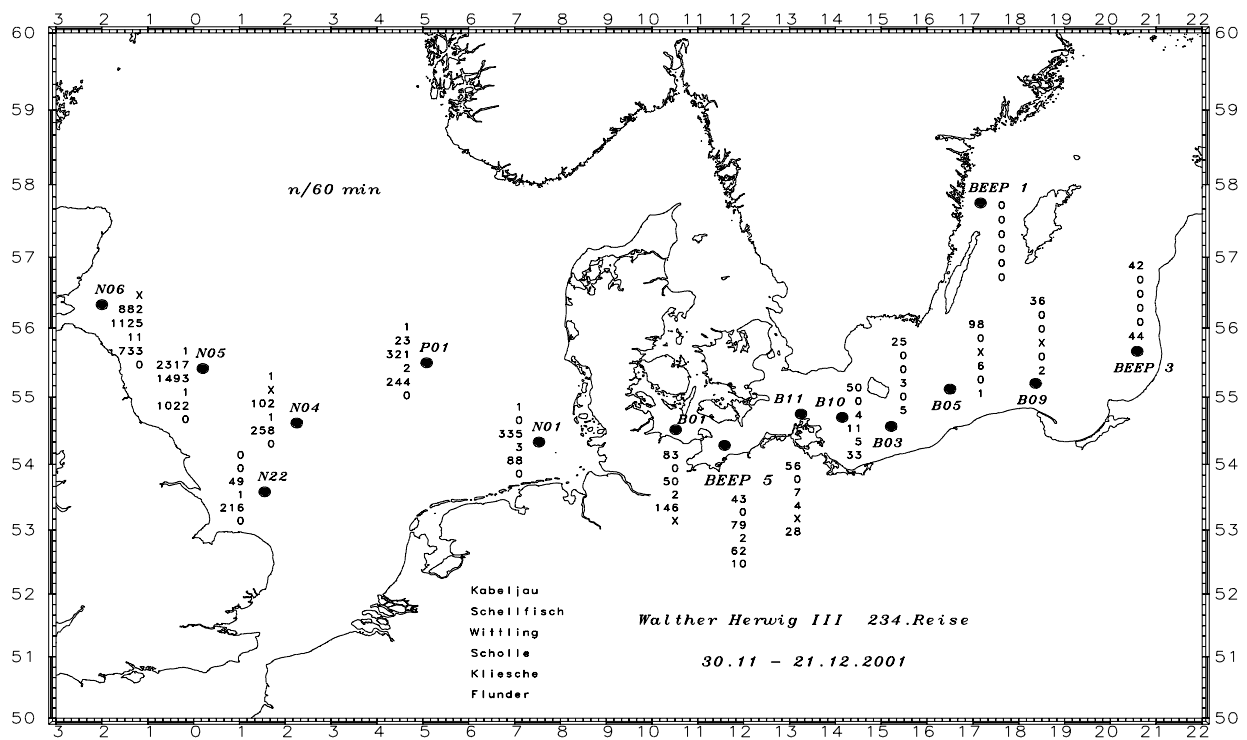


Fig. 2: Cruise 234 RV ,WALTER HERWIG III', 30.11. - 21.12.2001: Mean number per 1 hr trawling (from top to bottom) of cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting (*Merlangius merlangus*), plaice (*Pleuronectes platessa*), dab (*Limanda limanda*) and flounder (*Platichthys flesus*)

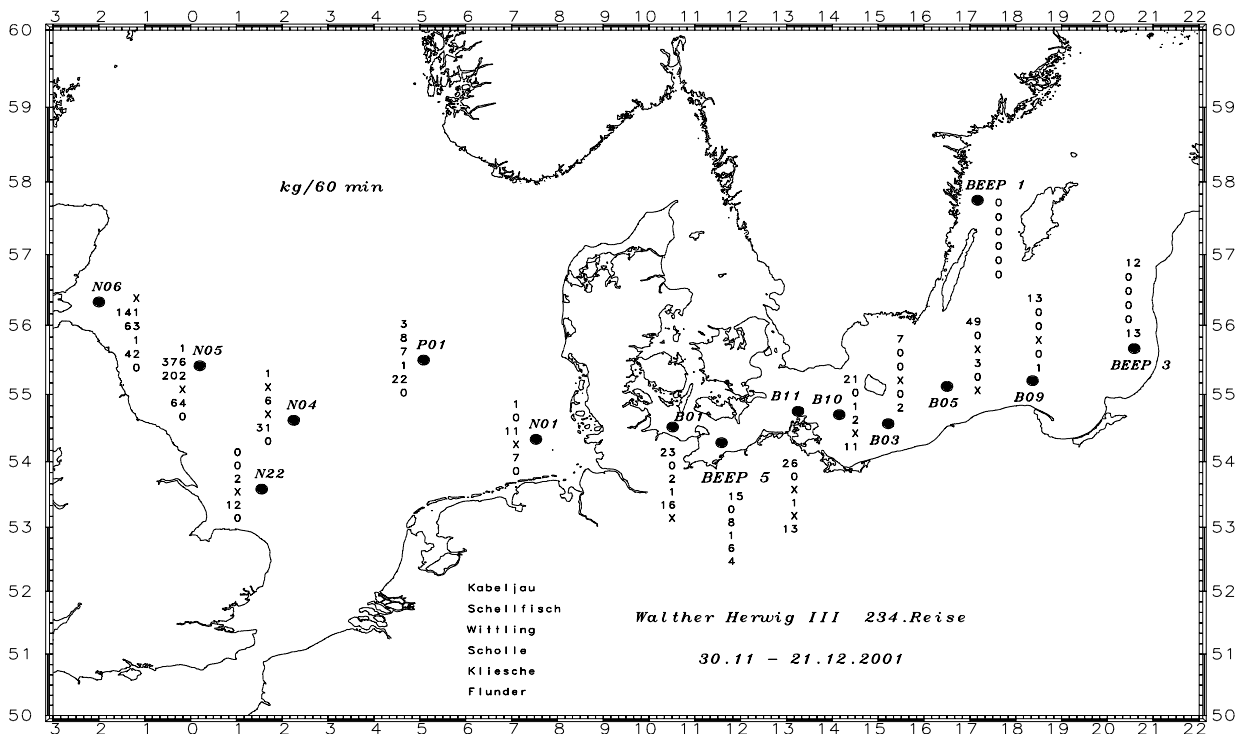


Abb. 3: Cruise 234 RV ,WALTER HERWIG III', 30.11. - 21.12.2001: Mean weights per 1 hr trawling (species see Fig. 2)

Tab. 2: Cruise 234 RV ,WALTHER HERWIG III', 30.11. – 21.12.2001
Prevalence (%) of externally visible diseases and parasites of dab (*Limanda limanda*)

Gebiet	N Unt.	Ly	Ep Pap + Hyp	Ulc ak/hei	Ulc ab	Flf	Kiehy	Hyp Pig	Steph	Acan	Lep
BEEP 5	358	2,0	0,0	0,3	0,3	0,3	0,0	0,0	0,0	0,0	0,0
B01	281	1,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0
N01	307	4,9	5,9	2,0	4,2	0,3	0,0	22,8	13,7	4,9	2,9
N04	530	11,7	6,0	2,8	8,3	0,6	0,0	42,5	44,3	5,1	0,0
N22	212	12,3	2,8	2,4	5,7	0,9	3,3	32,1	11,8	5,7	0,0
N06	544	21,7	3,7	3,3	6,3	1,8	4,2	37,7	76,8	3,9	0,2
N05	488	17,8	1,0	0,2	1,6	0,4	0,2	25,8	79,7	2,5	0,2
P01	497	16,9	2,4	2,6	6,0	1,8	2,4	5,6	85,1	6,6	0,4

Tab. 3: Cruise 234 RV ,WALTHER HERWIG III', 30.11. - 21.12.2001
Prevalence (%) of externally visible diseases and parasites of cod (*Gadus morhua*)

Gebiet	N unt.	Ulc ak/hei	Skel def	PBT	Netz ab	Loc	Loc ab	Clav	Cryp
B10	349	12,0	6,6	0,0	0,3	0,3	0,3	0,0	3,7
B05	612	4,6	2,3	0,2	1,6	0,0	0,0	0,0	0,2
BEEP 3	236	0,4	0,4	0,0	0,8	0,0	0,0	0,0	0,0
B09	250	10,4	2,0	0,0	0,0	0,0	0,0	0,0	0,0
B03	179	16,8	5,6	0,0	2,2	0,0	0,0	0,0	0,0
B11	350	12,9	4,6	0,6	1,1	0,0	0,0	0,0	6,6
BEEP 5	239	2,9	0,8	0,0	0,0	2,1	0,4	0,0	57,3
B01	433	1,2	0,7	0,0	0,7	0,7	0,2	0,0	65,8

Tab. 4: Cruise 234 RV ,WALTHER HERWIG III', 30.11. - 21.12.2001
Prevalence (%) of externally visible diseases and parasites of flounder (*Platichthys flesus*)

Gebiet	N unt.	Ly	Ulc Ak/hei	Ulc ab	Netz ab	Skel def
B10	209	14,4	2,9	0,5	2,9	1,0
B05	6	16,7	16,7	0,0	0,0	0,0
BEEP 3	204	17,6	4,9	3,4	2,0	0,5
B09	11	36,4	0,0	18,2	0,0	0,0
B03	31	41,9	6,5	6,5	3,2	0,0
B11	169	20,7	0,6	4,7	7,1	0,0
BEEP 5	52	17,3	1,9	0,0	5,8	0,0

Tab. 5: Cruise 234 RV ,WALTHER HERWIG III', 30.11. – 21.12.2001

Prevalences (%) of liver nodules of different size categories and other anomalies in dab (*Limanda limanda*) from the Baltic Sea and North Sea

Gebiet	Länge (cm)	N unters	Leberknoten			Grüne Lebern	Nematoden	Acanthocephalen
			>2 mm	> 5 mm	>10 mm			
B01	20 - 24	51	0,0	0,0	0,0	0,0	0,0	0,0
B01	>25	42	0,0	0,0	0,0	0,0	0,0	0,0
N01	20 - 24	59	5,1	1,7	0,0	0,0	1,7	0,0
N01	>25	9	11,1	11,1	0,0	0,0	0,0	0,0
N04	20 - 24	51	2,0	0,0	0,0	5,9	5,9	0,0
N04	>25	49	10,2	4,1	4,1	6,1	18,4	2,0
N22	20 - 24	51	2,0	0,0	0,0	5,9	3,9	2,0
N22	>25	22	13,6	0,0	0,0	0,0	22,7	4,5
N06	20 - 24	50	0,0	0,0	0,0	20,0	62,0	22,0
N06	>25	43	4,7	4,7	2,3	11,6	93,0	48,8
N05	20 - 24	51	0,0	0,0	0,0	86,3	78,4	19,6
N05	>25	3	0,0	0,0	0,0	66,7	33,3	0,0
P01	20 - 24	50	2,0	0,0	0,0	0,0	6,0	0,0
P01	>25	51	0,0	0,0	0,0	2,0	5,9	2,0

**Tab. 6: Cruise 234 RV ,WALTHER HERWIG III' ,30.11. – 21.12.2001
Prevalences (%) of liver nodules > 2 mm in diameter in Baltic flounder (*Platichthys flesus*) > 20 cm**

Gebiet	N unters.	Leberknoten > 2 mm (%)
B10	30	0,0
B05	6	0,0
BEEP3	30	0,0
B09	11	18,2
B03	31	0,0
B11	40	0,0
BEEP5	54	0,0
B01	3	0,0

Acronyms:

N unt	= Number of fish examined
Ly	= Lymphocystis
Ep pap + Hyp	= Epidermal hyperplasia/papilloma
Ulc, ak/hei, ab	= akut/heilend, healed skin ulcerations
Flf	= Fin rot/erosion
Kiehy	= Gill hyperplasien (X-cell-disease)
HypPig	= Hyperpigmentation
Skel def	= Skeletal deformations
PBT	= Pseudobranchial pseudotumours (X-cell-disease)
Netz ab	= healed net injury
Steph	= <i>Stephanostomum baccatum</i>
Acan	= <i>Acanthochondria cornuta</i>
Lep	= <i>Lepeophtheirus pectoralis</i>
Loc	= <i>Lernaeocera branchialis</i>
Loc ab	= <i>Lernaeocera branchialis</i> , abgeheilt
Clav	= <i>Clavella adunca</i>
Cryp	= <i>Cryptocotyle lingua</i>