

*GEF BALTIC SEA REGIONAL PROJECT  
PHASE 1: 2003 – 2005*

**ICES/BSRP SEA-GOING WORKSHOP  
ON FISH DISEASE MONITORING IN  
THE BALTIC SEA (WKFD M)**

**R/V 'Walther Herwig III'  
5-12 December 2005**

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COMPILED BY  
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BSRP Large Marine Ecosystem Component implemented by:  
**International Council for the Exploration of the Sea**

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## **Annex 1: ToR h) ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea (WKFD): Summary**

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**T. Lang (Germany) and G. Rodjuk (Russia)**

### **Introduction**

The ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea (WKFD) was held 5-12 December 2005 onboard the German RV 'Walther Herwig III'. It was co-chaired by T. Lang (Germany) and G. Rodjuk (Russia) and was attended by scientists from Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden (see Table 1). The workshop started and ended in Gdynia, Poland. Local arrangements and support in Gdynia were kindly provided by the Polish Sea Fisheries Institute (MIR).

According to ICES Council Resolution 2005/2/BCC02, the objectives of the ICES/BSRP Sea-going Workshop on Fish Disease Monitoring on the Baltic Sea (WKFD) were:

- to provide training and intercalibration related to methodologies applied in fish disease monitoring in the Baltic Sea,
- to further develop and assess health indicators and indices appropriate for monitoring and assessment purposes,
- to establish a closer collaboration between institutes involved in fish disease monitoring in the Baltic Sea, and
- to build the basis for incorporation of fish disease surveys into the revised HELCOM monitoring programme.

### **Background**

From a large variety of studies there is general consensus today that fish diseases are an appropriate indicator of ecosystem health and that the prevalence of diseases/parasites responds to natural and anthropogenic environmental change, including exposure to contaminants. Furthermore, many fish diseases/parasites are of ecological and economical relevance since they may affect growth, reproduction and survival in affected fish populations and may even cause human health problems. Therefore, a number of ICES Member Countries carry out fish disease surveys as part of their national marine monitoring and assessment programmes and results from these surveys are being used for internationally coordinated assessments, e.g. as part of the OSPAR JAMP/CEMP.

In the Baltic Sea, only Poland, Germany and Russia are presently conducting regular fish disease monitoring programmes. However, from data assessments carried out by the ICES Working Group on Pathology and Diseases (WGPDMO), there is indication of methodological problems, particularly regarding the comparability of disease prevalence data, and a clear need for more intercalibration has, thus, repeatedly been emphasised.

Besides these countries, there is also interest in other Baltic Sea countries to implement fish disease monitoring as part of the coastal or offshore monitoring, but there has been an

apparent lack of either capacities or experience. Within the Baltic Sea Regional Project (BSRP), this has been realised and funding was provided for capacity building related to fish disease monitoring in the BSRP beneficiary countries. The AtlantNIRO, Kaliningrad, Russia, was appointed as BSRP Lead Laboratory for Fish Diseases, Parasites and Histopathology in order to coordinate relevant activities and the ICES Study Group on Baltic Ecosystem Health in support of the BSRP (SGEH) is reviewing progress made.

Since ICES has a long-term experience in developing and intercalibrating methodologies for fish disease surveys and organised a number of practical practical methodological workshops before (e.g. 1994 in the Baltic Sea, co-sponsored by the Baltic Marine Biologists, BMB), it was recommended in the ICES SGEH and the ICES Working Group on Pathology and Diseases of Marine Organisms (WGPDMO) to organise an ICES/BSRP sea-going training workshop in December 2005, aiming at a standardisation and intercalibration of methodologies, addressing aspects from fish sampling, disease diagnosis, data reporting to statistical data assessment.

**Table 1: Participants of the ICES/BSRP Sea-going Workshop on Fish Disease Monitoring on the Baltic Sea (WKFDMM)**

NAME	AFFILIATION
Anders Alfjorden	National Veterinary Institute Department of wildlife, fish and environment Uppsala, Sweden
Egidijus Bacevicius	Lithuanian State Centre for Pisciculture and Fishery Research Fishery Research Laboratory Klaipeda, Lithuania
Natalia Chukalova	Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO) Kaliningrad, Russia
Nico Geveke (Student)	University of Oldenburg Oldenburg, Germany
Muza Kirjusina	Division of Parasitology and Ichthyopathology State Veterinary Medicine Diagnostic Centre (SVMDC) Riga, Latvia
Paul Kotterba (Student)	University of Hamburg Hamburg, Germany
Thomas Lang (Co-Chair)	Federal Research Centre for Fisheries Institute of Fishery Ecology Cuxhaven, Germany
Kari Lehtonen	Finnish Institute of Marine Research Helsinki, Finland
Kaja Lotman	The Matsalu National Park Administration, Lihula Läänemaa, Estonia
Galina Rodjuk (Co-Chair)	Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO) Kaliningrad, Russia
Grant D. Stentiford	CEFAS Weymouth Laboratory Weymouth, UK
Kordian Trella	Sea Fisheries Institute Gdynia, Poland
Thomas Tepperies (Technician)	Federal Research Centre for Fisheries Institute of Fishery Ecology Cuxhaven, Germany
Werner Wosniok	University of Bremen Institute of Statistics Bremen, Germany

## Workshop programme

The workshop was organised according to the timetable shown in Table 2 and consisted of practical work and training with flounder (*Platichthys flesus*), cod (*Gadus morhua*) and herring (*Clupea harengus*) as target fish species as well as of theoretical work addressing aspects such as:

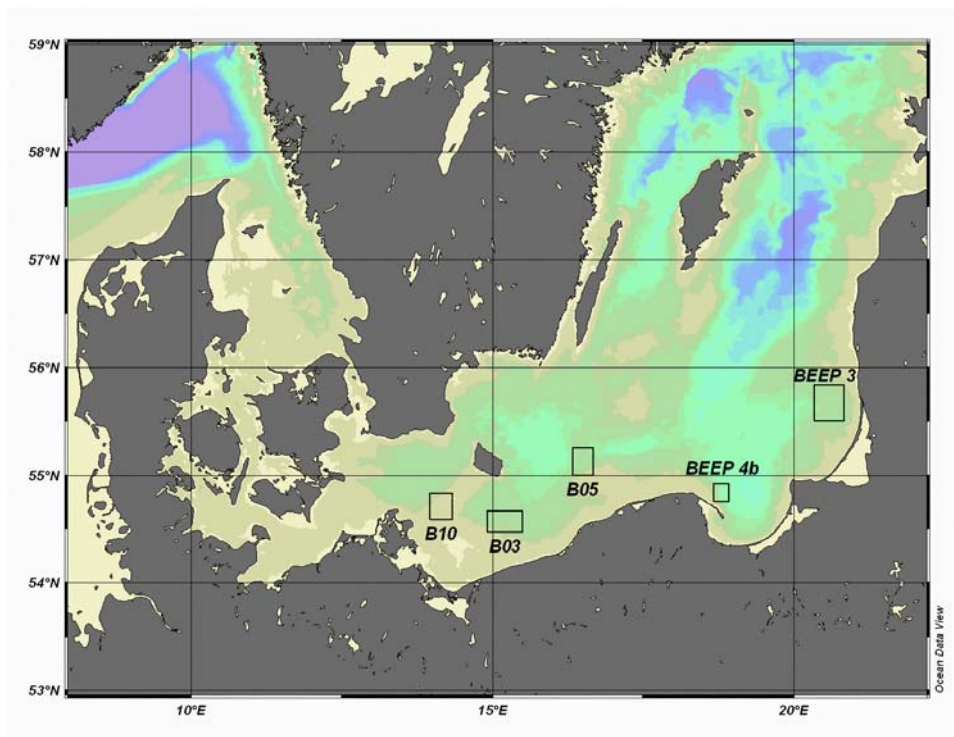
- **Practical work:** Methods for fish sampling, disease diagnosis (externally visible diseases/ parasites and liver histopathology), intercalibration exercises, sampling for histopathology, fixation and preservation techniques, age determination, data entry software, hydrographic measurements, sampling for biomarker measurements.
- **Theory:** Overview of national and international programmes and databases (e.g. ICES Data Centre), sampling design, data recording, analysis and assessment, development of health indicators, confounding factors with impact on diseases (host-specific, site-specific), quality assurance (e.g. BEQUALM) etc.

**Table 2: Timetable for the ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea (WKFD)**

4 Dec. 2005	RV Walther Herwig III arrives in port of Gdynia
5 Dec. 2005	Participants arrive in Gdynia, start of workshop on board RV Walther Herwig III
6-11 Dec. 2006	Field work and training at selected sampling sites (see Figure 1)
11 Dec. 2005	RV Walther Herwig III returns to Gdynia, reception on board with participants and invited guests
12 Dec. 2005	End of workshop, RV Walther Herwig III leaves Gdynia

Practical work was carried out in five Baltic Sea areas encompassing sampling sites in German, Polish and Lithuanian waters (see Figure 1 and Table 3).

**Figure 1: Location of sampling areas of the ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea (WKFD)**



**Table 3: Geographical position of sampling areas of the ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea (WKFD)**

SAMPLING AREA	LATITUDE	LONGITUDE
B10	54° 35'N - 54° 50'N	13° 58'E - 14° 20' E
B03	54° 28'N - 54° 40'N	14° 55'E - 15° 30'E
B05	55° 00'N - 55° 15'N	16° 20'E - 16° 40'E
BEEP 3	55° 30'N - 55° 50'N	20° 20'E - 20° 50'E
BEEP 4b	54° 45'N - 54° 55'N	18° 40'E - 18° 55'E

As part of the training programme, externally visible diseases and parasites of cod (*Gadus morhua*) and flounder (*Platichthys flesus*) were recorded (Table 4). In addition, herring were inspected for the presence of nematode larvae (*Anisakis simplex*) in the body cavity and flounder livers were examined for the presence of liver nodules (macroscopic liver neoplasms) and parasites.

**Table 4: Grossly visible diseases recorded in Baltic cod (*Gadus morhua*) and flounder (*Platichthys flesus*) and their causes**

COD ( <i>G. morhua</i> )		FLOUNDER ( <i>P. flesus</i> )	
DISEASE/PARASITE	AETIOLOGY	DISEASE/PARASITE	AETIOLOGY
Acute/healing skin ulcers	Bacterial	Lymphocystis	Viral
Skeletal deformities	Multifactorial	Acute/healing skin ulcers	Bacterial
Pseudobranchial swelling (X-cell disease)	Parasitic (Amoeba-like)	Acute/healing fin rot/erosion	Bacterial
<i>Cryptocotyle lingua</i>	Metacercariae of a parasitic digenean trematode	Skeletal deformities	Multifactorial
<i>Lernaeocera branchialis</i>	Parasitic copepode	<i>Cryptocotyle spp.</i>	Metacercariae of two parasitic digenean trematode species ( <i>C. lingua</i> , <i>C. concavum</i> )
		Liver nodules > 2 mm	Contaminants likely
		Liver parasites	Nematodes, Acanthocephaleans

## Outcome of the workshop/recommendations

Some results of the practical work are shown in Figures 2 and 3.

The participants considered the workshop to be successful since the major Terms of Reference were fulfilled. There was an agreement that the results of the workshop should be communicated to a wider forum, including responsible national authorities and international organisations coordinating marine environmental monitoring programmes. A number of follow-up activities were suggested, building on the experience made during the sea-going workshop.

The workshop participants agreed on the following (draft) recommendations:

- ICES to communicate the WKFD report and recommendations to relevant national ministries/agencies responsible for monitoring the environmental status

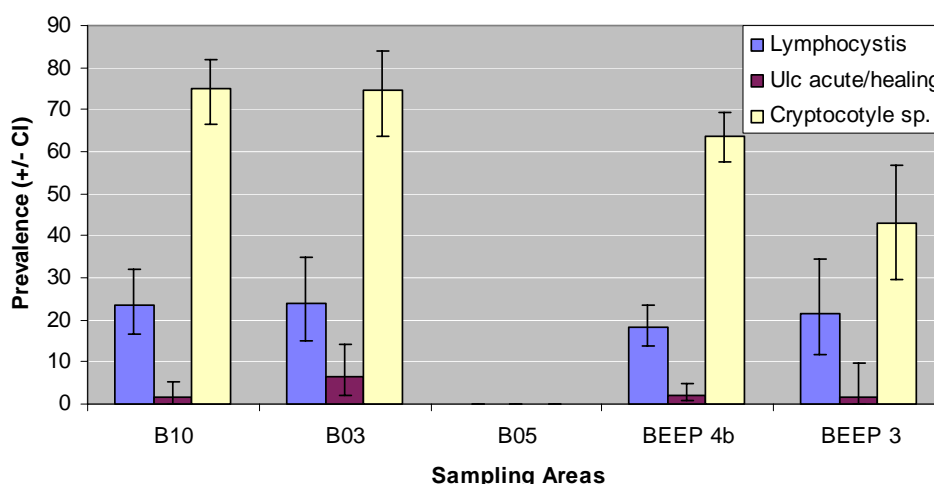
of the Baltic Sea and to international organisations (HELCOM, OSPAR, EU, EEA),

- Baltic Sea countries to use fish disease as a 'top-level indicator' of health in national integrated chemical and biological effects monitoring programmes,
- Baltic Sea countries to harmonise national marine monitoring and assessment programmes in order to implement an integrated programme,
- Baltic Sea countries to investigate the potential for an internationally coordinated integrated monitoring programme in the Baltic Sea, encompassing joint sampling campaigns and the involvement of appointed expert laboratories in the Baltic countries responsible for the conduct of specific analytical measurements,
- in this context, ICES/BSRP and Baltic Sea countries to organise an international demonstration project in 2007 on the ecosystem health of the Gulf of Finland, assessing the feasibility of coordinated sample collection and analysis,
- ICES/BSRP/HELCOM to organise a land-based workshop on monitoring of diseases and parasites in coastal fish species (venue suggestions: AtlantNIRO, Kaliningrad, or the Estonian Marine Institute, Tallinn) in the context of the HELCOM coastal fish monitoring.

The workshop results will be published in 2006 as ICES/BSRP Report (ICES CM 2006 xx:xx) and will be presented to and reviewed by the ICES SGEH, the ICES WGPDMO and the ICES Baltic Committee (BCC). The report will provide:

- an overview of present activities in Baltic Sea countries related to fish diseases,
- the results of the practical work,
- methodological guidelines for fish disease monitoring in the Baltic Sea.

It is hoped that the workshop and related future activities will build the basis for the incorporation of coordinated and standardised fish disease studies into national marine monitoring and assessment programmes of the Baltic Sea countries and eventually into the HELCOM monitoring programme. There is consensus that fish disease studies should be part of an integrated monitoring approach, encompassing e.g. studies on biological effects of contaminants (biomarker approach), eutrophication, biodiversity, physical and chemical measurements, and methods applied in fish stock assessment.



**Figure 2: Prevalences (% with 95% confidence intervals) of externally visible diseases in Baltic flounder (*Platichthys flesus*) recorded during the ICES Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea (WKFD)**

