

WHOLE ORGANISM COMPONENT

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Fish Disease

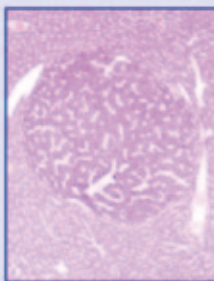
Fish disease is a biological effects measurement which is an integrative endpoint of historic exposure to stressors, including contaminants. Disease assessments have become integrated with other types of biological effects measurements as well as analytical data from biota, sediments and water under the recommended OSPAR JAMP suite of techniques used in environmental monitoring.

Externally visible diseases as well as liver pathology have been established for the flatfish dab (*Limanda limanda*) and flounder (*Platichthys flesus*) in European waters.

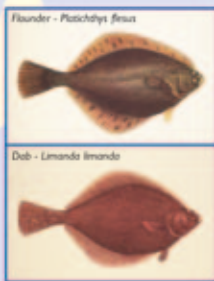
The development of standardised methodologies through the activities of the International Council for the Exploration of the Sea (ICES) has continued under BEQUALM. The overall objective of the EU funded BEQUALM fish disease work package was to produce a formal quality assurance infrastructure to validate field data on the occurrence of externally visible diseases and liver histopathologies in flatfish.



Participants in the BEQUALM liver pathology workshop examining histological sections of flatfish livers



Histological section showing hepatocellular adenoma in dab



Study species for fish disease

Work programme

The work programme for the first year of the self-funded scheme will be as follows:

1. Distribution of reference materials - these will consist of images of histopathological lesions at different magnifications with explanatory text. In addition, participants will receive material from a previous ring-test with the full diagnosis for training purposes.
2. The reference collection will be supplemented by submission of material from monitoring programmes and *ad hoc* investigations.
3. Ring-Test - a single set of histological slides will be distributed to participants, the results collated and reported.
4. Smaller intercalibration exercises using emailed images of specific pathology for diagnosis. These will form an important part of the on-going training required.

It is not intended to organise a workshop in 2002/03 but this will form a key activity in future years.

Scheduled Timetable of Events

Month	Event
April-May	Registration for whole organism component assays
July	Distribution of reference materials
August	Start of small scale intercalibration exercises - to be run quarterly
October	Full Ring Test initiated
December	Updated training CD distributed
March	Summary report of the year's results

Whole Organism Component

Whole Organism is one of the components of the BEQUALM self-funded scheme. The lead laboratory for this component is the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) in the UK. There are two aspects to the Whole Organism component:

Water and Sediment Bioassays

Fish Disease Measurement

Bioassays will be co-ordinated by the CEFAS Burnham-on-Crouch Laboratory and Fish Disease by the CEFAS Weymouth laboratory.

Registration Fees

Bioassay	Approx. Cost per participant if 5 signed up (Euros)	Approx. Cost per participant if 10 signed up (Euros)
Corophium 10d test	3035	1821
Arenicola 10d test	3035	1821
Turbot 96h test	2145	1180
Tisbe 48h test	1350	743
Fish disease	2550	1403
Oyster embryo 24h test	1523	837
Daphnia 48h test	1380	759
Daphnia 21d test	2235	1230
Algae 72h test (includes a workshop)	3025	1664
Acartia 48h test	1380	759

Registration Package

On payment of the annual registration fee participants will receive:

- Training CD rom for each assay signed up to
- Invitation to a training workshop where appropriate
- Reference materials couriered to your laboratory
- Relevant protocols
- Data template for each bioassay
- Confidential Statement of Performance
- Electronic summary report of laboratories performance from each intercalibration exercise
- BEQUALM Annual Report

Water and Sediment Bioassays

Measuring the toxic effects of bioavailable contaminants in water and sediment using whole organism bioassays is a valuable tool in assessing the quality of marine environments and a number of such techniques are included in the OSPAR Joint Assessment and Monitoring Programme (JAMP) suite. In addition, regulatory and other biological tests require QA/QC and these will also be incorporated in this scheme.

Bioassays selected for 2003/04:

Each year, the QA programme will comprise two parts:

Definitive Tests: those which have QA/QC procedures in place, includes core EU research programme assays. For the year 2003/04 these will be:



Corophium 10d sediment, Arenicola 10d sediment, Turbot 96h, Crassostrea gigas (oyster) 24h, Tisbe 48h

Developmental Tests: introduces more assays to the BEQUALM programme therefore expanding the repertoire. Will include newly developed assays and established assays requiring QA/QC. For 2003/04 the developmental assays will be:



Daphnia 48h, Daphnia 21d, Algae 72h, Acartia 48h

Reference Materials

Water Column Bioassays: Zinc as zinc sulphate

Sediment Bioassays: Ivermectin (anthelmintic drug) in the form of a commercial premix.

Work Programme

Each participating laboratory will be required to:

- Conduct two tests with the reference test compound (see timetable below), each time producing a dose response curve with calculated EC50 and 95% confidence limits.
- Conduct single tests on two 'unknown' samples, sent out by the lead laboratory, reporting the observed % mortality.
- Supply internal QA data in the form of quality control charts.
- Provide information on the number of tests performed in the year.
- Analyse datasets sent out by the lead laboratory, to check competency in conducting calculations and the statistical methods used.

Scheduled Timetable of Events

Month	Event
April-May	Registration for whole organism component assays
May-June	Ring Test 1 for Turbot, Tisbe, Corophium, Arenicola and Oyster
June	Ring Test 1 for Daphnia, Algae and Acartia
August	Ring Test 2 for oyster; reports RT1
October	Ring Test 2 for Corophium, Arenicola and Turbot
November	Ring Test 2 for Daphnia, Algae and Acartia
February	Reports RT2

For more information see
www.bequalm.org or contact
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