The surveillance and control programme for bonamiosis and marteiliosis in European flat oysters (*Ostrea edulis* L.) in Norway

*Hege Hellberg*
*Agathe Medhus*
*Haakon Hansen*
*Trude Marie Lyngstad*

---

*Editor Ann-Charlotte Karlsson*
*Technical editor Hanne Mari Jordsmyr*
*Scientific editors Hege Hellberg and Stålé Sviland*
*National Veterinary Institute*
Annual Reports 2009

Surveillance and control programmes for terrestrial and aquatic animals in Norway

Title
The surveillance and control programme for bonamiosis and marteiliosis in European flat oysters (Ostrea edulis L.) in Norway

Publisher
National Veterinary Institute
PO Box 750 Sentrum
N-0106 Oslo
Norway
Fax: + 47 23 21 60 01
Tel: + 47 23 21 60 00
E-mail: vipost@vetinst.no
Homepage: www.vetinst.no

Design: Hanne Mari Jordsmyr,
National Veterinary Institute
Front page photo: Hege Hellberg

ISSN 1503-1454

Example of citation:

© National Veterinary Institute

Any use of the present data should include specific reference to this report.
**Introduction**

The protozoan parasites *Bonamia ostreae* and *Marteilia refringens* have been identified as the main threats to commercial flat oyster production in Europe and bonamiosis and marteiliosis are classified as List II diseases by the European Union (1). In 2004, Norway was recognized as an approved zone with regard to *B. ostreae* and *M. refringens* (2). *Bonamia ostreae* was detected in samples from a wild flat oyster population in Arendal in 2008 (3). The Norwegian Food Safety Authority (NFSA) established a control zone to prevent further spread of the pathogen (4). Results indicated that the prevalence and intensity of infection was very low level and increased mortality has not been reported. For more information on bonamiosis and marteiliosis:

- [http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Bonamia-og-bonamiose](http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Bonamia-og-bonamiose)
- [http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Marteiliose](http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Marteiliose)
- [http://www.vetinst.no/eng/Research/Publications/Surveillance-and-Control-Programs-annual-reports](http://www.vetinst.no/eng/Research/Publications/Surveillance-and-Control-Programs-annual-reports)

**Aim**

The aim of the programme is to document the health status of Norwegian flat oysters regarding *Bonamia ostreae* and *Marteilia refringens*.

**Materials and methods**

**Sampling**

Sampling and inspection is carried out by the Norwegian Food Safety Authority District Offices according to Directive 2006/88/EC and Decision 2002/878/EC (1, 5). Each spring and autumn 30 oysters (surveillance) or 150 oysters (extended sampling) are sampled from each site and shipped live to the National Veterinary Institute in Bergen for analysis.

**Results**

In 2009, a total of 395 oysters from four sites (Table 1) were examined, real time PCR was performed on samples from Arendal (258) in addition to histology. *Marteilia refringens* and *B. ostreae* were not observed. There have been no reports on increased mortality in the sampled populations in 2009.

**Discussion**

*Bonamia ostreae* and *Marteilia refringens* were not detected in samples analysed in the surveillance and control programme for bonamiosis and marteiliosis in 2009.

Infections with *B.ostreae* can persist in wild oyster populations at very low prevalence without causing disease outbreaks or increased mortality (8). A sample size of 30 gives a 95% probability for detecting a prevalence of at least 10% in an infected population under the assumption of a 100% sensitive test, while a sample size of 150 gives a 95% probability for detecting a prevalence of at least 2% in an infected population.

Based on the results of the 2009 analyses the possibility of an infection with *B. ostreae* in the Arendal wild flat oyster population cannot be excluded, but the prevalence could be very low (probably < 2%).

**Table 1. Number of oysters per sample site tested for bonamiosis and marteiliosis in 2009.**

<table>
<thead>
<tr>
<th>Sample site</th>
<th>Spring 2009</th>
<th>Autumn 2009</th>
<th>Total 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vestfold</td>
<td>7</td>
<td>30</td>
<td>37</td>
</tr>
<tr>
<td>Aust-Agder</td>
<td>146</td>
<td>112</td>
<td>258</td>
</tr>
<tr>
<td>Hordaland</td>
<td>30</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Hordaland</td>
<td>40</td>
<td>-</td>
<td>40</td>
</tr>
<tr>
<td>Total: 4</td>
<td>223</td>
<td>172</td>
<td>395</td>
</tr>
</tbody>
</table>
References


2. EFTA Surveillance Authority Decision No. 225/04/COL of 9 September 2004.


5. Commission Decision 2002/878/EC of 6 November 2002 establishing the sampling plans and diagnostic methods for the detection and confirmation of the mollusc diseases Bonamiosis (Bonamia ostreae) and Marteiliosis (Marteilia refringens).


The National Veterinary Institute (NVI) is a nation-wide research institute in the fields of animal health, fish health, and food safety. The primary mission of the NVI is to give research-based independent advisory support to ministries and governing authorities. Preparedness, diagnostics, surveillance, reference functions, risk assessments, and advisory and educational functions are the most important areas of operation.

The National Veterinary Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad og Tromsø, with about 360 employees in total.

www.vetinst.no

The Norwegian Food Safety Authority (NFSA) is a governmental body whose aim is to ensure through regulations and controls that food and drinking water are as safe and healthy as possible for consumers and to promote plant, fish and animal health and ethical farming of fish and animals. We encourage environmentally friendly production and we also regulate and control cosmetics, veterinary medicines and animal health personnel. The NFSA drafts and provides information on legislation, performs risk-based inspections, monitors food safety, plant, fish and animal health, draws up contingency plans and provides updates on developments in our field of competence.

The NFSA comprises three administrative levels, and has some 1300 employees.

The NFSA advises and reports to the Ministry of Agriculture and Food, the Ministry of Fisheries and Coastal Affairs and the Ministry of Health and Care Services.

www.mattilsynet.no