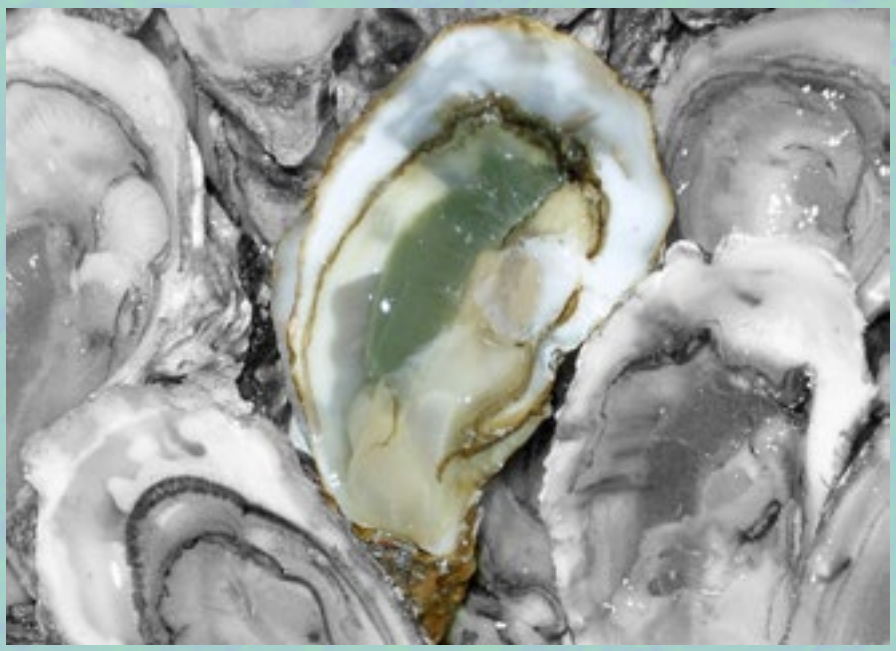
Surveillance and control programmes for terrestrial and aquatic animals in Norway
Norwegian Veterinary Institute

*Annual Report · 2011*

# The surveillance and control programme for Bonamiosis and Marteiliosis in European flat oysters (*Ostrea edulis* L.) and the blue mussel (*Mytilus edulis* L.) in Norway 2011

*Agathe Medhus*
*Hege Hellberg*



Veterinærinstituttet
Norwegian Veterinary Institute

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# The surveillance and control programme for Bonamiosis and Marteiliosis in European flat oysters (*Ostrea edulis* L.) and the blue mussel (*Mytilus edulis* L.) in Norway 2011

*Agathe Medhus and Hege Hellberg*

*Marteilia refringens and Bonamia ostreae were not observed in samples tested in 2011.*

## 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. The blue mussel is a susceptible species for marteiliosis and the parasite has been detected in these mussels in Sweden. Blue mussels were included in the Norwegian surveillance programme in 2010. The Norwegian Veterinary Institute has more information on bonamiosis and marteiliosis at the following web addresses:

http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Bonamia-og-bonamiose
http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Marteiliose
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* and blue mussels regarding *M. refringens*.

## Materials and methods

### Sampling

The programme is designed according to Directive 2006/88/EC and Decision 2002/878/EC (1, 5). Sampling and inspection are carried out by the Norwegian Food Safety Authority District Offices twice a year for each sample site giving a total of 60 samples for general surveillance and 300 samples for extended surveillance. All samples are shipped live to the Norwegian Veterinary Institute in Bergen for analysis.

The oyster surveillance included five sites while an additional site was included for the blue mussel surveillance. The sample plan is summarized in table 1.

**Table 1.** Sampling plan for 2011

| | Oyster | | | Mussel | | |
|---|---|---|---|---|---|---|
| **Sample site** | **Spring** | **Autumn** | **Total** | **Spring** | **Autumn** | **Total** |
| Ytre Østfold, Hvaler | - | - | - | 30 | 30 | 60 |
| Vestfold, Tønsberg | 30 | 30 | 60 | 30 | 30 | 60 |
| Aust-Agder, Arendal | 150 | 150 | 300 | 30 | 30 | 60 |
| Sunnhordland, Bømlo | 30 | 0 | 30 | 30 | 0 | 30 |
| Midt-Rogaland, Kvitsøy | 0 | 30 | 30 | 0 | 30 | |
| **Total** | **210** | **210** | **420** | **120** | **120** | **240** |

## Analysis

Oysters and mussels were prepared for histological examination and analysed according to the current edition of OIE "Manual of Diagnostic Tests for Aquatic Animals" (6).

The screening for *Bonamia sp* and *Marteilia sp* consists of histological examination of the digestive systems and gills. In case of inconclusive findings, gill samples from oysters may be analysed for the presence of *B. ostreae* by PCR-methods (7). Putative positive samples are referred to the EU Community Reference Laboratory for mollusc disease in La Tremblade, France for confirmative analysis.

# Results

In 2011, a total of 420 oysters from five sites (Table 1) were examined by histology. *Marteilia refringens* and *B. ostreae* were not observed. A total of 238 mussels were examined by histology. *Marteilia refringens* was not detected. Apart from losses due to low water temperatures and ice, there have been no reports on increased mortality in the sampled populations in 2011.

**Table 2.** Number of oysters and mussels per sample site tested for bonamiosis and marteiliosis in 2011.

| | Oyster | | | Mussel | | |
|---|---|---|---|---|---|---|
| **Sample site** | **Spring** | **Autumn** | **Total** | **Spring** | **Autumn** | **Total** |
| Ytre Østfold, Hvaler | - | - | - | 30 | 30 | 60 |
| Vestfold, Tønsberg | 30 | 30 | 60 | 28 | 30 | 58 |
| Aust-Agder, Arendal | 150 | 150 | 300 | 30 | 30 | 60 |
| Sunnhordland, Bømlo | 30 | 0 | 30 | 30 | 0 | 30 |
| Midt-Rogaland, Kvitsøy | 0 | 30 | 30 | 0 | 30 | 30 |
| **Total** | **210** | **210** | **420** | **118** | **120** | **238** |

## Discussion

*Bonamia ostreae* and *Marteilia refringens* were not detected in samples analysed in the surveillance and control programme for bonamiosis and marteiliosis in 2011.

Since 2009 there has been extended surveillance of the Arendal area without any further detection of *Bonamia sp*.

## References


1. Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals.

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

3. Hellberg H, Aakvik K. The surveillance and control programme for bonamiosis and marteiliosis in European flat oysters (*Ostrea edulis* L.) in Norway. In: Brun E, Jordsmyr HM, Hellberg H, Sviland S (editors). Surveillance and control programmes for terrestrial and aquatic animals in Norway. Annual report 2008. Oslo: National Veterinary Institute; 2010.

4. NFSA Regulation FOR 2009-06-15 nr 648: Forskrift om kontrollområde for forebygging, begrensning og utrydding av østerssykdommen Bonamiose, Risør, Tvedestrand, Arendal, Grimstad og Lillesand kommuner, Aust-Agder

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*).

6. Anonymous. Diseases of Molluscs. In: "Manual of Diagnostic Tests for Aquatic Animals 2010". Part 2, Paris: Office International des Epizooties; 2010.

7. Robert M, Garcia C, Chollet B, Lopez-Flores I, Ferrand S, Francois C, Joly JP & Arzul I. Molecular detection and quantification of the protozoan *Bonamia ostreae* in the flat oyster, *Ostrea edulis*. Molecular and Cellular Probes, 2009; 23: 264-271.

The Norwegian Veterinary Institute (NVI) is a nationwide 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 Norwegian Veterinary Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad og Tromsø, with about 360 employees in total.

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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 Affaires and the Ministry of Health and Care Services.

**www.mattilsynet.no**

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