

Exotic disease

## Infection with *Bonamia ostreae* (Also known as bonamiosis)

Oysters infected with *Bonamia ostreae*, illustrating classic gaping



Source: D Alderman

### Signs of disease

**Important:** *Animals with disease may show one or more of the signs below, but the pathogen may still be present in the absence of any signs.*

Diseases caused by any of the microcell species are similar, with few or no clinical or gross signs present with light infection. Identification of the *Bonamia* or *Mikrocytos* species requires histological laboratory examination and molecular diagnostic techniques.

#### Disease signs at the farm, tank or pond level are:

- dead or gaping oysters
- increased mortality.

#### Gross pathological signs are:

- generally poor condition
- gills appearing eroded
- yellow discolouration of the gills and mantle.

Infection with *Bonamia ostreae* rarely results in gross pathological signs of disease in oysters; often the only sign is increased mortality.

### Microscopic pathological signs are:

- dense infiltrations of haemocytes, some containing microcell parasites, in the connective tissue of the gill and mantle, and in the vascular sinuses around the stomach and intestine
- extensive lesions, including perforated ulcers in the connective tissues of the gills, mantle and digestive gland.

### Disease agent

*B. ostreae* is an intrahaemocytic protist belonging to the phylum Haplosporidia.

### Host range

Species known to be susceptible to infection with *B. ostreae* are listed below.

Common name	Scientific name
Argentinian flat oyster <sup>a</sup>	<i>Ostrea puelchana</i>
European flat oyster <sup>a</sup>	<i>Ostrea edulis</i>
New Zealand dredge oyster <sup>a</sup>	<i>Ostrea chilensis</i>
Southern mud oyster or Australian flat oyster <sup>a</sup>	<i>Ostrea angasi</i>

<sup>a</sup> Naturally susceptible

### Presence in Australia

**EXOTIC DISEASE—not present in Australia.**

### Epidemiology

- The critical host age for development of disease appears to be 2 years; however, other age classes are susceptible to infection.
- Significant mortalities usually occur at water temperatures of 12–20 °C.
- Systemic infection of haemocytes effectively starves the oyster of energy required for survival. As it fights the infection, the animal eventually dies from exhaustion and starvation.
- Some studies suggest that prevalence and intensity of infection increase during late winter and autumn, but the disease may occur at all times of the year.
- The pre-patent period is up to 5 months.
- Transmission of the parasite can occur directly from host to host and indirectly between oyster beds via the water.
- The disease is thought to have spread from California to Europe by human movement of infected oysters.

### Differential diagnosis

The list of similar diseases below refers only to the diseases covered by this field guide. Gross pathological signs may be representative of a number of diseases not included in this guide, which therefore should not be used to provide a definitive diagnosis, but rather as a tool to help identify the listed diseases that most closely account for the gross signs.

## Similar diseases

Infection with *B. exitiosa*, *Bonamia* spp. and *Mikrocytos mackini*

There are few or no visual cues to the presence of this disease other than poor condition, shell gaping and increased mortality. Consequently, it is impossible to differentiate between *Bonamia* species based on gross signs alone; any presumptive diagnosis requires further laboratory examination.

Light microscopy can contribute diagnostic information, but further laboratory examination and molecular diagnostic techniques are required for a definitive diagnosis.

## Sample collection

Due to the uncertainty in differentiating diseases using only gross pathological signs, and because some aquatic animal disease agents might pose a risk to humans, only trained personnel should collect samples. You should phone your state or territory hotline number and report your observations if you are not appropriately trained. If samples have to be collected, the state or territory agency taking your call will provide advice on the appropriate course of action. Local or district fisheries or veterinary authorities may also provide advice regarding sampling.

## Emergency disease hotline

The national disease hotline number is 1800 675 888. This number will put you in contact with the appropriate state or territory agency.

## Further reading

The accepted procedures for a conclusive diagnosis of infection with *B. ostreae* are summarised in the World Organisation for Animal Health *Manual of diagnostic tests for aquatic animals 2011*, available at [www.oie.int/en/international-standard-setting/aquatic-manual/access-online](http://www.oie.int/en/international-standard-setting/aquatic-manual/access-online).

Further information can be found at:

- the disease pages of Fisheries and Oceans Canada: [www.pac.dfo-mpo.gc.ca/science/species-especes/shellfish-coquillages/diseases-maladies/pages/bonostoy-eng.htm](http://www.pac.dfo-mpo.gc.ca/science/species-especes/shellfish-coquillages/diseases-maladies/pages/bonostoy-eng.htm)
- the Sub-Committee on Animal Health Laboratory Standards (SCAHLs) website: [www.scahls.org.au/procedures/anzsdps2](http://www.scahls.org.au/procedures/anzsdps2).

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