

QX detection in Port Stephens

Animal Biosecurity

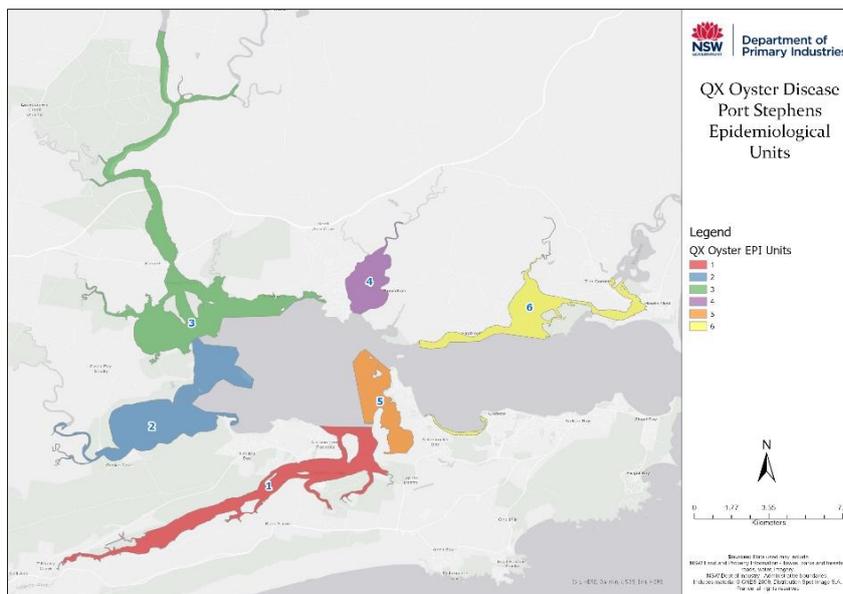
Laboratory testing at Elizabeth Macarthur Agricultural Institute confirmed QX in samples following sampling in the Port Stephens estuary. The following FAQs have been put together to answer any questions you may have.

When was QX found in Port Stephens?

QX was confirmed in Sydney Rock Oysters in the Port Stephens estuary on 27 August 2021. Further surveillance will be undertaken to define the outbreak.

What sampling has been done in Port Stephens?

DPI has conducted surveillance for QX in six areas within Port Stephens. Laboratory results indicate QX has been detected in three of the six areas (see 1, 2 and 3 on the map below). QX was detected at low prevalence with seven positive oysters detected from 180 oysters sampled in total. Sampling also focused on slow growing or unwell oysters to maximise the chance of QX detection.



How will QX be managed in Port Stephens?

From what we know of QX infection dynamics, these positive results have been detected late in the season for when QX disease is normally observed. Laboratory results also support the conclusion that the outbreak in Port Stephens is nearly finished for this season. Therefore, the true infection prevalence for Port Stephens cannot be determined from this sampling alone and will require further surveillance in autumn of 2022.

What movements of oysters are allowed in or out Port Stephens?

The QX classification of the Port Stephens estuary remains under investigation. QX is currently managed for in Port Stephens by the [Biosecurity \(QX Port Stephens\) Control Order 2021](#), that was made on 22 October 2021. This control order was made on 22 October 2021 and replaces the former General Biosecurity Direction.

This means that oysters from 'medium' and 'high' QX risk areas will still not be able to be moved into Port Stephens. Oyster cultivation equipment must also not be moved from 'medium' and 'high' QX risk areas into Port Stephens without prior treatment.

Outward movements of oysters from Port Stephens to low QX risk areas is prohibited. Permits have been issued to allow movements of spat produced by the two hatcheries out of Port Stephens to low QX risk areas, which includes water treatment and pre-dispatch health testing requirements. Spat may not be moved out of Port Stephens nurseries to low QX risk areas. Oyster cultivation equipment must also not be moved from Port Stephens to 'low' QX risk areas without prior treatment. Oysters and oyster cultivation equipment may be moved out of Port Stephens to 'medium' and 'high' QX risk areas.

Port Stephens oysters can still be sold to a processor or the marketplace for human consumption in accordance with NSW Shellfish Program requirements.

What about estuaries with oysters received from Port Stephens?

Tracing was conducted of movements of oysters from Port Stephens to other oyster producing estuaries in NSW for the period from November 2020 to August 2021. Oyster farmers that received stock from areas of Port Stephens where QX has been detected have submitted representative samples for laboratory analysis. Some of the samples from trace estuaries have tested positive for QX at very low levels. This does not impact the categorisation of these trace estuaries as the source of the QX is not the receiving estuary.

Oyster farmers in trace receiving estuaries have been advised to remove affected stock and to be vigilant in checking their stock in the next QX season, where infection typically occurs from January to April and losses of stock due to QX are usually observed from autumn to early winter.

Any farmers with suspicions of QX disease or unexplained mortalities of their Sydney Rock Oysters should call the 24-hour Emergency Animal Disease Hotline 1800 675 888 as soon as possible and within one business day.

What is QX?

QX stands for 'Queensland unknown'. It is a disease of Sydney Rock Oysters (*Saccostrea glomerata*) caused by a protozoan ('single-celled') parasite (*Marteilia sydneyi*). A closely related species, *Marteilia refringens*, causes 'Aber' disease in European flat oysters. This group of parasites is only known to infect invertebrate (animals without backbone) hosts and does not have any impacts on human health. *Marteilia sydneyi* is not a virus or bacteria.

Does QX impact other species of oyster?

Marteilia sydneyi has only been confirmed as a disease-causing agent, or pathogen, of the native Sydney Rock Oyster. Sydney Rock Oysters are the main species of oyster commercially farmed along the east coast of Australia, from the NSW/Victorian border north to the Great Sandy Strait in southern Queensland. Native flat oysters (*Ostrea angasi*) and the introduced Pacific oyster (*Crassostrea gigas*; also known by *Magallana gigas*), also farmed in some estuaries in NSW, are not known to be affected by QX.

How does QX affect oysters?

QX infection in Sydney Rock Oysters usually occurs between January - April, with diseased oysters losing condition and dying through autumn and winter. *Martelia sydneyi* has a lifecycle which involves at least two hosts and cannot be passed directly from one oyster to another.

The parasite enters into the soft tissue of Sydney Rock Oyster through its gills and palps (near the oyster's mouth). If it progresses to cause disease, the parasite divides and proliferates. It then migrates to the digestive gland which surrounds the oyster intestine. There it undergoes further development and multiplication to produce spores (sporulation), the end-stage of infection in oysters. Sporulation damages the digestive gland of the oyster, resulting in starvation and eventual death of the oyster.

Time from infection until death can vary between several weeks to several months. Affected oysters can be in poor condition and appear translucent or "watery". The digestive gland can also appear to be a light tan colour instead of the usual dark brown.

Prior to death of the oyster, the spores are released into the environment where they are taken up by alternate host(s) required in the life cycle of QX. The identity of the alternate host(s) has not been confirmed, but there is evidence suggesting that a polychaete worm (*Nephtys australiensis*) could play a role in the development of the parasite. (Adlard and Nolan, 2015).

What causes outbreaks and how does QX spread?

Due to the complex multiple-host lifecycle of the QX parasite in open waterways where oysters are grown there are many factors that can influence development of QX outbreaks.

The short answer is that we don't fully know what drives disease outbreaks, However, major things to consider are:

- Host factors such as the immune response of the oyster

- Parasite factors such as abundance and availability of the parasite to infect the oyster
- Environmental factors which can affect either the host such as immunosuppression resulting from decreased salinity or temperature affecting development of the parasites.

It is important to note that the presence alone of *Marteilia sydneyi* does not necessarily result in outbreaks of QX disease. QX cannot be spread directly from one oyster to another.

The spores released by the oyster need to enter an intermediate host(s) for further development. However, infected oysters should not be moved to avoid spreading the parasite to other areas where it may not yet be established.

Are oysters still safe to eat?

All seafood on the market remains safe to eat. Oysters in the marketplace must comply with stringent food safety standards of the NSW Shellfish Program.

What do I do if I suspect QX?

Oyster producers who find anything unusual are urged to call the Emergency Animal Disease hotline on 1800 675 888.

Where can I get further information?

NSW DPI website contains a range of information on QX. Please visit

<https://www.dpi.nsw.gov.au/fishing/aquatic-biosecurity/aquaculture/aquaculture/qx-oyster-disease>