

High rainfall, low salinity and Rock Oysters

Heavy Rainfall Consequences on Sydney Rock Oyster Health in Moreton Bay

Proponent: Dr Cecile Dang, University of Queensland

Oyster farmers in Moreton Bay lost between 50 to 70% of their oyster stock following heavy rainfalls during 2009-2010 and 2010-2011.

It is not possible to directly control pathogens in a marine environment, but understanding the reasons behind diseases development is critical to the development of animal management plans to mitigate and minimise spread of disease. The long-term sustainability of the oyster farming industry depends on the ability to identify, prevent and manage diseases.

OceanWatch Australia recognises the project as the first step towards developing practices for managing diseases in oyster culture in Moreton Bay. This project involved Dr Cecile Dang from the University of Queensland, two oyster farmers and university students.

Two commercial oyster leases in Moreton Bay were defined as study sites to reflect diverse environmental conditions. The estuarine site was situated in Pimpama River and the oceanic site was located at Deanbilla Bay, North Stradbroke Island.

This project has contributed to increase knowledge about infectious agent affecting Sydney rock oysters in Australia, as follows:

- the project resulted in the first description in Australian Sydney rock oysters of the parasite related to *Marteilioides* genus, indicating an extension to the geographic range of this parasite;
- low salinity has already been demonstrated as immunosuppressive for bivalves;
- zinc plays a critical role in the maintenance of homeostasis of the immune system in many animal species but, the information in regards to the role of zinc at higher concentrations on bivalve immune system is very scarce; and,
- data from this project suggest already that low salinity and high zinc concentration affect the immune-competence of the oyster, making them more susceptible to infectious agents.

Where to from here:

- The source of the high levels of zinc needs to be elucidated so that strategies for mitigation may be investigated;
- the diagnosis that the parasite *Marteilioides* genus, formerly found in pacific oysters *Crassostrea gigas* in Korea, has extended its range needs to be confirmed through molecular biology; and,
- increased knowledge about disease development will allow for the elimination of particular factors and practices and assist in developing management policies.