

# working together to re-establish the Bras d'Or Oyster Industry.

**Coastal communities of the Bras d'Or –  
an opportunity for growth.**

## introduction

Oyster aquaculture is a “**forever industry**” that started in the 12th century. It is an ideal industry for rural, coastal **community development**. Communities stay connected with, and remain stewards of, their resources and the places they call home.



In 2002, the Bras d'Or Lakes oyster industry suffered significant mortality from the oyster parasite, *Haplosporidium nelsoni*, commonly called MSX. The mortalities and restrictions placed on transfers have caused an approximate 80% reduction in productivity for the Nova Scotia oyster industry. Prior to 2002, **many individuals and First Nations communities around the Bras d'Or Lakes invested substantially in oyster aquaculture**. This knowledge and infrastructure now sits idle.

We have discovered an experimental process to reduce the level of parasite infection to undetectable levels using DNA analysis. Cape Breton University has partnered with the Apaqtukewaq Fishery Co-op to investigate the possibility of parasite removal on a commercial scale. If successful, this would result in increased survival and an opportunity to re-establish the Cape Breton Oyster Industry.

**innovative  
research at CBU  
made possible through  
community partnership**

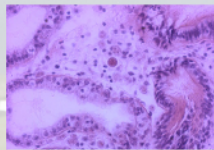


**Potlotek  
First Nation**



## materials & methods

Oysters were collected in December 2009 from MacDonald's Pond (Cape Breton), where the prevalence of MSX exceeds 90%, and transferred to the quarantine lab at Cape Breton University. Oysters were held for 12 weeks in tanks at 24ppt salinity (Instant Ocean®) at four different temperatures: 5°C, 10°C, 15°C, and 20°C. Oysters were fed daily and water changed weekly. Circulation and aeration was carried out using small aquarium aerators. Sampled tissues were processed for DNA analysis (PCR) and histological analysis. Remaining tissues were placed at -80°C for future research analysis.



## results

DNA analysis of tissues from oysters held at 15°C and 20°C reduced parasite prevalence from 96% (29/30) to less than 4% (1/29) and 0% (0/30) respectively. Oysters held at 5°C and 10°C showed a reduction in prevalence, but not to the degree of the two higher temperatures. Histological examination revealed no parasites in oysters held at 15°C and 20°C with low detection at 5°C and 10°C.

“The People of Potlotek have flourished here for thousands of years and the recent introduction of the oyster parasite has changed our relationship with that part of the natural world. The oyster

is an important cultural representation of our traditional activities. By helping the oyster recover and heal, the same will be true for the Mi'kmaq.”

— Lindsay Marshall, Principal, Unama'ki College

## discussion

The apparent removal of the MSX parasite by the Eastern oyster is indicative of the innate ability of oysters to not only survive infection with MSX, but overcome the infection to the point where they are essentially parasite free. **These results provide encouraging evidence that a lucrative oyster industry is possible in the Bras d'Or** even in the presence of the MSX parasite. This research provides a foundation for interesting and important research into the basic biology of this parasite/host relationship and **create opportunities for rural community economic development around the Bras d'Or Lakes**.

**The following work is currently underway or planned for the near future:**

- **Commercial scale treatment of oysters in Potlotek.**
- **The influence of water source and food availability on the process.**
- **The mechanism and timing of parasite removal.**
- **Aquaculture site identification based on select environmental parameters.**
- **Regional annual oyster industry symposium.**

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