

# Certain mussels could be genetically gifted to survive acidification

A team of Cawthron Institute scientists has found that certain mussel families are more likely than others to survive predicted ocean acidity, concluding that strong mussels inherit ocean acidification resilience from parents.

These scientists revealed these preliminary findings from their greenshell mussel ocean acidification breeding trials.

One of these researchers, Dr Norman Ragg, indicated that their trials indicate certain mussel families are more likely than others to survive predicted ocean acidity changes.

“We’ve been conducting ambitious breeding trials to determine how the iconic greenshell mussel species will respond to ocean acidification. I’m pleased to report these trials have been remarkably successful,” the scientist pointed out.

Ocean acidification is a worldwide climate change phenomenon. As the level of carbon dioxide in the atmosphere increases, the acidity of seawater around the world is slowly increasing.

Through their trials, Dr Ragg and his team have discovered this pH change makes it difficult for young mussels to grow their hard shells, meaning some babies will not survive the vulnerable first 48 hours of life. However, the breeding trials show some offspring are blessed with a stronger innate resilience, inherited from their parents.

The research team has also been studying whether the experiences of adult mussels are reflected in the resilience of their babies; interestingly there does appear to be a correlation.

In this study, adults were kept in seawater of varying relative acidity. After months in this environment, scientists induced spawning and monitored the offspring’s growth and survival.

“Results from the parent acidification trials look positive. They suggest adult mussels who experienced relatively acidic seawater have more tolerant offspring than adults without this exposure,” Dr. Ragg pointed out.

This research is facilitated by industry partnership and Cawthron’s comprehensive greenshell mussel breeding programme.

Through this programme, scientists could access excellent genetic coverage, studying greenshell mussel families from populations sourced from across New Zealand. These families were then carefully reared and harvested by Sanford, providing ideal research material.

These trials are part of the wider Coastal acidification – rate, impacts and management (CARIM) project, which aims to develop ocean acidification knowledge to enhance the protection and management of New Zealand coastal ecosystems.

CARIM is a NIWA-led collaboration, which includes partners Cawthron, University of Auckland, and University of Otago. It's a four year project, funded by the Ministry of Business, Innovation and Employment (MBIE).

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