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Adapt or die: Climate change puts pressure on NZ's paua

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Jeremy Wilkinson/Fairfax NZ

Paua have to be bigger than 125mm to be taken. Exports are worth around $60m a year, according to Seafood NZ.

Nothing can escape climate change, not even one of New Zealand's national treasures - the paua.

Scientists around the world are worried about the devastating impact acidification of the ocean is having on shellfish.

A new international study indicates mussel farming will not be commercially viable by 2100, and there are concerns the same could happen to the country's rainbow-shelled species.

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Paua commercial catch in the Marlborough region has decreased, but the stock is still not increasing.

A New Zealand fishery at the top of the South Island has seen the worst paua numbers in recent times. It's at the point where the Government has proposed either a 40 or 60 per cent reduction in commercial take in order to rebuild the fishery.

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The paua in the Nelson and Marlborough area, officially called 'PAU7', have suffered from man-made environmental effects, such as sedimentation from forestry activity run-off.

On top of that, climate change is brutal - sharp temperatures changes, ferocious storm surges, and the "acid attack" from within the ocean.

"This is something real, and mother nature cannot adapt, species cannot adapt that fast," says Paua Industry Council chief executive Jeremy Cooper.

Paua are sensitive creatures and acidification of the ocean, as a result of carbon dioxide emissions, makes it much harder for their shells to calcify.

If baby paua cannot grow their shells within a week, they die, Cooper said.

"It's the lack of larvae that's hurting us the most," he said.

"If the environmental effects keep increasing at the rate they are then no one's going to have any paua to catch."

With the sea heating up over the years, and forecast to rise further, paua populations could be forced to migrate to cooler parts of the country.

An MPI spokesperson said the fishery had dropped to 18 per cent of "unfished biomass" (unfished population). The target for a healthy fishery is 40 per cent.

If stock drops to 10 per cent, the minister has to step in and close the area.

"The reasons for low abundance in the fishery are due to several man-made and natural environmental factors, some which could not be controlled, as well as fishing-related factors," the spokesperson said.

Commercial harvesters agree with the Government - more of their quota will have to be shelved. It would mean they lose out on a product, but they say sustainability is more important.

Troubles in Australia in the past year provide a cautionary tale - a freak marine heatwave in Tasmania over the summer wiped out a vast number of abalone (the group of sea snails and molluscs that paua belongs to).

Temperatures rose about 4 degrees there, devastating the harvest and putting stress on the kelp that abalone eat.

Paua were "already living right at the edge of their temperature tolerance" in New Zealand, said Cawthron Institute shellfish scientist Norman Ragg.

"It doesn't take much to imagine the little bit of warming is going to drive that front south."

Paua thrive in colder water. North of Wairarapa, paua grow more quickly but are smaller, he said.

It was hard to "unpick" effects of climate change from warmer El Nino years, but it was clear that there had been more "unusual" seasons for New Zealand over the past 12 to 14 months, said Regg.

Ocean acidification was often called an "evil twin" of climate change, but the truth was it only placed more stress on top of existing problems.

"It's one more element of a rather bad equation," he said about the decline in PAU7.

The sum of that equation was unknown - that's why the Cawthron Institute, NIWA and other agencies were embarking on research into falling PH levels in New Zealand's coastal waters, and the effects on paua and green-lipped mussels.

There were no research programmes to specifically assess the potential effects of climate change on paua, MPI confirmed.

But perhaps the future didn't look so dire for paua, as species can adapt, pointed out Otago university associate professor Miles Lamare.

"You chuck it in an experiment, it's had no chance to adapt. Acidification is happening over a period of years and decades, and there may be a potential for these organisms to adapt."

Paua may be slower growing, smaller, or have weaker shells, but selective breeding could bring solutions for agricultural purposes.

The Labour Party's fisheries spokesperson, Rino Tirikatene, pointed to the PAU7 area as a good example of a "best-managed" commercial fishery.

"You wouldn't get a more active group who want to preserve and look after their fishery because it's their property right."

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