



TAFI Media Statement



TASMANIAN AQUACULTURE AND FISHERIES INSTITUTE

DATE: Wednesday 9 December 2009

ATTENTION: Chiefs of Staff, News Directors

PROFESSOR COLIN BUXTON Director

Lack of large lobsters lets urchins run wild

A new research paper shows that the removal of large lobsters from the environment has reduced the ability of kelp beds to respond to the onslaught of the spiny sea urchin in Tasmanian waters.

The paper, titled *Overfishing reduces resilience of kelp beds to climate-driven catastrophic phase shift* was recently published in the Proceedings of the National Academy of Sciences of the United States of America.

The authors of the paper are Dr Scott Ling, Professor Craig Johnson and Associate Professor Stewart Frusher of the Tasmanian Aquaculture and Fisheries Institute (TAFI), and Ken Ridgway, CSIRO Marine and Atmospheric Science.

Dr Ling said that, in the ocean realm, climate change and overfishing pose two of the greatest challenges to the structure and functioning of marine ecosystems.

“In eastern Tasmania, temperate coastal waters are warming at approximately four times the global ocean warming average, representing the fastest rate of warming in the Southern Hemisphere,” he said.

This has driven range extension of the ecologically important long-spined sea urchin (*Centrostephanus rodgersii*), which has started catastrophic overgrazing of productive Tasmanian kelp beds. This is leading to loss of biodiversity and important rocky reef ecosystem services.

Prof Johnson said coincident with the overgrazing is fishing of reef-based predators, including the spiny lobster (*Jasus edwardsii*).

“By conducting experiments inside and outside Marine Protected Areas we show that fishing, by removing large predatory lobsters, has reduced the resilience of kelp beds against the climate-driven threat of the sea urchin and increased risk of catastrophic shift to widespread sea urchin barrens,” he said.

Urchin barrens are areas where sea urchins have destroyed kelp by overgrazing.

The work shows that other human-induced stressors – in this case fishing – can exacerbate responses of ecosystems to climate change and limit the capacity of marine systems to adapt to climate change.

Prof Johnson said actions to reduce the risk of catastrophic phase shift in ecosystems are urgent in the face of ongoing warming and unprecedented levels of predator removal from the world’s oceans.

Director of TAFI, Professor Colin Buxton said that the Tasmanian rock lobster fishing industry and the Tasmanian Government’s fisheries managers were working collaboratively with scientists to evaluate the effectiveness of several management options.

“Healthy productive ecosystems are core to providing sustainable exploitable marine resources and it is encouraging that we are all working together to mitigate against further ecosystem degradation”.

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(Please note Dr Ling and Dr Johnson are working from a boat today and will be in and out of mobile range)

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