

# OCTOPUS CLUE TO RISK OF SEA-LEVEL RISE

Genetic evidence from an Antarctic octopus indicates that one of the world's major ice sheets – the West Antarctic Ice Sheet – could collapse if global temperatures keep climbing.



The research has been published in the international journal *Molecular Ecology* and reported on Britain's Natural Environment Research Council (NERC) 'Planet Earth' website.

Lead author of the international study was Australian geneticist Dr Jan Strugnell from La Trobe University.

The team analysed the genes of the Turquet's octopus, which lives in the Southern Ocean surrounding Antarctica. Their work was carried out during the Census of Antarctic Marine Life, from 2005 to 2010, and International Polar Year in 2007.

Dr Strugnell told 'Planet Earth': 'We were able to take advantage of much larger sample sizes than had been collected from Antarctica before. This presented us with a unique opportunity.'

She says adult Turquet's octopuses don't travel very much. They only move to escape from predators. However, the researchers found that the genes from octopuses from the Weddell and Ross Seas, 10,000 kilometres apart and on opposite sides of Antarctica, are startlingly similar.

'Those two seas are completely separate, so we expected the genetics of these octopuses to be quite different,' says Dr Strugnell.

However, because they are so similar, the researchers think this would only have happened if there had been a previous collapse

of the West Antarctic Ice Sheet which separates those two bodies of water.

The British web site reports that this collapse may have happened possibly as recently as 200,000 years ago, which suggests that scientists' concerns about the state of today's ice sheet could well be justified.

Dr Strugnell says when the climate was much warmer, sea levels would have been substantially higher, because less water would have been locked up as ice. In this situation, the Ross and Weddell Seas could have been connected.

'Ocean currents both facilitate and hinder the flow of genes,' she says. 'But the Antarctic Circumpolar Current almost certainly wouldn't have facilitated so much dispersal by octopuses that two populations would have almost identical genetics if the ice sheet had been in place.'

The British web site said while a previous study, in 2010, provided the first evidence of a trans-Antarctic seaway connecting the Ross and Weddell Seas, this was the first genetic evidence of such a connection.

Climate scientists are interested in ice sheets because they lock away fresh water that would otherwise be added to the oceans and raise global sea levels.

Of the world's three major ice sheets, they think the West Antarctic is most vulnerable to rises in global temperatures. Many say the ice sheet is inherently unstable and could collapse fairly quickly, predicting a sea level rise by as much as five metres.

## MORE INFORMATION

Further information on research opportunities in Genetics can be found at:

[latrobe.edu.au/scitecheng/areas-of-study/biological-sciences/genetics/research](http://latrobe.edu.au/scitecheng/areas-of-study/biological-sciences/genetics/research)