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Media Statement

For Immediate Release

KELLY TARLTON'S SCHOLARSHIP WINNER INVESTIGATES GROWTH RATES OF ANTARCTIC BIVALVES

Joanna Norkko, recipient of the Antarctica New Zealand / Kelly Tartlon's Underwater World and Antarctic Encounter Research Scholarship has just completed her first fieldwork season in Antarctica. Joanna is working on her Doctorate through the University of Auckland and is based at the National Institute of Water and Atmosphere (NIWA) laboratory in Hamilton. NIWA and the University of Auckland have a joint programme to support students studying aquatic and atmospheric sciences. Joanna's work is done under the auspices of the Institute of Aquatic and Atmospheric Sciences.

Dr Dean Peterson, Science Strategy Manager for Antarctica New Zealand, says, "These scholarships are extremely important as they give exceptional post graduate students the opportunity to join the Antarctic science community. Support from organisations such as Kelly Tartlon's allows the scholarship recipients to do research in Antarctica which, due to the logistical costs would not otherwise be possible".

Joanna's proposal concentrated on finding an indicator for the short-term growth rates of bivalves, specifically scallops (*Adamussium colbecki*) and geoducks (*Laternula elliptica*). The indicator she is using is the ratio between RNA and DNA. Scientists assume that the amount of DNA is constant, thus measuring the changes in RNA will indicate how fast the animal is growing. The more RNA that is present, the faster the animal is growing. Due to the cold temperatures that the scallops live in their normal growth rate is extremely slow. A scallop that is seven centimetres long would be around 100 years old.

Joanna arrived in Antarctica on the 15th of October and returns to New Zealand around the 23rd of November having spent time in field camps at Dunlop Island, Spike Cape, New Harbour and Cape Evans in McMurdo Sound. The original location for the work included Granite Harbour however over sea ice travel proved to be risky due to the amount and size of cracks in the ice. The camps included both polar tents and wannigans (heated units on sled bases), which, were pulled to the camp locations by bulldozer. Samples were obtained by divers diving through holes drilled in the sea ice, which is between 2 and 4 metres thick.

The technique Joanna is using extracts the total amount of RNA and DNA from the muscle tissue. Samples of adductor muscles (the muscle that holds the two halves of a scallop shell together) are taken from the bivalves and snap frozen in liquid nitrogen for transport to the laboratory in New Zealand. Once in New Zealand the muscle tissue is freeze-dried and the RNA and DNA is extracted.

Joanna worked closely with a marine biology team from NIWA who are investigating benthic (bottom dwelling) communities under McMurdo Sound, Antarctica. The NIWA team have been investigating population differences in benthic communities in various sites in McMurdo Sound for the past two seasons. If the RNA/DNA growth indicator is correct then Joanna's work will tell scientists whether growth rates in bivalves are different in diverse locations. If the rates are different Joanna will work with the NIWA team to consider possible reasons for the different rates. Possible causes include the extent and depth of sea ice, which changes the amount of light entering the seawater. Changes in light effects the amount of plankton available as food for the bivalves. Lower levels of available food would then explain changes in growth rates.

Joanna expects that the analysis stage of her proposal will take at least two months. The results of both the analysis and her fieldwork will form part of her PhD Thesis through the Auckland University School of Biological Sciences.

Joanna says, "without the support of Kelly Tarlton's Underwater World and Antarctic Encounter I would not have had the opportunity to travel to Antarctica and work in the field with the NIWA team. Being able to do exciting science in an extreme environment has been a highlight. I have had a fantastic experience and hope to return to Antarctica to do further scientific work".

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