

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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ATTENTION: Chiefs of Staff, News Directors



Dark prediction for Antarctic ecosystem

Life in Antarctica is likely to change dramatically during the next 100 years, with the microscopic plants that sustain the ecosystem struggling to survive the forecast warmer water temperatures in winter, UTAS scientists predict.

Research into Antarctica's microscopic plants are among works by more than 700 scientists and associated staff working in the field of marine and Antarctic studies now under the university's new institute, the Institute for Marine and Antarctic Studies (IMAS).

IMAS will integrate the well-established Institute of Antarctic and Southern Ocean Studies (IASOS) and the Tasmanian Aquaculture and Fisheries Institute, and collaborate with the Tasmanian Government, CSIRO, the Antarctic Climate and Ecosystems Cooperative Research Centre, the Integrated Marine Observing System, the Australian Antarctic Division and industry stakeholders.

UTAS Pro Vice-Chancellor (Research) Professor Jo Laybourn-Parry said IMAS will officially commence on January 1 next year.

"This is a very exciting time for the university and will consolidate expertise from different faculties and research centres in order to generate increased research activity in marine and Antarctic studies and provide a stronger mechanism for UTAS to engage with state, national and international players in the field," Prof Laybourn-Parry said.

IASOS director, Professor Andrew McMinn is the chief investigator of a study looking at how temperature changes impact the survival of microscopic plants, called phytoplankton, which live in the surrounding ocean and within the ice of Antarctica.

Prof McMinn's investigations have found evidence that these microscopic plants will not survive winter if the water is warmer.

"We're talking about the microscopic plants which underpin everything in this ecosystem. If there are no plants, then there are no krill, finfish, whales, seals or penguins," Prof McMinn said.

"Sea temperatures in Antarctica remain at -2°C throughout most of the year, which is cool enough for the organisms to survive the winter on the accumulated energy reserves that they obtained from the sunlight of the warmer seasons.

"If the ocean becomes warmer during the dark winter, the plants will use their energy reserves more quickly and will not survive as well to produce the large phytoplankton blooms that feed the returning animals in summer."

Professor Laybourn-Parry is the chief investigator for a project studying adaptations of phytoplankton that live in both freshwater and salt lakes on the Antarctic continent.

Prof Laybourn-Parry has found that the phytoplankton's ability to source energy and nutrients using both plant and animal-like methods may be the key to their survival during climate change.

“There are no or few zooplankton and no fish in these lakes, so the big question is how is carbon, the basic building block of life, cycled in Antarctic lakes and how does life survive in the winter darkness when photosynthesis is not possible,” Prof Laybourn-Parry said.

“We have found that nutritional versatility is a major key to survival, with many of the phytoplankton using both plant and animal-like nutrition during the annual cycle.”

One of the dominant phytoplankton groups in Antarctic lakes are Cryptophytes, which not only carry out photosynthesis, but can also obtain energy to survive when there is insufficient sunlight by eating bacteria.

Ocean and lake phytoplankton form the base of the Antarctic food chain and both these research projects will help scientists better understand the impact of increased temperatures in Antarctica during the long, dark polar winter and the subsequent key primary production season in summer.

This research on Antarctic phytoplankton was released at today's launch of the UTAS publication, *Research to Reality*.

Additional research projects in marine and Antarctic studies are featured in the latest edition of *Research to Reality*, which is available online at www.research.utas.edu.au from Wednesday, 4 November, 2009.

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