MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA
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ATTENTION: Chiefs of Staff, News Directors

Conference covers marine animals in a changing world

Underwater animals are the focus of an international conference at the University of Tasmania this week.

The 13th International Echinoderm Conference was opened by His Excellency, the Governor of Tasmania, Peter Underwood and will run until Friday 9 January. The Conference is held every three years and allows scientists and students from around the world gather to showcase their research into echinoderms.

The theme of the conference is "Echinoderms in a Changing World". Echinoderms are creatures like sea cucumbers, sea stars (star fish), sea urchins, brittle stars and feather stars.

Several key speakers are available on Thursday 8 and Friday 9 for interview to talk about conference highlights, which include:

- ***The legacy of ocean climate and chemistry change in the echinoderm fossil record***

Professor James H. Nebelsick, Institute of Geosciences, Tübingen, Germany

Reconstructing past climate and chemistry conditions is important for assessing the rate and scope of human-induced change in the oceans. The geological record shows clearly that over 100s of millions of years the earth's climate has been much warmer (and colder) than it is today and that ocean chemistry has also been very different. The fossil record shows how animals and plants have responded to these fluctuations in climate and environment. However, changes in climate and ocean chemistry through geological time have been gradual, with even the most rapid changes occurring over millions of years. Thus, the way that marine life has responded to previous changes in climate and chemistry cannot tell us much, if anything, about how marine life will respond to current trends of ocean warming and acidification because it is happening at a rate unprecedented in the history of the earth.

- ***Metal contaminants: A threat to echinoderms in the 21st century?***

Professor Philippe Dubois, Marine Biology, Université Libre de Bruxelles, Belgium

A critical question is how the warming and acidification of the oceans affects the response of marine animals to other important stressors such as heavy metal pollution that is so pervasive on many coastlines of the world. There is good news and bad. The positive news is that changes in ocean chemistry are unlikely to cause accelerated release of heavy metal pollutants into seawater from the sea floor. However, it is nonetheless clear that ocean warming and acidification accelerate the deleterious effects of metal pollutants on larval and adult echinoderms. In other words, the combined effects of climate change and heavy metal pollution are worse than the sum of the effects on their own.

- ***Ocean acidification and echinoderms: How bad will it be?***

Dr Mary Sewell and Dr Gretchen Hofmann, University of Auckland, NZ, and UC Santa Barbara, USA.

Acidification of oceans as a result of increased carbon dioxide in the atmosphere will be more pronounced in cold waters, particularly the southern ocean, than in subtropical and tropical waters. Predicted ocean acidification through to 2100 will be have significant negative effects on the morphology, survival, growth and physiology of echinoderm larvae in the Southern Ocean and Antarctica. Brooding species – those that keep their young in pouches while they develop – are likely to be particularly adversely affected. The depth range of many species will be drastically reduced as changes in ocean chemistry reduce the maximum depth at which species can survive and changes in surface temperature increase the minimum depth for survival. For some species, these changes point to local extinctions.

- ***Identifying management options to minimise risk of destruction of seaweed beds in Tasmania by sea urchin overgrazing***

  Professor Craig Johnson, John Sanderson, Scott Ling, Caleb Gardner, Stewart Frusher, Kevin Redd and Hugh Pederson. TAFI, University of Tasmania, Australia.

Recent establishment of the long-spined sea urchin in Eastern Tasmania is a direct consequence of climate change. Formation of sea-urchin barrens as a result of overgrazing by this species is currently the single largest threat to the integrity of reef habitat on the east coast of Tasmania. Barrens formation results in local collapse of biodiversity, production and key fisheries like abalone and rock lobster, and so poses a major challenge to managers. Current research is focussed on identifying options for managers to respond to the threat of urchin barrens in Tasmania. Increasing the

number of large lobsters in shallow waters is emerging as a promising solution. Large lobsters are they key predator of these sea urchins in Tasmania.

- ***Human-facilitated reproductive hotspots of an introduced seastar***

Scott Ling, Craig Johnson, School of Zoology, Craig Mundy, and Jeff Ross. TAFI, University of Tasmania, Australia.

Opportunities to minimise the risk of an invasive species spreading often rest with limiting its reproductive output. Within the degraded Derwent Estuary the introduced Northern Pacific seastar is most abundant around wharf and pier structures where it is heavily subsidised by mussels, which grow on pylons and fall to the seafloor. These human-facilitated hotspots of reproductive output have been important in the seastars' spread beyond the Estuary. Management action targeting reproductive hotspots has the potential to significantly reduce the risk of further spread of this invasive and destructive species.

- **Integrating electronic technologies in ecological field studies: Assessing movement, habitat use and behaviour of lobsters as key predators of sea urchins in eastern Tasmania**

Hugh Pederson, Craig Johnson, Scott Ling and Craig Sanderson. TAFI, University of Tasmania, Australia.

Rock lobsters have been identified as an important predator of the invasive long spined sea urchin in eastern Tasmania. A mass translocation of large rock lobsters into barrens habitat, where sea urchins have overgrazed seaweeds, and adjacent seaweed bed was undertaken to examine predation of sea urchins by lobsters. Movement and habitat utilisation of translocated lobsters has been determined using acoustic telemetry to track individual lobsters as they move through various sea floor habitats. The data have provided an unprecedented picture of the movement and behaviour of large predatory lobsters on and around sea urchin barrens. The state of art software to visualise these behaviours on a 3-dimensional graphic of the seafloor has been developed by a company in Hobart.

For more information/interviews, please contact conference convenor, Professor Craig Johnson of the UTAS School of Zoology: 0418 535 443

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