

The Southwest Whale Ecology Study

The Southwest Whale Ecology Study (SouWEST) is a newly established collaborative science program which integrates the research expertise of Western Whale Research (WWR), CMST, and the community outreach experience of the Dunsborough Coast and Land Care (D-CALC) group.

SouWEST aims to:

1. Ensure the long-term conservation of whales and their critical habitats in Southwestern Australia.
2. Improve the scientific

foundation for environmental management and species protection in the region.

3. Build on scientific and community observations made during the past fifteen years, by applying innovative scientific and advanced statistical modelling methods.

SouWEST is officially running its second humpback and blue whale season in Geographe Bay this year. During its first year (2010), the Dunsborough Coast and Land Care group



Blue whale surfacing

(D-CALC) in conjunction with a team of seven manning a theodolite station from CMST, collected detailed information on whale movements and behaviour. Collaborators from Flinders and Macquarie University collected biopsy samples from Western Whale Research's vessel "Bluey". Chris Burton (Western Whale Research) collected photo-

identification information of whale flukes and dorsal fins, and CMST deployed a noise logger to record humpback and blue whale song. The data collected is being used to obtain a greater understanding of the importance of Geographe Bay to migrating and resting whales.

'Immerse' Yourself



Immerse exhibition at the Western Australian Museum

The Western Australian Museum is currently 'exploring the deep' with its 'Immerse' exhibition at the Maritime Museum, Fremantle

from September 2011 until March 2012. The exhibition showcases the innovative ways in which humans work underwater and the evolving technology used to assist them. CMST has contributed to several of the displays, which highlight the use of acoustics in deep sea research and industry, and has donated the 'Papoose' submersible, a towfish and a sidescan sonar for the duration of the exhibition. The exhibition immerses the visitor in an underwater world, using contemporary technological displays. The gallery is a dark and watery interactive space which the visitor can explore with the assistance of the subsea technology on display.



CMST's 'Papoose' ROV model at the Immerse exhibition

HMAS Sydney II in 3D

A series of stereoscopic 3D images of the wreck of the Australian warship HMAS Sydney II have been extracted by CMST Research Fellow Andrew Woods. The images provide a stunningly realistic depiction of select areas of the wreck site and debris field. The HMAS Sydney II was sunk by the German raider HSK Kormoran off the coast of Western Australia in 1941. When the wreck was discovered in 2008, on an expedition led by David Mearns, it was extensively photographed in 2D. "I reviewed the image archive from the survey, which consists of over 1400 images,

to find suitable 2D image pairs," said Woods. "A rectification and image warping process was then applied to align the image pairs into true stereoscopic 3D images." The images have been output to the new Blu-ray 3D format and can be viewed on a wide range of new high-quality 3D displays.

PHOTO © 2008 THE FINDING SYDNEY FOUNDATION UNDERWATER SEARCH PHOTOGRAPHY BY DAVID MEARNS.



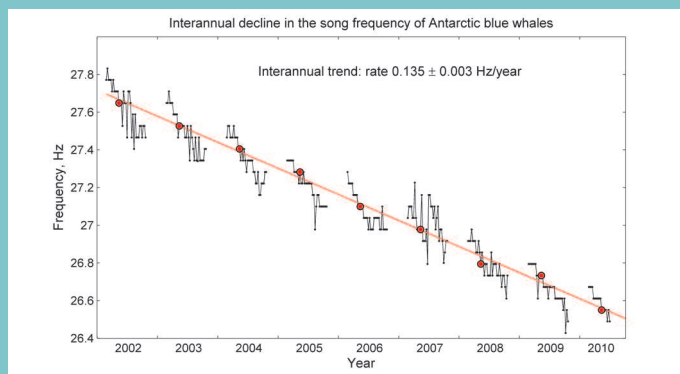
A shoe from the debris field of the HMAS Sydney II which can now be seen in 3D (shown in 2D here)

Changes in Blue Whale Call Frequency

CMST researchers Drs. Chandra Salgado Kent, Rob McCauley and Sasha Gavrilov in collaboration with Dr. Jason Gedamke (NOAA Fisheries), Dr. Joy Tripovich (University of NSW) and Chris Barton (Western Whale Research) have found a steady interannual decline in vocal frequencies of two blue whales species, pygmy and Antarctic, found in the ocean waters around Australia. This finding was made using nine-

year datasets of continuous passive acoustic observations from the Cape Leeuwin CTBT station in Western Australia and from two underwater acoustic observatories of the Integrated Marine Observing System deployed in the Perth Canyon and off Portland in Victoria. The results confirm a hypothesis by McDonald *et al.* about a worldwide decline in tonal frequencies of blue whale songs. Fundamental frequency trends

GRAPHIC: ALEXANDER GAVRILOV



Interannual decline in the call frequency of Antarctic blue whales of around -0.12 and -0.135 Hz/year for pygmy and Antarctic blue whales respectively were measured for calls from hundreds to thousands of whales. Moreover, high-resolution spectra of

underwater noise produced by concurrent calls by many remote whales revealed a more rapid decrease in song frequency during each season.

CMST Welcomes New Postgraduate Students

- ▶ Sira Tecchiato commenced her PhD this year in the Geology Department with Dr. Iain Parnum (CMST) as her co-supervisor. Her project, Comparison of Geomorphic Evolution, Sedimentation and Benthic Environments of Two Contrasting Carbonate Systems of the Western Australian Shelf focuses on two areas of WA, Shark Bay and Geraldton.
- ▶ Sylvia Osterrieder is commencing her PhD on the development of techniques for the detection of dolphins using passive acoustics. She graduated in 2009 with a Diploma in Biology (equivalent to a Masters) at the University of Rostock, Germany. She will be supervised by Dr.

Chandra Salgado Kent (CMST) and Associate Professor Monique Gagnon (Department of Environment and Agriculture, Curtin University). She also has support from Dr. Patrick Guay at Victoria University and Professor Bernd Wuersig, Director of the Marine Mammal Research Program at Texas A&M University in the US.

CMST Olympic Sailing

CMST senior research fellow Dr. Tim Gourlay is currently training for the world one-design (RS:X) windsurfing championships to be held in Fremantle this December. Tim won the 2010 Australian championships, and recently represented Australia at the Olympic test event in England. Depending on his world championship placing, he hopes to represent Australia at the 2012 Olympics. Tim's return to racing has added a new dimension to the sailing

research at CMST, with some interesting student sailboard aero-hydrodynamics projects, and the upcoming publication of a journal article on the RS:X sailboard.



PHOTO: NICOLA GOURLAY

Tim Gourlay on the Swan River

PhD Graduates 'Doff' Their Caps

On the 27th August, CMST's Miles Parsons, Daniel Veen and Grant Pusey attended their formal Curtin University graduation ceremony at the Perth Convention Centre. Since finishing their degrees Dr. Veen has taken a job at Scitek in the UK and Dr. Pusey has become a post-doctoral fellow at the University of Hawaii. Dr. Parsons, it seems,

refuses to leave CMST. After a night of celebrating two of the doctors completed their less formal graduation at the Perth City to Surf.

PHOTO: ALEGDUNGAN



PHOTO: MILES PARSONS



Drs. Veen, Pusey and Parsons (opposite, left to right) after receiving their PhDs and after formally becoming 'nutty professors' in the Perth City to Surf (above)

The Centre for Marine Science & Technology (CMST) conducts world-class consulting, research, development and education for the marine industry and for government agencies.

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