

Behavioural Response of Australian Humpback Whales to Seismic Surveys (BRAHSS)

In 2010, the CMST, in collaboration with several other groups, began a four-year experimental program to determine how great whales respond to seismic surveys, one of the largest experiments of its kind, in the world. Surveys were run off Peregrine Beach on the Sunshine Coast using a 20 cui air-gun on the southbound humpback migratory stream. Repeated off Peregrine last year, using

an air-gun array of 20 to 440 cui, the study was designed to give fine-detail behavioural responses of humpback whales to air-gun signals of constant level or ramped up using a 4-6 dB step between stages. Analysis of these data is to be conducted this year before work commences on the west coast in 2013, comparing the response of west Australian versus east Australian humpbacks, which

PHOTO: ROB MCCOULLEY



RV Whalesong

are different populations with different seismic survey exposure histories. This will be conducted between the Murion and Barrow Islands, to be repeated in 2014 using a full-scale seismic source to verify predictions made using the smaller sources. Funded

by the Joint Industry Program, the University of Sydney and University of Queensland are two other prominent parties in the collaboration, with the air-gun experiments conducted primarily from the RV Whalesong of the Centre for Whale Research.

CMST's Erbel Infusion

CMST's new Director, Dr. Christine Erbe arrived in Perth to a warm welcome in March and is already making waves of progress. Before joining CMST, Christine was the director of a marine acoustic consulting company, prior to which she worked for the Department of Fisheries & Oceans Canada. With a background in physics and engineering, Christine's research focuses on underwater acoustics, marine soundscape analysis, marine mammal bioacoustics, noise effects on marine animals,



Dr. Christine Erbe

noise measurement and modelling, and environmental impact assessments.

In November last year, after 23 years with CMST, outgoing Director Kim Klaka began his farewells with an event hosted by CMST, where Kim was wished well in his future endeavours and was even supplied with a model vessel for him to sail off into the sunset. Like other past CMSTites, luckily Kim lingers, advising on many naval architecture projects.



PHOTO: ANDREW WOODS

Kim Klaka at his formal farewell event

Order of Australia

In January of this year, CMST's Emeritus Professor John Penrose was named a Member of the Order of Australia (AM) for service to the community through the Volunteer Task Force (VTF) of WA, and to education in the fields of marine science & physics.

John co-founded the VTF in 1970 with around 60 volunteers assisting frail-aged and younger people with a disability. In 1985, John became founding Director of the CMST and also Associate Editor of the *Journal of Oceanic Engineering* (1989-2001). He has been the National Project Manager of



John Penrose in the Antarctic (1991)

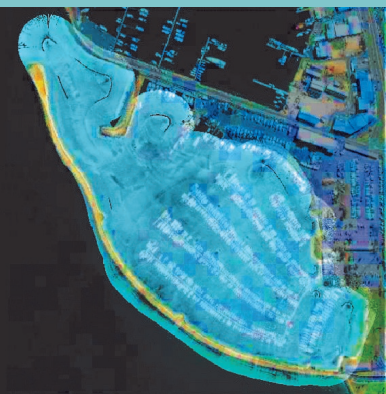
the Coastal Water Habitat Mapping Project (2003-2006) and a member of numerous environmental advisory groups. Heartfelt congratulations and thanks go to Emeritus Professor John Penrose from all the members and friends of the CMST.



Five Years at the Fremantle Sailing Club

A flourishing partnership between the CMST and the Fremantle Sailing Club (FSC) has now spanned five years. The collaboration has several successful projects under its belt, including student projects on dinghy performance, harbour water quality through the biology of snails and a joint submission

for a sailing research grant which was awarded \$10k. The latest project, an intriguing harbour seabed survey, conducted by Iain Parnum and Kim Klaka, produced some revealing images of what's going on under the boats of the yacht club. But it hasn't all been science, CMST have also helped to upgrade a number of the facilities at the yacht club to the benefit of all. On the 15th March, the staff and students of CMST were able to showcase the projects for members of the FSC at a presentation evening at the sailing club highlighting some of the acoustic and stereo video research conducted at the centre.



Sidescan imagery of FSC

Courses and Workshops

In May, CMST presented an intensive week-long ship seakeeping course to DSTO staff in Melbourne. The course started with a refresher on the basics of seakeeping, before moving on to the state-of-the-art in ship motion prediction, hull design and motion control. A full-scale demonstration seakeeping trial was also run and analysed, and the latest trends in trial equipment discussed.

Also in May, a ship stability and motions half-day course was presented to engineers at Fugro-TSM in Perth. This

course covered the basic concepts of ship stability and wave-induced motion, and was intended to give participants a better understanding of the inputs and outputs of commercial ship motion software.

As part of the 'Acoustics 2012' conference, to be held at the Esplanade Hotel, Fremantle, in November, CMST will be running an 'Underwater passive acoustic monitoring and impacts of underwater noise on marine fauna' workshop. The workshop will include three tutorial sessions on underwater acoustics,

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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Sounding out the Northern Scalefish

A recently commenced CMST study aims to gain a more comprehensive picture of one of Western Australia's largest and most inaccessible fisheries. A collaboration between the CMST, commercial fishers and the Department of Fisheries (DoF), WA, will trial an acoustic survey program in the Northern Demersal Scalefish Fishery (NDSF). The NDSF supplies highly prized species including the red emperor and goldband snapper. It is hoped that the partnership of CMST's acoustic experience and scientific equipment, the commercial fishers' knowledge and time at sea,



Fishers raising traps in the NDSF

and the DoF's historical data and experience will help mitigate the logistical problems with acquiring long-term consistent data from such a vast and remote area. The project is funded by the Fisheries Research and Development Corporation (FRDC) and Shell Development.

Student Activities

► New CMST PhD student Michael Caley is developing a dynamic underwater acoustic channel simulator to improve the effectiveness of point-to-point underwater acoustic data communication. The focus of his study is to understand the transient distortion of a transmitted signal by highly variable acoustic reflections from the underside of sea surface waves, and how this

may be efficiently modelled to enable real-time computation. He is being supervised by Alec Duncan and Yue Rong from Curtin, and Alessandro Ghiotto at L3 Nautronix.

► Physics honours student Eamonn Colley is assessing the suitability of using OpenFOAM software for two different applications, namely flow around a boat propeller and flow around a ship in shallow water.

terminology, metrics, the marine soundscape, ambient noise, anthropogenic noise, biological sources, sound propagation, measurement technology and methods,

noise modelling and prediction, noise impacts on marine fauna (mammals, fish, invertebrates), mitigation, and environmental management and policy.

CMST Lunchbox Seminars

CMST holds weekly seminars, with speakers from interstate and overseas, as well as CMST staff.

The schedule of seminars is listed on our website: www.cmst.curtin.edu.au/seminars

If you would like to receive email updates regarding CMST seminars, simply send an email to the following address: seminars@cmst.curtin.edu.au