

PhD Scholarships in Antarctic krill acoustic research –IMR & University of Tasmania

Funding for a PhD student scholarship has been obtained through an ARC grant to study Antarctic krill. Antarctic krill are an important species in the Southern Ocean supporting most of the Antarctic birds and mammals. A sustainable krill fishery is developing with krill products used in aquaculture and increasingly for human consumption. A new omega 3 krill oil industry has emerged and is rapidly expanding. Our aim is to understand and predict the factors governing oil levels and the biochemical composition in krill in an ecological perspective, including impacts of distribution, growth, reproduction and recruitment. Our research will also assess the possible effects of climate change on krill. Outcomes of this research will be used to manage the expanding krill fishery.

The scientific elements of the PhD are planned to include:

1. Experimental work over four seasons to investigate how the acoustic characteristics of krill are affected by fat content, maturation status, and behavioural characteristics
2. Investigation of the relative contribution of krill oil and body structures to the acoustic characteristics
3. Investigation of krill distribution and stratification in the Antarctic over four seasons in relation to the conclusions from item 1 and in relation to krill lipid studies

The PhD student will be involved in collecting acoustic and biological data during commercial fishing and scientific surveying of krill. The student will receive special training in acoustics which will be the main tool for mapping krill density distributions in space and time. Uncovering acoustic backscattering properties of krill throughout their life cycle will be done in controlled laboratory experiments as well as through *in situ* observation, with an emphasis on utilising the potential of broadband acoustic techniques. The student will work together with another PhD student in the project to link acoustic properties and behavioural characteristics to the observed variation in lipid contents or other physiological and biochemistry properties of the krill. The students will have access to krill experimental facilities and various sophisticated acoustic field equipment.

The PhD student will be based at the Institute of Marine Research (IMR) in Bergen, Norway and at the Institute for Marine and Antarctic Studies (University of Tasmania, UTAS) and CSIRO, both in Hobart, Australia. They will be supervised by a research team led by Patti Virtue (UTAS), and includes Olav Rune Godø and Gavin Macaulay at IMR and Steve Nicol, Emily Hilder (UTAS), Peter Nichols (CSIRO), So Kawaguchi (Australian Antarctic Division), Nils Hoem (Aker BioMarine, Norway) and Susan Bengston Nash (Griffith University). The student will spend time in Bergen and Hobart and take courses both at University of Bergen and at UTAS. The successful applicant will be a PhD candidate at the University of Tasmania, Australia.

Selection criteria of candidates:

- An Honours (1ST or 2A) degree, Master's degree (Distinction average) or equivalent in a relevant discipline (e.g., physics, statistics, cybernetics and biological sciences);
- Some basic knowledge in acoustics is desirable, and an interest to develop and apply acoustic technology to address biological questions;

- Ability and experience in working both independently and as part of an interdisciplinary team;
- Strong written and oral communication skills, including an ability to publish and present results of scientific research and to communicate effectively in a variety of scientific and non-scientific forums.

Please send expressions of interest in a cover letter and comprehensive CV to: Dr Olav Rune Godø (olavrune@imr.no). Non-Australian students are encouraged to apply for a UTAS International Postgraduate Research Scholarship. For more information about international scholarships available through University of Tasmania, visit:
<http://www.utas.edu.au/research/degrees/scholarships/international-scholarships>