

Utilising innovative fishing technology to address key questions on the biology of Antarctic krill

^{1,2} Patti Virtue, ¹ Stephen Nicol, ^{2,3} So Kawaguchi, ⁴ Nils Hoem, ^{1,5} Peter D Nichols

¹Institute for Marine and Antarctic Studies, University of Tasmania, Private Bag 129, Hobart 7001, Tasmania, Australia

²Antarctic Climate & Ecosystems CRC, Private Bag 80, Hobart Tasmania 7001, Australia

³Australian Antarctic Division, Channel Highway, Kingston Tasmania 7050, Australia

⁴Aker BioMarine, P.O Box 496, NO-1327 Lysaker, Norway

⁵CSIRO Oceans and Atmospheric, Food and Nutrition, GPO Box 1538, Hobart 7000, Tasmania, Australia

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. The latter has emphasis on the unique properties of krill oil which includes high levels of the health-benefitting omega-3 long-chain ($\geq C_{20}$) polyunsaturated fatty acids, including EPA and DHA and also high relative levels of phospholipids in the krill oil. A new omega-3 krill oil industry has emerged and is rapidly expanding. We are working together with the krill fishery to predict the factors governing oil levels and the biochemical composition in krill, including in terms of lipid class and fatty acid composition, which will help us understand growth, reproduction and recruitment. The collection of basic biological information on Antarctic krill, that traditional fisheries take for granted, is expensive and challenging because of their complicated life history and difficult habitat. Working with the krill fishing industry, we now have access to samples that are collected continuously all year over several years which constitutes a sampling effort that far outweighs all scientific endeavours we have undertaken to date. Establishing strong links between research, industry and management will ensure protection of this keystone species in the Antarctic ecosystem.

Keywords: krill, fisheries, lipid, omega-3 long-chain polyunsaturated fatty acids

Contact Author: Patti Virtue email: virtue@utas.edu.au