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TITLE: Impact of climate change on Antarctic krill

AUTHOR: ['Hauke Flores', 'Angus Atkinson', 'So Kawaguchi', 'Bjørn A. Krafft', 'Gennadi Milinevsky', 'Stephen Nicol', 'Christian S. Reiss', 'Geraint A. Tarling', 'Rodolfo Werner', 'Elisa Bravo Rebolledo', 'V Cirelli', 'Janine Cuzin-Roudy', 'Sophie Fielding', 'Jürgen Groeneveld', 'Matilda Haraldsson', 'Al Lombana', 'Enrique Marschoff', 'Bettina Meyer', 'Evgeny A. Pakhomov', 'Emilce Rombolá', 'Katrin Schmidt', 'Volker Siegel', 'Mathias Teschke', 'H. Tonkes', 'Jean?Yves Toullec', 'Philip N. Trathan', 'Nelly Tremblay', 'Anton P. Van de Putte', 'J.A. van Franeker', 'Thorsten Werner']

ABSTRACT:

MEPS Marine Ecology Progress Series Contact the journal Facebook Twitter RSS Mailing List Subscribe to our mailing list via Mailchimp HomeLatest VolumeAbout the JournalEditorsTheme Sections MEPS 458:1-19 (2012) - DOI: https://doi.org/10.3354/meps09831 FEATURE ARTICLE: REVIEWImpact of climate change on Antarctic krill H. Flores1,2,*, A. Atkinson, S. Kawaguchi, B. A. Krafft, G. Milinevsky, S. Nicol, C. Reiss, G. A. Tarling, R. Werner, E. Bravo Rebolledo, V. Cirelli, J. Cuzin-Roudy, S. Fielding, J. J. Groeneveld, M. Haraldsson, A. Lombana, E. Marschoff, B. Meyer, E. A. Pakhomov, E. Rombolá, K. Schmidt, V. Siegel, M. Teschke, H. Tonkes, J. Y. Toullec, P. N. Trathan, N. Tremblay, A. P. Van de Putte, J. A. van Franeker, T. Werner 1Institute for Marine Resources and Ecosystem Studies (IMARES), 1790 AD Den Burg (Texel), The Netherlands 2Alfred Wegener Institute for Polar and Marine Research, 27570 Bremerhaven, Germany *Email: hauke.flores@awi.deComplete list of author addresses given in Appendix 1 ABSTRACT: Antarctic krill Euphausia superba (hereafter ?krill?) occur in regions undergoing rapid environmental change, particularly loss of winter sea ice. During recent years, harvesting of krill has increased, possibly enhancing stress on krill and Antarctic ecosystems. Here we review the overall impact of climate change on krill and Antarctic ecosystems, discuss implications for an ecosystem-based fisheries management approach and identify critical knowledge gaps. Sea ice decline, ocean warming and other environmental stressors act in concert to modify the abundance, distribution and life cycle of krill. Although some of these changes can have positive effects on krill, their cumulative impact is most likely negative. Recruitment, driven largely by the winter survival of larval krill, is probably the population parameter most susceptible to climate change. Predicting changes to krill populations is urgent, because they will seriously impact Antarctic ecosystems. Such predictions, however, are complicated by an intense inter-annual variability in recruitment success and krill abundance. To improve the responsiveness of the ecosystem-based management approach adopted by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), critical knowledge gaps need to be filled. In addition to a better understanding of the factors influencing recruitment, management will require a better understanding of the resilience and the genetic plasticity of krill life stages, and a quantitative understanding of under-ice and benthic habitat use. Current precautionary management measures of CCAMLR should be maintained until a better understanding of these processes has been achieved. KEY WORDS: Euphausia superba · Climate change · Sea ice · Ocean acidification · UV radiation · Fisheries management · CCAMLR · Southern Ocean Full text in pdf format NextCite this article as: Flores H, Atkinson A, Kawaguchi S, Krafft BA and others (2012) Impact of climate change on Antarctic krill. Mar Ecol Prog Ser 458:1-19. https://doi.org/10.3354/meps09831Export citation RSS - Facebook - Tweet - linkedIn Cited by Published in MEPS Vol. 458. Online publication date: July 03, 2012 Print ISSN: 0171-8630; Online ISSN: 1616-1599 

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