



Ammonium excretion by Antarctic krill *Euphausia superba* at South Georgia

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ABSTRACT: Excretion by Antarctic krill *Euphausia superba* (hereafter "krill") is measured typically in small containers of filtered seawater for 12-24 h, which may cause a reduction of swimming, feeding, and metabolism. If the maximum published excretion rates are realistic, krill would be a major source of regenerated nitrogen in the South Georgia area because of their high biomass there. Because literature values are variable, depending on season, feeding history and the experimental set-up, our aim was to measure both a mean and an upper value of krill excretion rate at South Georgia. Experiments were on juvenile krill during October-November 1997 and January 1998. Freshly caught animals excreted 1.6-2.8 nmol ammonium mg⁻¹ dry mass h⁻¹; within the fivefold range of summer literature values for equivalent-sized krill. Maximum rates were determined on acclimated krill in large containers during alternating 1-d periods with and without food. During the feeding periods in saturating food concentrations, the mean daily ration was ~32% of body carbon d⁻¹ and excretion was 210% (October-November) and 280% (January) of the values for freshly caught krill. This equates to a maximum loss of ~2% of body nitrogen d⁻¹. Excretion rates decreased during the 1-d periods without food, and rates during the feeding periods were ~30% higher than in those without food. This suggests that the lack of feeding in traditional experiments leads to roughly 30% underestimates of excretion rate. These results help to set some limits on ammonium production rates of South Georgia krill over regional scales. Our calculations suggest that the role of krill in this varies between habitats to the west of the island (insignificant) and those in the east (significant).

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