

## FEEDING BEHAVIOR OF THE ANTARCTIC KRILL, *EUPHAUSIA SUPERBA* DANA

### I. REACTION TO SIZE AND CONCENTRATION OF FOOD PARTICLES

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The ingestion rate of the Antarctic krill, *Euphausia superba*, Dana, was estimated using concentrations of natural particles between  $0.13 \times 10^9$  and  $29.53 \times 10^9 \mu\text{m}^3/\text{l}$ . Rates were significantly lower at concentrations less than  $2 \times 10^9 \mu\text{m}^3/\text{l}$ . In large krill ( $>81.6$  mg dry wt.), no saturation of ingestion rate was seen; the rate increased linearly with increasing particle concentration over the range of food concentration used. At the average particle concentration of natural seawater ( $0.40 \times 10^9$  to  $1.74 \times 10^9 \mu\text{m}^3/\text{l}$ ), small and medium krill ingested slightly more than their daily minimum carbon requirements, but large krill did not. There is possibility that, at high food concentrations, krill can ingest a large amount of food in a short period. Krill feed on a wide variety of organisms, but larger particles are always preferentially ingested. Cannibalism was frequently observed. Individuals lived for as long as 40 days without food. This adaptive feeding behavior is believed to be important to the success of krill in the Antarctic Ocean. (p. 117-124).

## ORGANIC CHEMICAL COMPOSITION OF FECAL PELLET OF THE KRILL *EUPHAUSIA SUPERBA* DANA

### I. LIPID COMPOSITION

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The fecal pellets produced by the large and small krill under seminatural conditions were analyzed for lipid class compositions and fatty acid compositions. Lipid compositions of the fecal pellet were compared with those of the plankton and the particulate matter.

The fatty acid compositions of the fecal pellet produced by the large and small krill were quite different from each other. By comparing the lipid compositions of the large and small krill fecal pellets with those of the plankton and the particulate matter, it was suggested that the main source of the lipid materials of the fecal pellet produced by the small krill was the diatom, whereas that of the lipid materials of the large krill fecal pellet was a mixture of the lipid materials of the phytoplankton, diatoms, and the nanozooplankton, choanoflagellates.

The significance of the lipid compositions of the fecal pellets and of the nanozooplankton fed by the krill was discussed in relation to the energy transfer processes of the food web in the Antarctic ecosystem. (p. 125-134).

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### II. AMINO ACID COMPOSITION

Eiichiro TANOUE

Amino acid compositions of the fecal pellet produced by the large and small krill were compared. Some differences were observed between the two samples, although the distribution patterns of amino acids in the two samples were approximately the same. The Essential Amino Acid Index (EAA Index) was applied to estimate the protein quality of the fecal pellet samples. The EAA Index supported the previous conclusion obtained through