Food of short-tailed shearwaters died in a collision in the Southern Ocean

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Short-tailed shearwaters (Ardenna tenuirostris) breeding around Tasmania forage in the basin and shelf slope area of the Southern Ocean. Stomach contents of birds returning to the colony reflects prey obtained near the breeding areas. These includes Australian krills, amphipods, myctophids and postlarvae (Weimerskirch & Cherel 1998). Fatty acid composition of stomach oil and stable isotope ratio of blood of these birds indicate that they feed mainly on myctophids (Connan et al. 2005; Cherel et al. 2005). Although these studies based on samples obtained at the breeding colony do not show Antarctic krill (Euphausia superba) as an important prey, Kerry et al. (1983) found substantial amount of Antarctic krill in the stomach of the specimens collected in the marginal sea-ice zone in East Antarctica. Here, we examined the stomach contents and the stable isotope of the liver tissue of four short-tailed shearwaters and one sooty-shearwater (Ardenna grisea) collided with the mast of a boat and died. Four short-tailed shearwaters were collected at 109° to 120° E, 63°S of the basin area in Indian sector of the Southern Ocean in March 2019. Three had no or heavily digested prey in the provenculalus. The other one had 23.6 g juvenile to sub-adult Antarctic krill. The single sooty shearwater had one pair of squid beak. $\delta^{15}N$ of short-tailed shearwater's liver tissue valued 8.95 \pm 0.38 ‰ and δ^{13} C of these valued -24.29 \pm 0.29 ‰. The value of the nitrogen stable isotope ratio was higher than that of the seabird species feeding mainly on Antarctic krill (8.0 ‰) and close to that of seabirds feeding on both fish and krill (9.3 ‰). As the half-life of carbon turnover in the liver of birds is estimated as 2.6 days, these shearwaters might feed both on fish and krill in a few days before collision to the boat. Faster digestion of fish (~6 hours) than crustaceans (~17 hours) may explain the absence of fish in the stomach. These results suggest that Antarctic krill could be an important prey for short-tailed shearwaters near the ice-edge.



Figure 1. δ^{13} C and δ^{15} N isotope signatures (mean \pm SD) of short-tailed shearwater, sooty shearwater, antarctic krill, myctophids and other seabird species in the Southern Ocean.

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