



Lipids from stomach oil of procellariiform seabirds document the importance of myctophid fish in the Southern Ocean

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ABSTRACT: We investigated the relative importance of myctophid fish and Antarctic krill in the diet of adult flying seabirds of the Southern Ocean. The main prey of short-tailed shearwaters *Puffinus tenuirostris* (*P. ten.*), white-chinned petrels *Procellaria aequinoctialis* (*P. aeq.*), blue petrels *Halobaena caerulea* (*H. cae.*), thin-billed prions *Pachyptila belcheri* (*P. bel.*), and Antarctic prions *Pachyptila desolata* (*P. des.*) were mostly deduced from the lipid analysis of adult stomach oils. More than 97% of the 125 analyzed oils mainly consisted of wax esters (WEs) and triacylglycerols (TAGs) (>70% of total lipids). WE fatty alcohol (FAlc), WE fatty acid (FA), and TAG-FA profiles clearly segregated *P. aeq.* from *P. ten.*, with smaller, but still significant, differences among the three other petrel species. *P. aeq.* and *P. ten.* therefore preyed on distinct prey species, whereas *H. cae.*, *P. bel.*, and *P. des.* had a more similar diet, but still with some prey differences. Comparisons between FAlc and FA patterns of oils with those of potential prey species showed that >93% of FAlc and FA patterns of oil WEs had a high probability of resemblance with the myctophid signatures, and similar results were obtained with the TAG fractions. Almost no stomach oil fit the lipid patterns of subantarctic and Antarctic euphausiids, including those of the WE-rich *Thysanoessa macrura* and the TAG-rich Antarctic krill *Euphausia superba*. This study thus demonstrates for the first time the importance of myctophids in the nutrition of adult flying seabirds breeding in subantarctic islands and foraging in Antarctic waters during the austral summer.

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