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### ***DNA metabarcoding as a marine conservation and management tool: a circumpolar examination of the diet of threatened albatross***

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Widespread, simultaneous dietary studies can provide a valuable global picture of resource requirements, the plasticity or specificity of a species as well as insights into seabird-fishery interactions and changing environmental conditions. However, the diets of seabirds are typically assessed using stomach contents analysis which can over-estimate hard-bodied prey and under-estimate soft-bodied prey, such as jellyfish. As seabirds are used to identify changes in the overall species composition of marine ecosystems, such biases in dietary assessment may impact our detection of important ecosystem regime shifts. The circumpolar black-browed albatross (BBA, *Thalassarche melanophris*) are used as keystone monitoring species for identifying changes in marine ecosystem and have suffered substantial population declines due to mortality in fishery bycatch. Using DNA metabarcoding of scats, we examined their diet across two breeding seasons (2013/14 and 2014/15) at seven breeding colonies. Using this study we aimed to develop DNA metabarcoding methods for seabirds to assess its use for ecosystem monitoring and to identify seabird-fishery interactions. Fish was the major dietary item, but interestingly, jellyfish was frequently observed (42% of samples). There was extensive geographic variation but little inter-annual variability in prey consumed. Several fish species that are not easily accessible to albatross, but are commercially harvested or by-caught, were detected in the albatross diet during the breeding season. This study indicates ongoing interactions with fisheries through consumption of fishery discards, increasing the risk of seabird mortality. We highlight the value of DNA metabarcoding of seabirds to detect changes in prey abundance and distribution, and colonies where birds are interacting with commercial fisheries. The detection of jellyfish was particularly important as this prey group is predicted to increase under current climate change scenarios. It is therefore important that future diet monitoring programs should use methods that can detect all prey groups.