

# Exploitation of distant Antarctic habitats by juvenile macaroni penguins from the southern Indian Ocean

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The at-sea ecology of marine migratory species has been unevenly studied across life-cycle stages, which limits our understanding of how distant marine ecosystems may be connected through the long-distance movements of animals during specific stages of their life-cycle. The macaroni penguin *Eudyptes chrysolophus* is the largest avian consumer of marine resources in the world, however to date there has been no information on the at-sea distribution of this species' juvenile individuals. In this study using ARGOS satellite tags we successfully tracked nine juvenile macaroni penguins during their post-fledging dispersal from Kerguelen Is., a key breeding site in the southern Indian Ocean. The tracked birds crossed the Antarctic Polar Front to the south in a consistent fashion. They then unexpectedly reached the Antarctic Marginal Ice Zone after two months at sea, travelling up to 2,500 km to the southeast of their colony until the satellite transmissions ceased. The fact that during their juvenile stage, globally-significant predators such as macaroni penguins target Antarctic sea ice habitats to forage is fundamentally new for the species and has important consequences for the management of Antarctic prey resources. Our study brings new elements that not only clarify the species' ecology during a critical stage of its life cycle, but importantly also expand the species' known connectivity to adjacent ecosystems. These new findings will help refining conservation strategies for the southern Indian Ocean populations, however further studies are needed to test whether juvenile macaroni penguins from other key populations (notably in the southern Atlantic Ocean) may also use similar habitats during their post-fledging dispersal.