

## Stable isotope investigation of egg components from the bird community of Marion Island

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The subantarctic Prince Edward islands house a diverse and numerous seabird community and one landbird, the Lesser Sheathbill *Chionis minor*. Although these birds share a common nesting area, their use of the environment differs substantially during chick-rearing. We investigated the female foraging areas ( $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$ ) and trophic levels ( $\delta^{15}\text{N}$ ) of 12 bird species during the little known egg formation period. Egg shell and egg membrane stable isotope values reflect female foraging ecology prior to laying. From 2011 to 2013, we collected egg shells with membranes (most of them from hatched eggs) from three species of penguins (King *Aptenodytes patagonicus* [KP], Macaroni *Eudyptes chrysolophus* [MP] and Southern rockhopper *E. chrysocome filholi* [RP] penguins), five species of surface-nesting seabirds (Southern *Macronectes giganteus* and Northern *M. halli* giant petrels, Wandering *Diomedea exulans* [WA] and Grey-headed *Thalassarche chrysostoma* [GHA] albatrosses, Subantarctic skua *Stercorarius antarcticus*), and four species of burrow- or crevice nesting birds (White-chinned *Procellaria aequinoctialis* [WCP], Great-winged *Pterodroma macroptera* [GWP] and Blue *Halobaena caerulea* [BP] petrels, Lesser Sheathbill). Considering all species,  $\delta^{13}\text{C}$  values ranged from  $-21.9 \pm 0.6$  ‰ to  $-15.6 \pm 1.0$  ‰ indicating that BP females foraged farthest south and WCP and GWP farthest north, with the nine other species well spread in between.  $\delta^{18}\text{O}$  values segregated crested penguins (MP and RP) from KP, WA, GHA, and both giant petrels. The lowest  $\delta^{15}\text{N}$  were recorded in BP and the two crested penguins ( $9.1 \pm 0.4$  ‰,  $9.4 \pm 0.2$  ‰,  $9.8 \pm 0.2$  ‰ for BP, MP and RP, respectively) and the highest in WA ( $15.0 \pm 0.3$  ‰) reflecting the known trophic segregation between crustacean and squid eaters. Isotopic diversity metrics will be used to describe the isotopic niches of females of each species prior to egg laying and to evaluate more precisely intra- and inter-specific differences.