

Supplement

Table S1. Isotopic niche metrics of Pygoscelid penguins (Adélie, Chinstrap and Gentoo) from Antarctic Peninsula and South Shetland Islands during the breeding season of 2013-2014, calculated with the SIAR package in R (R Development Core Team 2014). The location of the centroid (LOC) indicates where the niche is centered in isotope space. A Bayesian approach based on multivariate ellipse metrics was used to calculate the standard ellipse area SEA, which represents the core isotope niche width as described by Jackson et al. (2011). To describe the spread of the data points, parameters proposed by Layman et al. (2007) were calculated. As proxies of intrapopulation trophic diversity, the mean distance to centroid (CD) and the mean nearest-neighbour distance (NND) are given. Information on the trophic length of the community is given as the $\delta^{15}\text{N}$ range (NR), and an estimate of the diversity of basal resources is provided by the $\delta^{13}\text{C}$ range (CR).

| Symbol | Explanation | Adélie | Chinstrap | Gentoo |
|--------|---|------------------------|-------------------|------------------------|
| LOC | Location of centroid | -24.63071, 10.78429 | -28.072, 8.368 | -23.21583, 10.22458 |
| SEA | Area of the standard ellipse (isotope niche width) | 16.24592 | 0.2226896 | 4.522172 |
| SEAc | as above, corrected for sample size niche width 2 | 17.59975 | 0.2323718 | 4.727725 |
| CD | (Mean distance to centroid) | 4.030197 | 0.3670507 | 1.623406 |
| NND | mean Nearest Neighbour Distance | 0.905791 | 0.1274375 | 0.6674245 |
| NR | trophic length (range in $\delta^{15}\text{N}$) | 11.87 | 0.77 | 12.25 |
| CR | diversity of basal resources (range in $\delta^{13}\text{C}$) | 9.94 | 1.35 | 7.28 |