Foraging behaviour and prey selection in Adélie and chinstrap penguins at Signy Island, South Orkneys

Jean-Baptiste Thiebot[1], Philip N. Trathan[2], Akinori Takahashi[1]
[1]*National Institute of Polar Research, Tokyo, Japan*
[2]*British Antarctic Survey, Cambridge, UK*

Recent studies show that examining prey capture events at sea provides new perspectives on the foraging behaviour and prey selection of marine predators. This *in situ* approach is rapidly developing thanks to the advent of miniaturized animal-borne video loggers, and is especially relevant to the study of marine ecosystems in polar regions because polar trophic webs and trophic interactions can be difficult to sample, compared with other regions. In the maritime Antarctic region (western Antarctica), penguins constitute an important part of the predator biomass, and rapid changes in their foraging environment are affecting their population numbers over the long-term. In order to refine our understanding of trophic interactions and prey selection by these predators, we studied 50 penguins during the chick-guarding stage at Signy Island, South Orkneys, in December-January 2017-2018. First, 22 Adélie penguins *Pygoscelis adeliae* were instrumented: 20 with a video data logger combined with a GPS-depth-acceleration data logger, and 2 with a video data logger only. Then, the later-breeding chinstrap penguins *Pygoscelis antarctica* were sampled (*n*=28): 24 with both types of data loggers, and 4 with GPS-depth-acceleration data loggers only). Video data provided information on prey capture attempts; comparisons with diet samples collected ashore provided information on the penguins' prey selection behaviour. In addition, GPS, depth and acceleration data allowed us to examine the 3-D habitat of prey and the foraging effort of the predators.