Foraging behavior of Adélie penguins from two adjacent colonies in Lützow-Holm Bay, Antarctica

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Intra-specific competition would be an important factor affecting the foraging behavior of animals. Central place foragers, such as breeding seabirds, may face intense intra-specific competition near their colonies due to high conspecific density. Furthermore, in case two or more colonies are adjacent to each other, intra-specific competition would be more severe. In such case, theoretical models predict that the home ranges of the populations from multiple colonies may segregate between the colonies. However the degree of segregation may vary depending on various factors such as conspecific density, prey distribution. Here, we examined the foraging behavior of chick-rearing Adélie penguins *Pygoscelis adeliae* from two adjacent colonies by using bird-borne GPS loggers in addition to acceleration-depth-temperature loggers. The field study was conducted at Hukuro cove (104 nests) and Mizukuguri cove (338 nests) colonies in Lützow-Holm Bay, Antarctica, from December 2016 to January 2017. We obtained 636 days of GPS positioning data containing 504 foraging trips from 47 birds in two colonies. About two-thirds of GPS positioning data was associated with concomitant time-depth-acceleration records. These data showed that penguins fed in much wider foraging areas with shorter trip durations in this year than in previous years, which is apparently related to drastically small amount of sea ice around the colonies in this year. The foraging areas of the birds from two colonies overlapped extensively, implying that intra-specific competition between two colonies was not intense in this year.