404

CORROBORATION OF SIMULTANEOUS SATELLITE TRACKING AND SHIP-BASED SURVEYS FOR ESTIMATING CHINSTRAP PENGUIN (*PYGOSCELIS ANTARCTICA*) DISTRIBUTION AND CORRELATION WITH ANTARCTIC KRILL

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To determine how Chinstrap Penguins (*Pygocelis antarctica*) utilize available krill patches in a coastal Antarctic environment, we conducted a survey during 2 to 10 February 2005, to determine the distribution of krill and foraging penguins, in the vicinity of Livingston Island, South Shetland Islands, Antarctica. An acoustic backscatter survey was used to determine the distribution and abundance of Antarctic krill (Euphausia superba), during which simultaneous counts of penguins were made using strip transect methods. To provide an even better understanding, we used satellite telemetry to study the individual behavioral movements of 8 penguins from a nearby breeding colony. It is this factor that makes this study unique and the first of its kind, to address questions involving the corroboration of simultaneous surveys of Chinstrap Penguins, and their prey. We found that krill were especially abundant along the edge of a 200 m submarine canyon, located within 15-20 km of the focal penguin breeding colony where birds were fixed with satellite transmitters. Satellite tagged birds spent 84% of their time with 15-20 km from their colony clustered around the 100 to 200 m isobath, and were positively correlated with a relatively few high quality krill patches. Underway ship-based counts of penguins during the acoustic survey were also positively correlated with a relatively few high quality krill patches. There were no differences in the correlation of penguins and prey using both survey techniques. However, in contrasting the information on the distribution of penguins from the ship-based survey and the satellite tracking survey, suggested that penguins from different colonies on Livingston Island, may use different but similar parts of the submarine canyons. Furthermore, we conclude that Chinstrap Penguins likely travel to and from their respective breeding locations to krill patches, which is likely a function of distance to locations in which the encounter rate with high quality krill patches increases.

Keywords: Antarctic Krill, Chinstrap Penguin, Livingston Island, Patches, Satellite-tracking, Ship-based surveys