The Effect of Geographic Distance on the Variation in Vocalizations of the Gentoo Penguin, Pygoscelis papua, on the Antarctic Peninsula

Dahl, Andrea

Gentoo penguins, Pygoscelis papua, depend on specific vocalizations for courtship and chick-rearing; therefore, examining the correlation between gentoo vocalizations and geographical locations is important for establishing whether breeding colonies could communicate with penguins in new migratory regions. Emerging research in gentoo penguin vocalization may determine the key features for non-songbird communication to aid in the establishment of new colonies, both in the wild and in captivity. The purpose of the research was to examine whether gentoo call characteristics as measured by frequency, syllable duration, and power, are different between colonies located on the Antarctic Peninsula. The most northern of the nine colonies in the study is Brown Bluff (63° 32' 00" S, 056° 55' 00" W) and the most southern colony is Cape Tuxen (65° 16' 0.012" S 64° 7' 59.988" W). Signal software was used to analyze gentoo call spectrograms for call characteristics from each colony. Averages of the call characteristics were calculated for each colony and compared using ANOVA and multiple comparisons analyses with R Software. The analysis supported variation between colonies for frequency. Syllable duration of the call was found to be similar within a colony and had variation between colonies. Power of the call syllables had the most statistically significant variation between colony regions. Gentoo penguins are an important mesopredator in the Antarctic ecosystem. Gentoo populations are a critical indicator of ecosystem health and subsequent success depends upon effective communication between breeding pairs leading to successful nurturing of offspring.

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