

B06. Vocal individuality and acoustic correlates of body size in the display songs of banded penguins

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Animal vocalisations can be used for individual discrimination or even recognition. Moreover, where the acoustic features of vocalisations are linked to anatomical constraints that cannot be faked, the vocal signal can provide “honest” information about the body size of the emitter. In penguins, acoustic variation in vocalisations originates from distinctiveness in the morphology or size of the vocal apparatus. Using the source-filter theory approach, we investigated vocal individuality cues and correlates of body size in vocalisations of banded penguins (*Spheniscus* spp.). We recorded several ecstatic display songs (vocalisations uttered during the breeding season) from two ex-situ colonies of Humboldt (*S. humboldti*) and Magellanic (*S. magellanicus*) penguins housed at the Acquario di Cattolica and Acquario di Genova, respectively. For each bird recorded, we collected a total of eight skeletal measurements as indicators of the body size. Moreover, to the longest syllable of each ecstatic display song, we measured the duration and several source (f₀)- and filter (formants)-related vocal parameters in Praat v.5.4.0173. Using a stepwise Discriminant Function Analysis, we demonstrated that both f₀ and formants (F1-F4) were essential vocal features to discriminate among individuals. However, using a series of Generalised Linear Mixed Models, we showed that only call duration and f₀ are honest indicators of the body size. Our findings provide novel insights into the role of vocal displays as both social signals and quality signals in penguins. Finally, we added important information to a growing body of literature on the role of the different vocal parameters in conveying biologically meaningful information in monomorphic seabird vocalisations.