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Abstracts

FEATURE ARTICLES

BIRDSONG AND SOUND TRANSMISSION: THE BENEFITS OF REVERBERATIONS

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Abstract. Animal vocalizations used for long-distance communication are shaped by acoustic properties of the environment. Studies of the relationship between signal design and sound transmission typically focus on habitat-induced limitations due to signal attenuation and degradation. However, signal design may not entirely be explained by habitat limitations, but rather by beneficial consequences of reverberations. Narrow-frequency bandwidth notes (NFB notes) are pure notes that change little in frequency, and are typical for many bird species living in dense tropical forests. In contrast to frequency-modulated notes, we show that reverberations lead to a longer and louder signal after transmission for NFB notes. Furthermore, playback experiments to territorial males of an African passerine indicated that longer notes led to a stronger behavioral response. These results suggest that reverberations may benefit signal efficiency depending on the signal design, and add new insight into the selection pressures imposed on acoustic signals by the environment.

Key words: *acoustic design, birdsong, convergence, Green Hylia*, Hylia prasina, *sound transmission.*