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Behavioral Responses of White-tailed Deer to Vehicle Mounted Sound-Producing Devices

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Abstract

Deer-vehicle collisions are on the rise and are a costly side-effect of increasing deer populations and expanding transportation systems. We evaluated the efficacy of sound as a deterrent for reducing deer-vehicle collisions by observing the behavioral response of captive and free-ranging white-tailed deer (*Odocoileus virginianus*) to 5 pure-tone sound treatments: 0.28 kHz, 1 kHz, 8 kHz, 15 kHz, and 28 kHz. We conducted preliminary trials with semi-tame deer at the University of Georgia Captive Deer Research Facility. We exposed 8 deer in a 0.25-ha outside paddock and 5 deer in individual stalls (2.7 m x 4.8 m) to the various treatments at >70 dB Sound Pressure Level. We recorded 406 observations and determined that the behavior of captive deer did not change when presented with any of the 5 pure-tone sound treatments. We also conducted field trials at Berry College Wildlife Refuge, Georgia and gathered 319 behavioral observations of free-ranging deer relative to a moving automobile (56.45 kph). The automobile was fitted with a sound-producing device and speakers that emitted one of the pure-tone sound treatments or no sound treatment as a control. For the 1 kHz, 8 kHz, 15 kHz, and 28 kHz sound treatments, we observed no change in deer behavior relative to the control. When exposed to the 0.28 kHz treatment, deer reacted in a manner more likely to cause deer-vehicle collisions. Our results indicate that deer within 10 m of roadways did not alter their behavior in response to the pure-tone sound treatments we tested in a manner that would prevent deer-vehicle collisions. Commercially available wildlife warning whistles (aka deer whistles) are purported to emit similar consistent, continuous sounds as pure tones at various frequencies within the range of those presented in this study. Our data suggests that deer-whistles, as they are purported to operate, are likely not effective in preventing deer-vehicle collisions.