

DEVELOPMENT AND EVALUATION OF A TERRESTRIAL ANIMAL-BORNE VIDEO SYSTEM FOR ECOLOGICAL RESEARCH

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ABSTRACT

Animal-borne video and environmental data collection systems (AVEDs) are integrated sensor systems that combine video from the animal's perspective with data from other sensors (e.g., audio, location). By placing sensor data within the context of video, AVEDs provide a unique perspective not offered by other methods and facilitate research into animal behavior, foraging tactics, bioenergetics, wildlife damage issues, and inter- and intra-specific interactions. From 2006 to 2008, I assisted in developing the first terrestrial, store-onboard AVED designed for ecological research. To provide ecologists with a framework for evaluating AVED research, I reviewed the historical development, ecological research potential, and future challenges associated with AVEDs. I tested the hypothesis that AVED attachment increases the stress levels (fecal glucocorticoid metabolites [FGMs]) of captive white-tailed deer (*Odocoileus virginianus*). Using a repeated measures analysis of variance, I found no difference in FGMs between control and treatment individuals during a 6 week trial that included a 2 week treatment period. I demonstrate the utility of our AVEDs by describing contacts between white-tailed deer at the Baskett Wildlife Research and Education Area near Ashland, Missouri. My research shows that our AVEDs are powerful new tools for ecological research that do not elevate stress levels of captive white-tailed deer and enable ecological research opportunities that traditional methods (e.g., radio telemetry) have not provided.