

MOUNTAIN-PLAINS CONSORTIUM

PROJECT BRIEF | December 2015

Could Cattle Guards Augmented with Electrified Pavement Prevent Mule Deer and Elk Access to Highways?



the **ISSUE**

Motorists and wildlife are at risk when wild animals enter highways at access roads that bisect wildlife exclusion fencing. Cattle guards are common at access roads, but are ineffective wildlife barriers. Electrified pavement is an emerging technology previously untested as a deterrent for deer and elk.

the **RESEARCH**

Regardless of the dimension of the electrified pavement, simulated cattle guards augmented with the material were more than 80% effective in excluding mule deer and more than 95% effective in excluding elk from baited wildlife enclosures. However, when applied to an existing standard cattle guard spanning an access road to Interstate 15, we found the material no more than 54% effective in preventing mule deer access to the highway. Although we demonstrated that cattle guards augmented with electrified pavement were effective barriers to deer and elk movement under the conditions of the feeding enclosure trial, we found the design only marginally effective at securing the highway right-of-way from deer intrusions during the road trial.



A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

Colorado State University
North Dakota State University
South Dakota State University

University of Colorado Denver
University of Denver
University of Utah

Utah State University
University of Wyoming



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Project Title

Could Cattle Guards
Augmented with
Electrified Pavement
Prevent Mule Deer and
Elk Access to Highways?

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Utah Department of
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the FINDINGS

In this study, our objective was to evaluate whether a standard cattle guard augmented with a strip of electrified pavement could reduce wildlife intrusions at rates comparable to specialized guards, but at reduced cost. Installing an additional standard cattle guard (2.1-m × 11-m) to an existing cattle guard costs approximately US\$32,400 (US\$900/ft., R. Taylor, Utah Department of Transportation, personal communication). In contrast, augmenting a standard cattle guard of the same dimension (11-m-long) with a strip electrified pavement (0.91-m × 11-m) costs approximately US\$27,000 (US\$750/ft., R. Taylor, Utah Department of Transportation, personal communication). Based on these cost estimates, electrified pavement yields a total cost-savings of \$5,400 when compared to the cost of installing an additional standard cattle guard. However, these initial cost-savings would likely be offset by costs associated with maintenance of the electrified pavement and electrical components over the life of the barrier.

the IMPACT

Simulated cattle guards augmented with the material were more than 80% effective in excluding mule deer and more than 95% effective in excluding elk from baited wildlife exclosures. However, when applied to an existing standard cattle guard spanning an access road, we found the material no more than 54% effective in preventing mule deer access to the highway. Although we demonstrated that cattle guards augmented with electrified pavement were effective barriers to deer and elk movement under the conditions of the feeding exclosure trial, we found the design only marginally effective at securing the highway right-of-way from deer intrusions during the road trial.

Monitoring replicated installations of electrified pavement over multi-year time spans would likely yield a comprehensive assessment of the material under different roadway scenarios and may improve the essential function of this innovative emerging technology to reduce risk for motorists and wildlife along our highways.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=832>

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7938 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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