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# a d v i s o r y

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### **DEER-VEHICLE COLLISIONS: NO EASY SOLUTIONS BUT SOME METHODS WORK OR SHOW PROMISE**

Deer populations as well as miles of vehicle travel increase every year, contributing to the large and growing problem of motor vehicles colliding with deer. Numerous ways have been tried to reduce such crashes, but the programs often haven't been based on science or evaluated scientifically. A new Institute-sponsored review, "Methods to Reduce Traffic Crashes Involving Deer: What Works and What Does Not" by James Hedlund of Highway Safety North and Paul and Gwen Curtis of Cornell University, summarizes the various approaches, finding that some work at least in some situations. Some methods show promise, but more research is needed. And some methods simply do not work.

#### **Size of the problem**

The best estimate is that more than 1.5 million deer-motor vehicle collisions occur each year, resulting in about 150 occupant deaths and more than \$1 billion in vehicle damage. More precise data are hard to come by because collisions with deer usually aren't reported to police. When they are, they're often categorized along with collisions with horses, cattle, moose, elk, and other animals.

Insurers pay the costs of many deer collisions, but most companies don't code deer strikes separately under comprehensive losses. Erie is one company that does track deer claims separately and publishes results — an average of 12 claims per 1,000 insured vehicles in 2002, which represents an increase of 12 percent since 1998. The rate of deer claims has increased every year, except for a small decrease from 2001 to 2002. The average cost of a claim in 2002 was \$1,960. Such costs represented 38 percent of all comprehensive losses.

#### **Fencing is an effective method to reduce collisions**

The only broadly accepted method of reducing deer collisions that is theoretically sound and proven to be effective is to install fencing, combined with underpasses and overpasses where appropriate. Fencing that's sufficiently high, long, strong, and well anchored with no gaps or tunnels will prevent deer from crossing roads. However, this approach is expensive.

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The Insurance Institute for Highway Safety and the Highway Loss Data Institute are independent, nonprofit scientific and educational organizations dedicated to reducing the losses — deaths, injuries, and property damage — from crashes on the nation's highways. This work is wholly supported by automobile insurers. Of special interest to insurers, advisories are published for member companies.

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**Four promising methods that merit further study**

Reducing herds will reduce deer collisions, but this is a controversial method. Questions include how much herd reduction is necessary, and over what area, to reduce the collisions.

Establishing broad areas of cleared ground alongside roads reduces the foliage that might attract deer to the roadway. This approach increases the likelihood that drivers will see deer that do enter the road. More studies are needed to confirm these effects.

Displaying temporary signs along roads that intersect with deer migration routes reduces collisions by about half, Institute research has shown. More research is needed to evaluate driver response to such signs over time. (Note: Mule deer in western states follow regular migratory routes. White-tailed deer, common east of the Rocky Mountains, may occupy fixed ranges or, in northern states, travel many miles between summer and winter ranges.)

Another potentially promising approach involves signs that activate when deer are detected near a road. Detection methods include infrared light, radar, laser, radio frequency beams parallel to the road, and heat detection cameras. Little research is available on effectiveness.

**Three methods with limited effectiveness**

For more than 30 years reflectors and mirrors have been used along roads in Europe and some U.S. states. The most common system, made by Swareflex, involves reflectors on posts installed at regular intervals. Reflection from vehicle headlights is thought to form a visual “fence” that deer aren’t expected to cross. More than 10 studies of such systems yield conflicting results. The balance of evidence indicates little in the way of long-term effects.

Research indicates that feeding deer in ways that keep them from crossing roads can be somewhat effective. But there are downsides — continuing costs, the possibility of attracting more deer to the roadside, and the likelihood that deer will become dependent on the food.

Limited studies have been conducted of the effects of contact repellents with unpleasant tastes applied to food and/or area repellents that smell unpleasant to deer. The research findings are mixed. Repellents can be effective in changing deer feeding and patterns of movement, but they aren’t likely to keep deer away from roads.

**Two ineffective methods**

The most common approach is to post permanent signs to warn drivers of deer crossings. The locations don’t vary through the year, whether or not collisions with deer are likely. Although the effects of these signs haven’t been evaluated, they’re thought to be widely ignored.

The ineffectiveness of another approach — deer whistles attached to cars — has been proven. Available for more than 20 years, whistles produce ultrasonic noise (16 to 20 kHz) when a vehicle exceeds about 30 mph. The presumption is that deer will hear the noise and be warned away. It’s unclear whether deer do hear the noise, but in any event studies show the devices have no effect on deer behavior.

Better reporting of deer collisions would help address the problem. It also would be useful if the precise locations of the collisions were recorded, as in Maine, to identify problem areas. Such information would contribute to appropriate application of various countermeasures.

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