

Large Animal/Vehicle Crashes and Do “Deer Whistles” Work?

The Problem

Each year there are 500,000 to 750,000 large animal/vehicle collisions, which result in over one hundred deaths. The National Safety Council estimates that over 4,000 injuries result from these crashes. The National Highway Traffic Safety Administration estimates that the life-time economic cost of a fatality is almost a million dollars. According to the Insurance Information Institute large animal/vehicle crashes cost an average of \$2,000 each. The growing deer population has led to a dramatic increase in large animal/vehicle collisions. In the 1980s the deer population was approximately 10 million. Today, deer number more than 25 million. Crashes due to deer and vehicle encounters will continue to increase as urban habitats encroach upon rural environments.

Tips to Prevent Crashes

Here are tips to help you avoid hitting a deer or other large animal, and to help mitigate the crash if you do:

- Be especially aware of the potential to hit deer during their mating season - September through December.
- Be attentive in the early morning and evening hours, which are the most active times for deer. Crash frequency is much higher at those times.
- Be alert and drive with caution when you are driving through a deer-crossing zone. Deer

crossing signs are placed where other deer have been involved in crashes. If you see one deer look for others – they seldom run alone.

- If you see a deer, slow down and blow your horn with one long blast to frighten the deer away. If necessary, use your high-beam headlights to see the deer better. Be cautious, however, with your lights if the deer is in the road – you may “freeze” the animal in place.
- Do not swerve to avoid a deer. Instead, brake firmly when you notice a deer in or near your path. Swerving may confuse the animal because it won’t know which way to run. Hitting a deer is safer than hitting an oncoming vehicle or running off the road and striking a roadside obstruction.
- Always wear your seat belt. In large animal/vehicle crashes the most serious injuries and fatalities occur because people were not wearing their seat belts.
- If your vehicle strikes a deer do not get out of the vehicle and touch the animal. The frightened animal, in attempting to move, could hurt you or further injure itself. Pull safely off the road with your emergency flashers illuminated and call for help.

Air-fed Deer Whistles

Do Air-fed Deer Whistles Work?
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Air-fed deer whistles, those small plastic devices attached to car bumpers to scare deer from roadways, are “acoustically ineffective”. That is the finding of a scientific study conducted by Peter Scheifele, an animal bioacoustics and audiology expert at the University of Connecticut.

On highways and byways across North America, nearly 750,000 collisions occur each year between deer and vehicles. Manufacturers promote deer whistles as “acoustic attention-getters”, alleging deer will react to the whistle by remaining still.

“There has been a lot of conjecture about whether the whistles work or don’t work, and we are one of the first independent groups to scientifically test them,” says Scheifele, director of bioacoustic research at the National Undersea Research Center at the University of Connecticut’s Avery Point campus and researcher in the Department of Animal Science.

He and his team tested six air-fed whistles in the laboratory and in the field. The study’s goal was to determine the actual frequencies generated by the whistles and the intensity at which they are produced; compare that data to the hearing abilities of deer; and then take the animal’s acoustic behavior into consideration.

Following the directions on each package, the team mounted the devices onto a car’s front bumper. Using a road closed to the public, they drove the car at speeds ranging from 30 to 45 miles per hour while recording sound and data.

“We tested them strictly from an acoustical point of view,” explains Scheifele. He found that the whistles typically produce a signal either at a frequency of 3 kilohertz (kHz) or 12 kHz. Both, as it turns out, are problematic.

The hearing range of white-tailed deer, the most common species in the U.S., is between 2 and 6 kHz, so the animal is not capable of hearing the 12 kHz signal. Although deer may be capable of hearing the 3 kHz signal, it is only 3 decibels louder than the road noise created by the car, so

the signal is buried. Scheifele points out that the condition would worsen with additional traffic in the area or if the wind was blowing.

Since completing the study, a new electronic whistle has been put on the market. Although Scheifele has not had an opportunity to test it, he has examined its advertising claims. He says the specs for the electronic whistle are considerably different from those of the air-fed devices, so “there is a possibility that the electronic whistle is more effective than the air-fed devices.”

But even if deer can hear the electronic signal, the UConn scientist questions how one alerts rather than startles the animal. This is where animal behavior comes into play.

“Think about the metaphor ‘deer in the headlights’,” says Scheifele. “It is used to conjure up an image of someone who is confused or frightened. When deer sense something unusual, we do not know for sure how they are going to react.”

Will they freeze in their tracks, run off, or charge towards the sound? Their behavior is related to the “fight-or-flight response”. According to scientific literature on the subject, there is an amount of space in which an animal feels safe; but once that boundary is violated, the animal’s reaction is unpredictable. Its response will depend on a number of factors, including age, sex, type of enemy, and surroundings.

“All in all, the air-fed whistles do not make sense to me acoustically,” states Scheifele.

He has written a paper on his findings and submitted it to the Acoustical Society of America’s Acoustics Research Letters Online where it will shortly be under review.”

Other studies show similar results.

Georgia’s Game and Fish Department, for example, found that in hundreds of observations from vehicles equipped with deer whistles, deer didn’t respond. Whistles on vehicles going 25-30 mph produced no ultrasonic sound, although

some ultrasonic and lower frequencies were produced when the whistles were blown by mouth. According to wildlife biologists at the University of Georgia, neither deer nor humans can hear ultrasonic sound. Whistles blown by mouth near captive deer produce no response.

A University of Wisconsin study found that three types of whistle did produce low-pitched and ultrasonic sounds at speeds of 30 to 70 miles per hour; however, researchers were unable to verify that deer responded to the sounds, even at distances well below the distances from which manufacturers claim the whistles are heard. Moreover, deer would only be able to hear the whistles if there were a straight shot between the deer and the whistle. If curves, trees, or other obstacles came between the deer and the whistle, the device would be ineffective.

One researcher warned that, even if the devices were effective, they would quickly clog with insects and dirt and stop working.

Based upon their own research and a review of others, Texas A&M University concludes it is “very unlikely that deer whistles will be effective at reducing deer-vehicle accidents.”

Technology

Several studies are underway to determine if technology can warn motorists of the presence of animals on or near the roadway. One study will use microwave technology to identify the presence of an animal and, subsequently, alert motorists using dynamic warning signs.

Other interventions being tested include headlight activated reflectors located alongside highways in high deer population areas that create an “optical fence” to stop wildlife from crossing roadways.

Another is the addition of deer crossovers and underpasses although they are admittedly, very expensive – but very effective. These crossovers are being implemented in Europe with some success. The rationale is that animals are being isolated to their prime habitat by roadway

and other construction. Providing them with easy connections to their fragmented habitats may greatly reduce the frequency of animal crashes. Improved fencing in deer crossing areas is being considered.

Another technology just becoming available is in-vehicle infrared cameras to identify the heat “signature” of animals at night and project an image of the animal(s) on the windshield to alert the driver to their presence. This technology is available now on a few high end automobiles.

Conclusions

Vehicle collisions with wildlife will continue to be a growing problem as the size of deer and other animal herds increase, as humans encroach on and fragment their habitats, as more vehicles miles are driven, and because motorists are complacent even where warning signs alert them to the possible presence of animals on roadways.

Drivers must be prepared to react when driving in areas where animal life is known to be in the roadways. They should be aware of the prime times when deer and other large animals are most active – both during the day and the calendar year. They should understand that current “deer crossing” signs are, indeed, located where previous animal/vehicle collisions have occurred. They should understand how to maintain vehicle control if a collision is imminent and, especially, not to attempt to swerve out of the way of the animal.

An extensive literature review indicates that air driven deer whistles are not cost effective. There may be anecdotal evidence of their effectiveness however there continues to be no scientific evidence supporting that conclusion particularly because it is unknown if deer can actually hear the tones these whistles emit. Fleets considering purchase of these whistles may find that the funds would be better used in improving driver training, hiring or qualification programs. Fleets who choose to install the devices should

keep detailed records of animal collision incidents, and near misses, with particular emphasis on comparing exact crash location, times of day and month, pre- and post-installation. Maintenance records should be kept to understand the cost implications of using these devices.

References

1. Highway Safety Information System U.S. Department of Transportation Federal Highway Administration, Research, Development, and Technology Turner-Fairbank Highway Research Center.
2. Ibid

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