

# Less bang for the buck



**In the US 10,000 people are injured and around 200 are killed every year in vehicle-animal collisions. The technology to avoid this alarming statistic already exists, says ED MULKA. So why aren't we deploying it?**



**An avid deer hunter using bow and arrow and single shot muzzleloader, I have an up close and personal knowledge and understanding of deer.**

When I first started, it was quite exciting to even see one's quarry, as deer were not nearly as plentiful as they are today. Over the years, the deer population has exploded and one of nature's gentle creatures are either loved or hated depending on the interaction we have with them. Many farmers look at deer as giant rats that devastate crops; anyone who survived the unfortunate circumstance of one appearing in your headlights probably has a less than fond memory of the animal. Comedian Ron White puts it nicely in his stand-up routine when he says, "if you really want to hit a deer with your rifle, just slow the bullet down to 55mph, put a pair of headlights on it, and the deer will jump right in front of it!"

**Animal collective**

Animal-vehicle collisions are rising as urban sprawl increasingly becomes suburban sprawl. With the increasing attention to the environment and ecology, animal populations have increased, thereby presenting a problem to the motoring public that was not foreseen. The problem continues to grow and it's undeniably our fault.

We continue to encroach on the animals' territory and, in the case of white tail deer, we chase away their natural predators. We offer them our farms, small backyard food plots, and ornamental gardens. We plant vegetation along our roadways that is attractive to deer and then season this natural buffet by chemically treating our northern roadways for ice, thus creating a giant "salt lick". We do in fact attract these animals to the location we most prefer they avoid – our highways. Deer are seen regularly on roadways grazing within a few feet of the hard shoulder as vehicles hurtle by at highway speeds. It's like a parent telling a child to "go play in traffic".

The cost of lives, property, carcass removal, and our wildlife resources are compromised "when bumpers meet antlers." In 2006, State Farm Insurance Company cited annual figures of 1.5m animal-vehicle collisions, with over US\$1 billion in damages, 10,000 injuries, and 150 to 200 fatalities annually, according to the Insurance Information Institute for Highway Safety<sup>(1)</sup>.

The USDOT recently released a study that painted a much bleaker picture that indicated the annual cost to be around US\$8.3 billion<sup>(2)</sup>.

To put this in perspective, CBS Evening News recently reported there are about 6m traffic accidents a year, over 560,000 of which are alcoholic-related and another 781,000 that are due to weather conditions. We have an extensive effort throughout the country to enforce drunk-driving laws. We also address weather problems through continued improvements in vehicle design and road maintenance. The question is: what are we doing to address a problem that appears to be as much as two to three times more serious?



## Detection

### Hunter-gatherers

Studies at the University of Georgia and personal accounts from hunters, including myself, attest to the behavior of deer, such as noises they perceive as danger (a predator or the cocking of a rifle, for instance); light that mesmerizes them - headlights that cause them to freeze in place as they attempt to focus on the approaching vehicle's light or a flickering light that causes them to turn away.

Further studies and tests are ongoing for non-technical and technical solutions to reduce deer-vehicle collisions where and when the danger is most prevalent. Although there are advocates of various solutions to deal with the issue, the problem needs to be approached in a systemic manner as there is no single answer. For one, the deer population is just too large in many areas and needs to be decreased. There are numerous ways to address decreasing the number of deer in a populated area; many of which are under fire by animal rights activists.

Regardless of how the population issue is addressed, one should not expect a quick solution to arise and be implemented. The near-term fix then is to make use of technology to avoid animal-vehicle collisions.

### Warning to the issue

Many experts advocate a physical barrier that channels deer to a single point where crossings can be controlled through an underpass or overpass. If the barrier is properly constructed, this will obviously work well, especially on high speed interstates. However, barriers are not always practical and in many cases cost-prohibitive. In rural and residential areas where barriers are least likely to be viewed as acceptable solutions, ITS technol-

ogy has advanced to a point where we can offer solutions that are both cost effective and efficient.

One high-tech approach is to actively warn motorists of danger ahead through an alert system that indicates the presence of a large animal in proximity of the road<sup>(3)</sup>. A system that is being tested by Minnesota DOT is comprised of a series of "laser fences." The system determines if an interruption of a roadside laser beam(s) warrants a warning signal to the driver. Thus far, the system has proven to be better than 50 per cent effective in reducing accidents. This use of technology warns the driver. Other technology applications warn the animal and direct it away from danger.

Previous efforts to deter deer and other large animals from road crossings have proven to be less than optimal. One of the reasons is that deer can become accustomed to specific methods and subsequently become desensitized or avoid the deterrent by detouring around it to get to feeding areas.

The most viable solution is to allow animals to cross roadways at times when they do not present a danger, thereby permitting access to preferred feeding and bedding areas along traditional migration routes. The approach to this part of an overall solution should therefore be to deploy a system that is only activated when vehicles are present or approaching the point where the animal might potentially cross the road.

As the vast majority of animal-vehicle collisions occur at night, approaching headlights are the most suitable method for activation of a device to deter deer from crossing roadways. Understanding wildlife's natural reaction to the affect of approaching headlights, some methods attempt to deter road crossings by deflecting the oncoming light into wooded areas in an effort to

mesmerize the deer to a standstill before it approaches the road. In other cases, light is refracted to indicate movement that could be interpreted as a threat to the animal, forcing it to retreat from the danger area. These methods have been tested and results vary significantly depending on the individual solution and organizations queried.

They are, however, effective to at least some degree and reports indicate that using technology to warn wildlife has moderate to excellent results.

### Common sense

Having observed deer reaction to a variety of stimuli, I support engaging more than one animal sense as a better approach. Simulating a natural predator or introducing other stimuli that innately would keep a deer from entering an area where it senses danger can be accomplished using technology. A roadside device that is activated by approaching headlights to set off the sound of a predator along with a supplemental strobe light to represent movement is an example of this approach. The greatest aspect of this tactic, which it shares with the previously discussed reflective system, is that it allows animals to cross roadways at times when they do not present a danger.

One such Wildlife Protection Unit is in production and deployed in Austria as a deterrent to keep animals of all types from crossing roads. Initial indications are that it is shown to be over 90 per cent effective. The deployed configuration is activated by headlights alone and emits a whistling and is accompanied by a blue-white, erratic, strobe-type light. The unit is encased in a weather resistant Plexiglas-like enclosure that is powered by solar cells, batteries, or a combination of both.

Weighing less than a pound, the unit can be mounted on trees or small poles and directed such that the sound and strobe emitter face the direction from which the animal will approach. The "brains" of the unit is a circuit board offering years of sustained performance at low cost in terms of both initial installation and follow-on maintenance. Further, the unit can be reprogrammed with different sounds to avoid animals becoming desensitized to a specific stimulus. The units have been under test in the US in an exceptionally hazardous area in Springfield Township, New Jersey, near Ft. Dix Army Base since August 2007 with no accidents reported to date.

### Conclusion

In addition to physical barriers, "intelligent" solutions within our modern technology now provide a means to address this problem. We have progressed to a point where we can communicate the potential for a collision to the driver or strive to warn the animal away from the danger area. Both approaches are being proven to reduce accidents to varying degrees and subsequently save lives. Considerable attention is being given to alcohol- and weather-related accidents, yet it seems that very little effort has been focused on a problem that appears to have significantly outdistanced both.

Further, many of the solutions offered are "intelligent"



in that some form of processing is required for vehicle-to-roadside and roadside-to-driver functionality. One can anticipate that this newly emerging arena will become more of an ITS undertaking and will develop into new disciplines. It is time for the ITS community to actively pursue this problem as diligently as it does other safety issues.

Wouldn't it be nice if we could outfit each deer with a 5.9GHz OmniAir-compliant transponder and let VII worry about it? **TH**

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### References

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**"What are we doing to address a problem that is two or three times more serious than weather-related accidents?"**