Protecting wildlife from traffic

Better solutions are urgently needed to reduce accidents, says Roy Rea*

Automobile collisions with wildlife are on the increase worldwide. As road surface quality, highway speeds and the numbers of cars on the roads increase, so do the odds of encounters between motorists and wildlife.

Over 200 people are killed and thousands seriously injured every year on North American highways alone as a result of wildlife-related vehicular collisions; the loss of the wildlife resource and expenses due to material damages are staggering. In Alaska, for example, road kills are the leading cause of mortality for moose. The average cost to repair a vehicle that has collided with a moose is well over US$15,000.

Researchers in the field have been scrambling for some time now to develop countermeasures that will effectively mitigate the problem of wildlife-related collisions. Unfortunately, such efforts have met with little luck. Currently, the most effective countermeasure is wildlife fencing. Fencing, unfortunately, is unsightly, costs about $50,000/km to install and is expensive to maintain.

Several other popular countermeasures currently in use simply do not stand up against rigorous scientific scrutiny, leaving roadside managers desperate for an effective solution.

Most researchers agree that the development of an effective countermeasure must consider the biology of the animal in question and must specifically address the behaviour drawing them to the highway right-of-way. Although wildlife may utilise corridors for a variety of reasons from travel routes and mineral (de-icing chemicals) licks to sunning areas, most experts agree that feeding on roadside forages predominates animal activities in these rights-of-way. The majority of animals killed in transportation corridors are plant-eaters, albeit carnivores are often incidentally struck while scavenging the remains of road-killed herbivores.

If the problem then is simply one of animals being attracted to rights-of-way by roadside vegetation, the solution seems clear: reduce the attractiveness of roadside forage and wildlife-related collisions will decline.

Several attempts have been made to do just this. Spraying roadside plants with noxious chemicals such as lithium chloride, for instance, appears to deter browsing. Such chemicals, however, are expensive, tend to be short-lived and are environmentally insensitive.

Planting unpalatable species appears to be effective at deterring certain species of browsers from utilising roadside verges, but this strategy tends to be labour intensive and costly. Furthermore, what may be unattractive or unpalatable to one species may be simply irresistible to another.

Finally, reducing browse availability through repeated brush cutting is known to reduce herbivore-related collisions by as much as 60%, but is extremely expensive.

More recently, research indicates that a new approach to roadside vegetation management may be a more useful tool for reducing the attractiveness of roadside browse and would negate the need to use chemicals or attempt to change the floral composition of the roadside. This research suggests that by more precisely timing roadside brush cutting operations managers are now capable of capitalising on built-in plant defence strategies that have allowed plants to defend themselves against herbivores for millennia.

Plants use both physical (such as rose prickles) and chemical (terpenoids, tannins etc) defences. A plant's ability to produce such defences in response to tissue removal depends, among other things, on its supply of raw building materials and energy required for the task.

This supply of materials changes as plants develop. Consequently, the ability of a plant to produce defences varies over the course of the growing season. Plants browsed or cut during early summer following costly leaf making, for instance, may have less energy for such tasks than plants damaged later in the growing season when building materials and energy reserves have started to accumulate in below ground root structures.

Willows cut in mid-July were recently shown to produce regenerative growth for several years that had much higher nutritional quality for herbivores than willows cut at any other time of the year or uncut plants. Such findings have potentially serious implications for motorists traversing transportation corridors in which roadside vegetation is brushed, not necessarily when cutting will stimulate the production of the most unpalatable vegetation but when it is most operationally feasible for roadside tractor work.

Now equipped with these insights, rights-of-way managers in British Columbia, Canada are trying to determine a more appropriate time of the year to cut brush that will remain operationally and financially feasible but does not result in the production of high quality, attractive browse. The University of Northern British Columbia, British Columbia Hydro and British Columbia Rail are collaborating on the research, which will span several years. This research aims at developing a set of recommendations that can be implemented not only by rights-of-way managers in British Columbia to keep moose off of the highway but can be adapted by managers hoping to mitigate collisions with koalas in Queensland, zebras in Zimbabwe and free-range cattle in Kazakhstan ■

It is hoped that research will help reduce or stop this sort of tragic accident *(Photo: Christiana Wiens)*

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