

# Herbicide Impacts on Deer, and the New Forestry Strategy

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For years the public has inquired why NBDNR sprays glyphosate herbicides on plantations, and asks about the impact of spraying so much of this chemical every year on the forest. The response includes the following:

1. We only spray 1% of the forest;
2. Hardwood growth bounces back; and
3. As soon as the hardwoods bounce back, wildlife uses the plantations.

In short, government tells us that herbicide spraying of forest is beneficial for deer. With a new Crown Lands Forest Management Strategy about to be implemented, and the number of hectares to be sprayed likely to increase dramatically, I think it's time to re-examine the impact of spraying our public forests with glyphosate herbicides.

During my 15 years (1997-2012) as a provincial deer biologist in New Brunswick, deer use of Crown land deer yards declined. I also saw deer numbers decline in general across Crown land, while deer in urban and suburban areas grew. Rather than assume anything, I dove into research papers, surveyed the landbase, and analyzed forest regeneration data on the areas planted and sprayed.

For over 20 years, the area sprayed annually has been 13,000 hectares, or over 32,000 acres. Foresters have sometimes suggested that 25% of all harvested area is "treated" with herbicides, however, regeneration data from DNR suggests that between 35 and 40% is actually sprayed. Further, the BEST sites are sprayed and planted – sites with indices suggesting they may be better suited to growing hard-

woods. These sites are converted to plantations because softwoods also grow better here than on other sites. This leaves the suboptimal sites to provide much of the habitat for wildlife, including deer.

When I began to look harder at the published studies, I was shocked at how little research there actually is which supports the position that herbicide use benefits deer. The most recent paper to make this claim is already 10 years old (2004) and the results are based on a 2002 summary that reached its conclusions on the basis of a mere three studies, including – one dealing with Black-tailed Deer behavior in Oregon, a study on Roe Deer in France, and a third from Maine that did not actually observe deer use of the sites following herbicide application.

I was also skeptical that hardwood "bounced back" after herbicide use. All my field experience and aerial surveying showed that nearly all plantations

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*White-tailed Deer doe*  
Photo by R. Cumberland



consisted of softwood trees – indeed, the current inflated Annual Allowable Cut (AAC) depends on plantations growing *lots* of softwood trees *free* of competition from hardwoods. When I looked at the forest-based research, this is *exactly* what is reported – glyphosate – the herbicide used for over 95% of all herbicide use in eastern Canada – was extremely effective at killing hardwood competition. Further, the DNR regeneration data also showed that all plantations that were subsequently treated with herbicides were stocked with 90-100% softwood trees.....not hardwoods! This is what I witnessed from the air and in the many plantations that adjoin the highways of NB. If one glyphosate treatment did not kill all the hardwoods (and in the case of maples it may not) then the site was sprayed a second time, and even a third, to ensure the plantation is 95% stocked with evergreens.

So – knowing that a *lot* of land mass is sprayed with glyphosate annually, and knowing it kills deer browse, just what is the impact? How much deer browse is removed from the forest annually through herbicide spraying? Research from the northeast suggests that most clear-cuts produce at a minimum 20,000 to 40,000 stems of hardwoods per acre. Using this number, one acre of clear-cut would produce a ton of deer browse in one year. Because a deer eats 2 kg of browse a day, this equates to one deer consuming 4.5 pounds of food a day, or 132 pounds of deer food a month, or just over 1,600 pounds of food in one year.....a little under a ton of deer browse. Therefore, spraying a clear-cut and killing 40,000 stems per acre removes enough food to feed a single deer for an entire year. If we expand

this to the total 32,000+ acres sprayed each year, our modern “silviculture” kills enough food to feed nearly 40,000 deer every single year on Crown land.

And we wonder why so few deer now reside on Crown land and why numerous deer-yards are vacant? Questions about the impacts of the herbicide glyphosate often result in the statement that it is not harmful to humans, to wildlife, or the environment [Editors note: see page 45, Frego et al., for comment on the evidence for bryophyte damage in NB from glyco-phosphates]. But recent literature suggests otherwise. I found authors reporting that:

- Glyphosate is toxic and disrupts the human endocrine system<sup>1</sup>
- Glyphosate is strongly associated with chronic kidney failure<sup>2</sup>
- Glyphosate is toxic to normal dairy cow metabolism<sup>3</sup>
- Glyphosate negatively affects the structure and function of freshwater ecosystems<sup>4</sup>
- A review shows glyphosate is toxic and causes a host of problems in humans and wildlife<sup>5</sup>
- Glyphosate causes problems in human embryonic and placental cells<sup>6</sup>
- Adjuvants as well as glyphosate are *both* toxic to human cells<sup>7</sup>
- Glyphosate is responsible for gluten intolerance<sup>8</sup>

Glyphosate has been, and continues to be, sprayed repeatedly on publicly owned land. There is evidence this spraying may be detrimental to the environment, to our deer population, and to humans. It is time for a reassessment of this practice.

## References

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White-tailed Deer buck  
Photo by E. Hazboun

