THE WILDLIFE SOCIETY
Leaders in Wildlife Science, Management and Conservation

Honourable Doug Donaldson
Minister of Forests, Lands, Natural Resource Operations and Rural Development
PO Box 9360 STN PROV GOVT
Victoria BC, V8W 9M2

Honourable George Heyman
Minister of Environment & Climate Change Strategy
PO Box 9360 STN PROV GOVT
Victoria BC, V8W 9M2

17 July 2020

RE: BCTWS Position Statement on aerial application of glyphosate as a silvicultural treatment in British Columbia.

Dear Ministers Donaldson and Heyman,

The British Columbia Chapter of the Wildlife Society (BCTWS) would like to commend the Government of British Columbia for several recent efforts to improve wildlife and wildlife habitat management in the province. We would like to offer our perspective in further advancing wildlife and wildlife habitat management by highlighting one particular issue, the aerial application of glyphosate as a silvicultural practice in forest operations.

The BCTWS is a diverse and growing group of wildlife professionals and student organizations (www.bctws.ca) comprised of over hundreds of members that reside throughout British Columbia. We support five University Student Chapters based at the University of Northern British Columbia, University of British Columbia campuses in the Okanagan and Vancouver, University of Victoria, and Thompson Rivers University. We operate in direct conjunction with The Wildlife Society (TWS, www.wildlife.org) and its Canadian Section which has 10,000 members from across the globe. Our mission is to: "To inspire, empower, and enable wildlife professionals to sustain wildlife populations and habitats through science-based management and conservation."

With respect to the aerial application of glyphosate, in the absence of a silvicultural design that accounts for ecological integrity, we urge precaution and an evidenced-based approach to protect wildlife and their habitats. Therefore, our society takes the position that aerial glyphosate use as a silvicultural practice should not be continued until there is evidence to inform its ecological impact of biodiversity and ecosystem integrity. This is particularly important in areas of the province that are undergoing profound changes in forest structure and age classes.

We offer the attached position statement, against the current aerial application of glyphosate, because of its: 1) toxicity to aquatic and amphibious organisms, and 2) because its continued use in regenerating forest is largely unknown, especially in forests impacted by wildfire and insect infestation. This type of application presumably has important impacts on biodiversity and ecological integrity.

We hope that our position on this important issue will help provide support to a change in policy regarding the aerial application of glyphosate as a silvicultural practice. We are also happy to answer any comments or questions you may have and offer any assistance you may need in developing new policy or regulations.

Sincerely,

British Columbia Chapter of The Wildlife Society

cc'd

John Allan - Deputy Minister, Ministry of Forests, Lands, Natural Resource Operations and Rural Development

David Muter - Acting Assistant Deputy Minister, Resource Stewardship Branch, Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Kevin Jardine - Deputy Minister, Ministry of Environment and Climate Change Strategy

James Mack - Assistant Deputy Minister Environmental Sustainability and Strategic Policy, Ministry of Environment and Climate Change Strategy

Jennifer Psyllakis – Director of Wildlife and Habitat, Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Alec Dale, Executive Director – Ecosystems Branch, Ministry of Environment and Climate Change Strategy

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British Columbia Chapter

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POSITION STATEMENT OF THE BRITISH COLUMBIA CHAPTER OF THE WILDLIFE SOCIETY ON ROUTINE AND WIDESPREAD USE OF GLYPHOSATE-BASED HERBICIDES IN FOREST MANAGEMENT

17 July 2020

Introduction

The British Columbia Chapter of The Wildlife Society (BCTWS) is a society of professional wildlife biologists practicing in British Columbia. Our members apply the principles and methods of science to ecology and wildlife management to achieve conservation outcomes for wildlife and habitats in British Columbia.

We speak with decision makers and user groups across the province building links and providing expert advice supporting evidence-based management directly from our membership. From time to time we will state our position on issues that affect the future of wildlife in BC.

This document communicates our position on the practice of widespread spraying glyphosate-based herbicides to prevent regrowth of broadleaved plant species in regenerating cut blocks. A particular concern focuses on North Central British Columbia, where precipitous moose declines in interior BC have resulted from combined stressors including broad-scale habitat loss (following beetle epidemics, extensive wildfire, and salvage logging), greater vulnerability to motorized hunting, starvation, and predation. Because glyphosate spraying reduces moose forage, strictly planning and controlling its application is one of very few "management levers" having potential to mitigate these severely stressed populations.

Our Position

While aerial application of glyphosate has been standard practice in British Columbia for many years, there is emerging scientific evidence showing increased risk to both wildlife and their habitats from the broad-scale application of these chemicals.

To protect wildlife and their habitats in British Columbia, the provincial government needs to end the practice of using aerial application of glyphosate as a routine and widespread silvicultural practice throughout the province.

The Issue

The British Columbia government currently allows forest companies to use non-selective, systemic herbicides, like glyphosate, to kill unwanted vegetation and maximize growth of commercially valuable trees when other options, such as manual brushing, are available. Broad-scale herbicide application is a non-selective silvicultural treatment used with the intent of reducing forest biodiversity, by killing aspen and other broadleaf plants. Glyphosate is the active ingredient in most such herbicides (Henderson et al. 2010).

The result of this practice on wildlife is two-fold: First the herbicide is toxic to wildlife with increased evidence to sublethal effects to many small vertebrates such as fish (Menendez-Helman et al. 2012; Braz-Mota et al. 2015), amphibians (Ralyea 2005), and insects (Perez et al. 2011). Second, the destruction of aspen and other broadleaf plants substantially reduces the quality and diversity of habitat available for wildlife. These effects can come from the non-lethal effects of glyphosate itself, the adjuvant and surfactants mixed in the herbicide, or from the effect of broad-scale spraying on habitat (Clark et al. 2009).

Each year about 16,000 ha of forest are sprayed with glyphosate (Wood 2019) and spraying occurs primarily in the Central Interior and Cariboo-Chilcotin. This is approximately 12% of the area of interior forest harvested each year. Govindarajulu (2008) reported that 90% of aerial applications and 57% of ground-based spraying occurred in British Columbia's northern interior region.

While operational guidelines exist under the Integrated Pest Management Act to protect sensitive habitats such as wetlands (Perez et al 2007; Battaglin et al. 2005; Manas et al. 2009; Menendez-Helman et al. 2012), aerial application always involves drift and overspray that reaches untargeted vegetation (Thompson et al. 2012). Plants receiving sub-lethal doses have shown impacts such as poor health, reduced growth, and genetic mutations (Reddy et al 2008). Wood (2019) reported that plants receiving sub-lethal doses may store glyphosate indefinitely, translocate it into the environment, or slowly break it down.

Glyphosate-based pesticides, their metabolites, and the chemicals they are mixed with may be more persistent and ubiquitous in the environment than previously thought. According to Helander et al. (2012) assumptions about glyphosate's rapid breakdown and non-toxicity to animals may be more problematic in northern environments, such as boreal forests, that have long winters and short growing seasons. Glyphosate in northern forests may be retained and transported in soils, with cascading effects on nontarget organisms. For example, the metabolites of glyphosate-based pesticides can persist up to 240 days after application (Manas et al. 2009). It has been found in the soil up to 4 months after application (Edwards et al. 1980). In recent years new technologies, methods, and standards have advanced the way pesticides and other chemicals are studied (Kissane and Shepard 2017) and with these new methods and approaches at hand it is now time to revisit this practice.

But perhaps the largest impact of broad-scale aerial application of herbicides are the ecological impacts to wildlife. The use of glyphosate-based herbicides reduces herbaceous and broad-leafed plant cover across large areas. This has the potential to substantially reduce food and shelter habitat for a wide range of wildlife including birds, small mammals, and ungulates (Clark et al 2009). For example, moose

are experiencing multiple stressors in the highly disturbed landscapes of British Columbia's northern interior, including decreased condition and starvation indicative of problems in forage availability and quality (Kuzyk 2016, Mumma and Gillingham 2019). Although glyphosate use may not be a primary cause of moose decline, its continued broad-scale application adds one more cumulative impact to populations already stressed by widespread landscape change and habitat degradation.

Broad-scale use of herbicides can also contribute to adverse ecological change at the landscape scale by exacerbating the risk and severity of forest wildfires, and we urge precaution in the widespread use of such pesticides. Severe wildfire has many negative effects on forest wildlife species, vegetation, soils, and overall biodiversity. In 2017, 37 of BC's eminent forest ecologists and community leaders wrote to Premier Horgan and Minister Donaldson urging changes in policy and management to grow more resilient forests and mitigate threats from wildfire (Daniels et al. 2017). Key recommendations of the letter included the promotion of more land cover in deciduous species, such as aspen, that form natural firebreaks and retard the rate of wildfire spread. Provisions in British Columbia's Forest Planning and Practices Regulation specify that within regenerating forest blocks, deciduous tree species may not comprise more than 5% of trees, or 2 ha, whichever is smaller. This silvicultural practice, often implemented through the broad-scale application of herbicides, eliminates a key defense against wildfire and further reduces the resilience of BC's forests.

BCTWS position on broad-scale pesticide application as a silvicultural practice in British Columbia.

1. We believe in the management of BC's public forests for the full range of benefits including wildlife, ecological services, forest products, and social values. This management should be informed by the best available science.

2. The emerging science concerning glyphosate use significantly raises concerns about the increased risk associated with the broad-scale use of pesticides. We caution that the science on glyphosate use in forest ecosystems is evolving, with recent studies raising concerns about its persistence in the environment and deleterious lethal and non-lethal effects on non-target organisms. Glyphosate toxicity in the environment and its impact on a wide range of terrestrial and aquatic wildlife species must be mitigated through strict application guidelines and monitoring.

3. Widespread use of pesticides that kill broad-leafed and deciduous plants is based on an outdated silvicultural model that focuses exclusively on wood fiber production to the detriment of other forest values, including wildlife. The consequences of this model, including degraded forest ecosystems and depleted wildlife populations, are detrimental to the interests of all British Columbians. Changes to silvicultural policy are necessary to promote more resilient and robust wildlife habitat throughout the province.

4. The precipitous moose declines in interior BC result from combined stressors including large-scale habitat loss (following beetle epidemics, wildfires, and salvage logging), greater vulnerability to motorized hunting, starvation, and predation. Glyphosate spraying of forage plants adds one more adversity to severely stressed populations. The ecological impacts

mediated through vegetation reduction are substantial and almost completely undocumented. Landscape-level planning and monitoring are needed to direct reforestation strategies which address wildlife habitat requirements and wildfire resilience rather than just maximizing timber objectives.

5. Our position is that in the absence of a silvicultural design that accounts for ecological integrity, the routine and widespread use of pesticides, such as glyphosate-based herbicides, is contrary to the sustainable management of forest ecosystems in British Columbia and broad-scale pesticide use is having negative impacts on wildlife and their habitats. While there are some uses that may be acceptable, such as point-application for invasive species control, the spraying of herbicides like glyphosate is a detrimental and risky practice for wildlife.
6. We urge the Government of British Columbia to end the practice of using glyphosate as a routine and widespread silvicultural practice throughout the province.

Sincerely,

The BC Chapter of the Wildlife Society.

THE WILDLIFE SOCIETY
British Columbia Chapter

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