

Understanding First Nations rights and perspectives on the use of herbicides in forestry: A case study from northeastern Ontario

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ABSTRACT

This article provides forestry professionals with an improved understanding of why First Nations are opposed to the use of chemical herbicides for silvicultural purposes on their traditional lands, based on a case study in northeastern Ontario. Results were generated using a modified form of a focus group approach. First Nations opposition to herbicide use involved not only concerns over human and environmental health (concerns common among the general public) but also spanned from treaty rights, mistrust, and respect issues to herbicide use being incongruent with traditional First Nations worldviews. The results illustrate that the science-education approach typically used to address public opposition to herbicides is neither adequate nor appropriate for addressing First Nations concerns. Instead, a more in-depth engagement and approach, centred on genuine respect for First Nations rights, culture and history, is needed to arrive at solutions that are consistent with each First Nation community's values and terms.

Key words: First Nations, Aboriginal, Indigenous, traditional ecological knowledge, herbicides, forestry, perceptions, risk, worldviews, vegetation management, silviculture, boreal forest

RÉSUMÉ

Cet article permet aux forestiers professionnels de mieux comprendre pourquoi les Premières Nations s'opposent à l'utilisation des herbicides à des fins sylvicoles sur leurs terres ancestrales en s'appuyant sur une étude effectuée dans le nord-est de l'Ontario. Ces résultats ont été obtenus à l'aide d'une forme modifiée de groupes de discussion. L'opposition des Premières Nations à l'utilisation des herbicides ne résulte pas que de leur préoccupation pour la santé humaine et celle de l'environnement, qu'ils partagent d'ailleurs avec le public en général; elle repose aussi sur les droits définis par Traité, la méfiance, une question de respect et même sur le fait que l'utilisation d'herbicides va à l'encontre de la vision traditionnelle que les Premières Nations ont sur le monde. Les résultats montrent que l'approche par l'éducation scientifique que l'on adopte souvent pour contrer l'opposition publique aux herbicides n'est ni adéquate ni suffisante pour prendre en compte les préoccupations des Premières Nations. Il faut au contraire une démarche plus approfondie fondée sur un véritable respect des droits, de la culture et de l'histoire des Premières Nations pour trouver des solutions adaptées aux valeurs et aux conditions propres à chaque communauté des Premières Nations.

Mots-clés : Premières Nations, Autochtones, Indigènes, savoir écologique traditionnel, herbicides, foresterie, perceptions, risque, vision du monde, gestion de la végétation, sylviculture, forêt boréale.



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Introduction

In Ontario, aerial or ground (air blast) application of herbicides for the silvicultural purpose of managing forest vegetation is allowed as long as the application is done in accordance with the regulated Forest Management Planning Manual (OMNR 2009) and other legislative and operational requirements (OMNR 1995). However, the use of chemical herbicides has been met with concerns by the public in North America and Europe over the perception of unacceptable human health and environmental risks (Wagner 1994, Buse *et al.* 1995, Wagner *et al.* 1998a, Ammer *et al.* 2011, McCarthy *et al.* 2011). Such concerns have led to requirements to reduce herbicide use on some certified forests (FSCCWG 2004) and in 2001, the ban of herbicides for managing forest vegetation

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on Crown forest lands in Quebec (Thiffault and Roy 2011). These reactions restricting herbicide use in forestry have persisted despite efforts to mitigate the aerial application of herbicides (Thompson *et al.* 2010, 2012), and an abundance of science suggesting that concerns about negative impacts on human health and the environment are largely unwarranted when registered herbicides are used according to label instructions (Thompson *et al.* 1991, Lautenschlager and Sullivan 2002, Tatum 2004, Swift and Bell 2011).

In Canada, concerns over herbicide use in forestry can be even more pronounced within many First Nations. For example, a preliminary survey of 30 respondents from three First Nations communities in northwestern Ontario indicated that they were more than 20% higher in their opposition to herbicides than the general public of Ontario (Decision Research 1995). A survey of moose hunters from Aroland First Nation found that community members who have a diet of moose are concerned that herbicides affect the food system (LeBlanc *et al.* 2011). In addition, First Nation direction to eliminate or minimize herbicide use are evident in formal resolutions (e.g., Quote 1 and Serpent River First Nation³), in Aboriginal Background Information Reports of some Forest Management Plans in Ontario⁴, and in some community-based land use plans now emerging in the more northerly parts of Ontario (Cat Lake First Nation, Slate Falls Nation, and Ontario Ministry of Natural Resources 2011).

A first step toward reconciling the two opposing positions on herbicide use in forestry should be to improve the understanding among forestry professionals of First Nations' rights and perspectives, their lens, concerning herbicide use. Such engagement with First Nations is needed to provide a parallel understanding to the general public's reasons for opposing the use of herbicides (Perrin *et al.* 1993, Beckley and Korber 1995, Buse *et al.* 1995, Decision Research 1995, Wagner *et al.* 1998a, 1998b). However, besides preliminary survey work (Perrin *et al.* 1993, Decision Research 1995) and generalized discussion (Wyatt *et al.* 2011, Mihajlovich *et al.* 2012) aimed at understanding First Nations' views, an in-depth engagement of First Nations over the use of herbicides in forestry has yet to be done.

In this paper, we add to the overall understanding of attitudes towards herbicide use in forestry by reporting on the concerns expressed by First Nations representatives in north-eastern Ontario. The material is based on dialogue with Cree and Ojibway persons that have been participating in a series of ongoing meetings and focus sessions on eliminating herbicide use. The intent of this paper is to provide those involved with herbicide applications in forestry, namely government and industry forestry professionals, with an improved understanding of First Nations' rights and perspectives. Without this understanding it will be difficult to claim that the use of herbicides is based upon a fully informed decision.

³Serpent River First Nation Band Council Resolution #06/07-21, January 22, 2006.

⁴Forest Management Plan for the Martel Forest, Chapleau District, Northeast Region, Tembec, for the 10-year period from April 1, 2011 to March 31, 2021: Supplementary Documentation Section 6.1.8, Aboriginal Background Information Report. Available at <http://www.efmp.lrc.gov.on.ca/eFMP/home.do> (see also Aboriginal Background Information Report for: Pineland Forest).

Quote 1. Mushkegowuk Council resolution requiring the phase-out of herbicides

At the time, Mushkegowuk Council had representation from Attawapiskat, Kashechewan, Fort Albany, Moose Cree, New Post (now named Taykwa Tagamou), Chapleau, and Missanabie First Nations (Weenusk First Nation is a more recent addition to the council).

WHEREAS the lands and forests in the traditional territories of the Chapleau Cree First Nation surrounding its reserve, and the lands and forests in other parts of the Mushkegowuk Territory, are repeatedly subject to aerial spraying intended to encourage growth of planted trees by eliminating other vegetation;

AND WHEREAS this aerial spraying has wide destructive effects, including harming many beneficial plants such as traditional medicinal plants and berries, and harming the habitat in other ways;

AND WHEREAS there are alternative and less destructive methods of achieving the desired affects, including manual tending;

AND WHEREAS alternative methods such as manual tending may be more expensive but are also more beneficial to local and First Nation economies, in addition to being less harmful to the lands and forests;

AND WHEREAS other jurisdictions have banned aerial forest spraying;

THEREFORE BE IT RESOLVED that the Mushkegowuk Nation and the Mushkegowuk First Nations urge and require the Province of Ontario and the forestry companies operating in Mushkegowuk Territory plan and implement a rapid phase-out of aerial forest spraying, and plan and implement early replacement of aerial spraying with more acceptable practices, including manual tending;

AND BE IT FURTHER RESOLVED that the Province of Ontario adopt and implement policies and legislation which prohibit aerial forest spraying in Mushkegowuk Territory.

MUSHKEGOWUK COUNCIL (MOOSE FACTORY, ONTARIO) RESOLUTION No. 2004-09-98

Methods

The discussions presented here are derived from a series of meetings with First Nations from October 2011 to July 2014 (Table 1) associated with an initiative called the "Herbicide Alternatives Program" (HAP). The program was started in 2011 by Tembec Inc.⁵, an integrated manufacturer of forest products and Forest Stewardship Council (FSC)-certified⁶ that operates over a large area of northern Ontario. Tembec Inc. is collaborating with First Nations to review herbicide use and to develop and implement a strategy for regenerating harvested areas without the use of chemical herbicides aimed at harmonizing forestry practices with traditional First Nations values. A HAP steering committee was initiated with First Nation representation: Michipicoten First Nation, Chapleau Cree First Nation, Missanabie Cree First Nation, Taykwa Tagamou Nation, and Mattagami First Nation. At times community Chiefs, Councillors, Elders, administrative officials and First Nation knowledge keepers joined the steering committee meetings and field sessions to provide more direct input. All parties attending HAP sessions strived to make decisions that were aligned with the objective of eventually eliminating

⁵<http://tembec.com/en>

⁶ <http://ic.fsc.org/>

Table 1. Dates, locations, and participants for Herbicide Alternative Program (HAP) meetings. Each meeting included a modified focus group session targeting the attending First Nations communities' reasons for opposing the use of herbicides in forestry.

Date	Location	First Nations attendance		Comments
		HAP member	Other attendees for parts of meetings and field tours	
Oct. 17–20, 2011	Timmins, ON; LaSarre, QC	6	–	Initial meeting and field tour ^a
Dec. 14–15, 2011	Kapuskasing, ON	4	–	–
Mar. 19–20, 2012	Chapleau, ON	3	–	Includes field trial tour
Apr. 5, 2012	Chapleau, ON	1	Chief and 2 Councillors from Chapleau Cree First Nation; Chief Michipicoten First Nation	Includes field trial tour
May 22–24, 2012	Kapuskasing, ON	2	–	Includes field trial tour
Aug. 15–17, 2012	Rouyn-Noranda, QC	1	–	Field tour to Quebec ^a
Oct. 25–26, 2012	Timmins, ON	5	–	–
Dec. 13–14, 2012	Sault Ste Marie, ON	4	–	–
Feb. 19–20, 2013	Chapleau, ON	4	Chief of Chapleau Cree First Nation; Chief Michipicoten First Nation	–
Jun. 3–4, 2013	Chapleau, ON	4	Chief and 2 Councillors from Chapleau Cree First Nation	Field tour; update/questions at a Chapeau Cree First Nation community dinner
Dec. 9–10, 2013	Timmins, ON	5	–	–
Apr. 8–9, 2014	Timmins, ON	4	–	–
Jul. 14–15, 2014	Missanabie, ON	5	Chief and 2 Councillors from Missanabie Cree First Nation; 1 representative from Matachewan First Nation	–

^aThe neighbouring jurisdiction of Quebec has significant experience with vegetation management alternatives to herbicides, given that herbicides are banned there for purposes of managing forest vegetation on Crown lands.

the use of chemical herbicides on Tembec tenures in north-eastern Ontario consistent with the values of the First Nations communities in this area.

An integral part of the dialogue at HAP steering committee meetings and associated field sessions is discussion about why these First Nations communities oppose herbicide use in forestry. To understand this critical issue, we employed the focus group method of Krueger and Casey (2008), but with some procedures modified to ensure due respect was given to First Nations protocol around talking circles and information sharing. These protocols were jointly agreed upon by all members of the HAP steering committee during initial work to develop terms of reference for the project. While maintaining the primary intent of the focus group approach, i.e., to generate qualitative data and insight about “why” participants think or feel the way they do on defined issues (Krueger and Casey 2008), we modified the method's procedures in the following ways:

1) *We examined only the non-herbicide First Nation perspective.* Focus groups normally address various views on an issue (Krueger and Casey 2008). We did not address the broader issue of herbicide and non-herbicide use since, for First Nations communities, targeting participants with opposing views can give the impression of an attempt to divide their communities. Moreover, while we do recognize that there are multiple First Nation views on the use

of herbicides, such views are not dissimilar to the views in mainstream society that have been extensively researched and discussed (Thompson *et al* 1991, Perrin *et al.* 1993, Buse *et al.* 1995, Decision Research 1995, Wagner *et al.* 1998a, 1998b; Lautenschlager and Sullivan 2002, Thompson and Pitt 2011), and do not need repeating here. The focus group only addressed opposition to herbicide use, which is the perspective of the First Nations communities that are collaborating with Tembec on the HAP initiative. Notwithstanding, we feel that our primary non-directive and open-ended question, i.e., “*What are the reasons behind First Nations communities opposition to herbicide use in forestry?*” addressed a wide spectrum of reasons behind opposition to herbicide use as is characteristic of a focus group (Krueger and Casey 2008).

2) *We targeted fewer participants.* Focus groups are typically composed of five to 10 participants, albeit the number of participants can acceptably range from as few as four to as high as 12 (Krueger and Casey 2008). We aimed to have at least four First Nations steering committee members, Chiefs, Councillors, or administrative officials present per session, although the number in attendance varied according to availability, from one HAP steering committee member for a field tour in the neighbouring jurisdiction of Quebec to an additional four participants for a meeting near a local First Nation community (Table 1). A compar-

atively small number of participants is appropriate in this study because First Nations steering committee members, Chiefs, Councillors, and administrative officials consult with their respective communities (within Tembec license areas), gather information, and relay community views, values, and concerns back to the HAP steering committee.

- 3) *We extended the focus group discussion over a longer time period.* Focus groups are generally conducted in one session (unless perceptions of change over time are targeted) (Krueger and Casey 2008), whereas the focus group discussion in this study extended to 13 HAP meetings and associated field sessions to accommodate the time required to build trusting relationships. Any research method that requires participants from First Nations communities and that is conducted by persons from outside of these communities requires a meaningful amount of time for relationship building (Fletcher 2003, Asselin and Basile 2012). Generally, it is not feasible to simply “show-up” in a First Nations community, invite community members to a focus group session, and expect frank discourse (let alone participation), especially for a contentious issue such as herbicide use. HAP steering committee meetings purposely occurred early, often, and are ongoing in keeping with the main goals of building meaningful relationships and trust. The time invested in creating a social environment that is comfortable, permissive, and nonjudgmental resulted in a positive relationship of trust being built to the extent that the approach was viewed as sincere by First Nations participants.

Over the course of the focus group sessions, the authors acted as scribes and compilers, recording what First Nations shared. Verbatim quotes from First Nations people were presented to capture not only the thought but also to help convey the emotions or emphasis behind the thought with an explanation providing the context and background to the quotes for readers. A commentary from the compilers is included to provide supporting evidence from the published literature to: 1) reinforce First Nations’ teachings from HAP meetings; 2) illustrate that these perspectives extend beyond northeastern Ontario; and, 3) provide an interpretation or explanation where necessary to help bridge First Nation concerns and teachings to a forestry audience. In keeping with ethical protocols of working with Indigenous participants on research projects, all commentary was reviewed by the First Nation participants to ensure the interpretation was correct, and any information included in this paper was done with the consent of each individual involved.

Each session incorporates traditional First Nations smudging ceremonies and prayers, which provide non-First Nation participants with opportunities to be embedded in experiences or dialogue that may help them to better understand First Nations’ traditional worldview. Each session begins with a smudging ceremony and a prayer by a First Nation Elder and closes with a prayer that gives thanks to the Creator for the group’s shared progress. Much of the working sessions centers on a talking circle format with opinions, concerns and suggestions invited and sought from each person in attendance. Many meetings also involve time on the land, which enhances opportunities for all participants to share and discuss their respective knowledge (traditional, operational or scientific) with one another. Over time, the direct, open,

respectful, and non-adversarial approach of the sessions has aided the relationship-building process and led to a more in-depth understanding of herbicide issues for all partners.

We recognize that the views within and among First Nations communities across Canada can vary, spanning from strongly traditional to less traditional materialistic perspectives, but the materialistic perspective is not discussed in this paper for two reasons: 1) the materialistic perspective does not represent the views held by the First Nations communities in northeastern Ontario that are collaborating with Tembec through the HAP initiative (focus of this paper); and, 2) an explanation of the materialistic perspective is beyond the scope of this paper. For an example of how opposing views can play out even within First Nations communities see a discussion on the forest management practices of the Menominee people of northeastern Wisconsin (Burgess 1996).

Admittedly, it can be challenging to use the contemporary written approach to capture and share the perspectives of First Nations people (Murray and Rice 1999, Watson and Huntington 2008). Not only do First Nations share information in a more oral-aural experiential manner, their traditional knowledge may also be considered at several levels in a knowledge-practice-belief complex (Berkes 2008), making it difficult to pin down a single definition for any given concept (McGregor 2009). This situation contrasts with the western approach where knowledge is represented by facts measurable in time and space within the empirical realm, with spirit and connection disregarded (Watson and Huntington 2008). The challenges of using the contemporary written approach to explain concepts within a traditional First Nations worldview are also exemplified in something seemingly as simple as authorship. In contemporary citation terms—who is the original author? Or, as a First Nation participant in another recent local forest management forum (MERC 2009) asked: “*How will you cite the Creator?*” Despite these types of challenges, every attempt was made to strike a balance between maintaining the original thoughts of the First Nations participants and communicating effectively to a non-First Nation forestry audience.

Results and Discussion

Concerns from observations on the land

At the focus group sessions, participants consistently expressed their concern about the potential environmental and human health impacts of herbicides—based both on their reliance on the land and direct observations of detrimental changes occurring in areas where herbicides have been sprayed. Some specific observations shared by First Nations members of the HAP steering committee included: moose being absent from areas that have been sprayed with herbicide; dead birds observed in areas after spraying; bones turning green accompanied by the smell of herbicide when they are exposed to air during the dressing of a hunted moose. Local First Nations people have observed that moose seek certain plants to eat to maintain a healthy immune system. The stress associated with loss of home and habitat (due to clearcutting and aerial herbicide applications) and increased hunting pressure, combines with insufficient plant medicines (because of herbicide application), to compromise moose immune systems to the extent that moose become predisposed to infections and diseases. The moose become weak

and unhealthy, making them easy prey for wolves. In a complementary way, western science itself provides evidence that threatening activities cause stress in animal populations (Creel *et al.* 2002) and animals have the ability for self-medication (Rounak *et al.* 2011, Engel 2003). Michipicoten First Nation Elder John Tangie expresses this concern and frustration that something is wrong on the land (Quote 2). This warning by the government to not eat certain parts of a moose represents a further disruption of traditional life, practice and diet, and First Nation hunters do not want to see further risk of damage to their traditions.

Quote 2. Something is wrong on the land

I think herbicide use is going to kill all our medicinal, edible plants, our medicines, and I never ever heard of not being able to eat the heart and liver of a moose. But now the government puts out pamphlets warning us not to eat the heart or liver of a moose [reference to OMNR 2011; in other conversations similar references are made to restriction on eating fish (OMOECC 2017), another food staple]. But when we were kids we had a feast on moose liver, heart and kidneys, but now what's the problem with that? If the government puts out warnings not to eat the internal organs, what's causing the internal organs to be bad? So if the internal organs are bad, we are taking a chance eating them. That is our food supply that is being tampered with. So how come? Is that from the herbicide use, or what?

So I am saying is, if they are using herbicides in the bush, moose don't know those willows, those trees there were sprayed with herbicide. They will still go forage and eat. I don't know exactly when they [the government] came out with the warnings. It's just not natural and it's not natural to worry about this when hunting. That's alien to me. Because that's how I grew up, we ate the liver, heart and kidneys.

JOHN TANGIE, ELDER AND FIRE KEEPER, MICHIPCOTEN FIRST NATION

Commentary

Many First Nations communities feel that their unique relationship and attachment to wild plants for food, medicine, and ceremonial purposes are insufficiently recognized and protected (Mitchell 1998, Wyatt *et al.* 2011). As well, for some communities, herbicides may also be seen to limit their opportunities for developing non-timber forest products (e.g., mushrooms, blueberries) in culturally appropriate and sustainable ways (Mitchell 1998). The wild plants of concern to First Nations people are not isolated to specific plant communities or areas that can be delineated on a map and protected from aerial herbicide spraying, but rather they are widespread across the landscape. The list of plants of concern to them is long (Marles *et al.* 2000, Brigham *et al.* 2010, Karst 2010, Upreti *et al.* 2012) and understanding of where and under what conditions such plants are found is limited. First Nations also see herbicide sprayed on vegetation as working its way up the food chain to affect fish and wildlife that are likewise staple sources of First Nations food and culture (e.g., LeBlanc *et al.* 2011).

The response from government agencies to First Nation observations on the land and concerns over herbicide use have been attributed to a variety of other causes: road access; parasites unrelated to herbicide spraying; pollutants from the larger southern industrial areas that fall out of the air; mine

tailings in the north; climate change. In addition, government agencies rely on the abundance of science suggesting that concerns about negative impacts on human health and the environment are largely unwarranted when registered herbicides are used according to label instructions (Thompson *et al.* 1991, Lautenschlager and Sullivan 2002, Tatum 2004, Swift and Bell 2011). However, from the First Nations viewpoint, this reasoning appears to be dismissive, disrespecting First Nations rights, experiences, and views, and is simply interpreted as a defensive measure to justify herbicide use because it is the most efficient (i.e., least cost) to control competing vegetation.

The opposing views create frustration on both sides. Forest practitioners⁷ are frustrated because forest renewal relies on vegetation management and they feel First Nations are unreasonable since the science clearly demonstrates that herbicides, when used properly, are safe from both negative ecological and human health impacts. First Nations are frustrated because they have continuously brought their concerns to the table during forest management planning meetings. Archie Nolan, Missanabie Cree Traditional Elder, tells us that other Elders he speaks to question: "What don't they understand? We do not want herbicide spraying on our territory!"

The First Nation lens

In order to move beyond this impasse, forest practitioners first need to correct an apparent dismissive attitude and put some effort into understanding the First Nation lens. We believe that through respectful understanding of this alternate lens, those in the forestry profession will see that the opposition against herbicides is not "unreasonable."

Sharing the land

From a government perspective, or lens, sustainable forest management takes place on "Crown Land," hence in Ontario there is the Crown Forest Sustainability Act (1996). However, for traditional First Nations, the idea of land or water "ownership" by either them or the "Crown"—i.e., that someone could have a superior claim to its use—is a foreign concept, out of step with their belief that possession of land by humankind is unnatural and unjust (Alfred 2009) and out of step with what was agreed in the treaties. Under First Nations traditional culture, land supports all life and is given to all people (Deloria 2007) and land is, therefore, necessary to be treated as a shared resource, rather than as an owned commodity. And above all, the integrity of the land is to be respected by everyone.

Jason Gauthier (Chief, Missanabie Cree First Nation) articulates how for First Nations land sharing and compatibility of use is at the heart of the relationship (Quote 3) (see also Royal Commission on Aboriginal Peoples 1996). From the First Nation perspective then, outside decision-makers empowered by the Crown to manage traditional territories are seen to impose unilateral decisions about herbicide use, even when First Nations communities clearly oppose spraying. Thus for First Nations, herbicide use in forestry, as it is

⁷By "forest practitioners" we are referring to anyone involved with any aspect of herbicide spraying from chemical manufacturers, to government regulators, to forest managers, to field foresters applying herbicides for vegetation management.

Quote 3. What it means to share the land

*Our understanding is that we were sharing the land which means that when a forester intends to use herbicides, we must agree on the treatment... and the option of “no” as an answer must be respected. I am not referring to just jurisdiction here, I am referring to **Respect**, a teaching that our people live by everyday of our lives. The intent of land use is not based on exclusivity and ownership, but sustainability and responsible practice. The responsibility of stewardship is fundamentally based on kinship, the relationship we have to all living things, and Mushkegowuk treats our brothers, sisters, mothers and fathers and so on, like we expect to be treated. I have heard the term “eco-centrism” used in this way, but I think that it does not encompass our spiritual and ceremonial ties to earth’s life-force.*

Validation is not what we look for in this process, but respect our role as the people of Aski. Understand clearly, that our intent is not only to care for the land solely for First Nations’ peoples, but for all of humanity.

CHIEF JASON GAUTHIER, MISSANABIE CREE FIRST NATION

currently enacted, does not embody the spirit to share and co-exist in peace. Instead, it embodies both a lack of recognition that Aboriginal peoples are the original inhabitants and stewards of the land and a lack of respect for the intent and sacredness of the treaties that land is a shared gift. And sharing the land in a good way is a key value, which means that before anything is done on the land both sides must agree in order to come to a collective decision. As expressed by Jason Gauthier, in the spirit of respect and sharing there must a willingness of government and industry to accept that the answer to herbicide spraying may be “no”. All First Nations are seeking on the issue of herbicide use in forestry is respectful co-operation on equal terms.

Commentary

A key phrase in Quote 3 is “*Our understanding is that we were sharing the land*” where “our understanding” refers to treaties. First Nations do not look upon treaties as a surrender of the land but rather as a solemn promise between sovereign nations to share and co-exist in peace (Stevenson and Webb 2003, Long 2010), “*an embodiment of a relationship between equals*” (McLeod 2007: 81). This understanding of treaties is supported by First Nation oral history and, for Treaty No. 9 in northeastern Ontario, is further supported by documentation that indicates what First Nations agreed upon verbally with Canadian government representatives during signing of the historical treaties was not what was written in the final treaty documents (Adams 1989, Cardinal 1999, Long 2010).

The over-riding message is that Aboriginal peoples in Canada hold particular rights in relation to forested lands as specified under the Canadian Constitution, traditional title, negotiated treaties, and legal decisions (Smith 1998, Stevenson and Webb 2003, Wyatt 2008, Hoehn 2012). Because of the historical and legal position of First Nations in Canada with rights and interests recognized at international and national levels, consultation and accommodation of First Nations must be considered a fundamental building block for sustainable forest management (Stevenson and Webb 2003). That is, First Nations are not “just another stakeholder” in a consulta-

tion process (Stevenson and Webb 2003), rather they are “rights-holders.” First Nations use treaties as a lens to view responsibilities—and these responsibilities include decisions about herbicide use on their traditional lands. As such, treaties form an integral part of the opposition to herbicide use in forestry. So, although it is good to have an understanding of what is behind the demand to stop using herbicides, First Nations should not have to convince non-First Nations to understand their perspective in order to stop herbicide use. The issue is about rights not persuasion.

Land as home

For many non-First Nations, home is property—a house, a cottage, a personal place that is in a sense sacrosanct that gives owners protection against the elements and a sense of security. In this sense, property is protected by law and with it contains certain rights to what governments and industry can do on the property without first asking for permission. Certainly if the government decided to send in a work crew to herbicide spray the back lawn without an owner’s permission, there would be legal recourse available to the owner.

First Nation communities express a different view of the concept of home where the land is considered home. A substantial number of First Nations people still rely on the land for food stuffs obtained through hunting, fishing, and gathering, and these staples are often shared within their communities (LeBlanc *et al.* 2011, Wyatt *et al.* 2011). Land also provides people with a place of reference to remind them who they are and provides substance to life’s experiences and how to relate to all things (Fixico 2009); specific places, locations, and the ancestral stories associated with them are viewed as integral to the present and future (McLeod 2007). Every feature of the landscape resonates with story and every point of significance has a name (Davis 2009).

Lark Ritchie, Chapleau Cree First Nation, recalling a story from his childhood illustrates this conception through a personal recollection (Quote 4). Under this perspective, the land encompasses not only the physical ground beneath a person’s feet but also the air, water, vegetation, fauna, and the associated relations among and within (captured in Cree as *paquataskamik* which encompasses the natural environment and all it contains⁸), and one’s relationship with the land is really a relationship with home. Home in this sense ties together family, history and identity. First Nations view their life here through the lens of place—tracking past, current, and future generations in one place on the land. To First Nations on the land, land is home and an integral part of one’s whole existence. Thus herbicide spraying on the land, on home, is viewed by First Nations that outsiders are “*spraying on top of us*.”⁹

Commentary

Lark Ritchie’s personal account reflects a general view expressed and reinforced by other First Nations. Author and scholar Thomas King (2012: 219) states: “*Land has always been a defining element of Aboriginal culture. Land contains the languages, the stories, and the histories of a people. It pro-*

⁸For a more in depth look at the meaning of *paquataskamik* see: <http://paquataskamik.weebly.com/>

⁹Lark Ritchie, Chapleau Cree First Nation member of the HAP steering committee.

Quote 4. The land is home

This little story illustrates the central significance of the environment in many Native American lives. When in the last days of life, a man remembers and shares life and experience in the context and framework of a river, we begin to understand the subtle, yet vital interweaving of ecology and being, a fundamental entity in personal and social identity.

On a Thursday evening in May, in the Spring of 1961, my mother fried some pike fillets and sent me with them to the Lady Minto Hospital. I brought them to my grandfather, who lay there in the last stages of cancer. I was twelve years old, and he, sixty seven. "Hello", I said, as I entered his room. He opened his eyes and looked up with a short reply. "Hi Boy, sit down". I sat. He arranged himself, moving a pillow under his side, facing me. We both knew his condition, though we did not talk about it.

A silence continued. We were used to silence, we had spent my life until that point as grandfather and grandson. Walking and sitting together; few words, long periods of silence, interspersed with teachings and play that helped make me who I am today. I handed him a small brown paper bag. "Mommy made some fish for you," I mumbled, and handed the bag to him. He accepted the bag, and pulled out two packages wrapped in white translucent waxed paper. He unwrapped one. "Ooo, Fish", he said. His expression conveyed that this was an important thing, and that I was somehow, I was special for bringing it to him. "Where is it from? What kind?"

"It's Pike," I replied, "From down the river."

"Who caught it?"

"Daddy caught it. Down past the rapids, in the weedbed near the beach."

We both knew that place; we had traveled the river and each bend, each weed bed was as familiar to us as the cupboards of our homes. For others who travel the river, that spot is on the east side of Henderson Lake, a small sand beach now used by hunters in the fall as a moose hunt campground.

Again we entered a moment of silence, as he broke a fillet into two. "Have some with me," and he handed me a small piece. "I already ate," I said, "we had it for supper." He offered it again, urging the fragment towards me, "Have just a little piece with me; its better to eat together." I took it and ate it.

For some seconds, we chewed, and swallowed. "It's good." The short sentence trailed off, almost a whisper. I watched him break off another piece, which he handed to me. I accepted it. He broke off one for himself, and as he did, I saw tears in his eyes. The first tears I had ever seen in those eyes, and the last. My own eyes welled with the same warm water. He rolled onto his back, looked at me, and his hand motioned, "Eat." He placed his own piece into his mouth, and chewed. I did the same.

He looked up, past the hospital ceiling towards a sky he saw in his mind, "We used to camp there, on that beach, it is a good place for a break; to cook." He wiped his lips, and then his eyes; first one, and then the other. "Across the river, there is a small bay; behind the island. It's another good place to fish." And he told me a story of a fish he had caught there, and how he had used a green line and a sucker to catch it, and how it had flopped in the canoe. He told me one more; of a bear on a rock, just down the river a bit.

Our tears had passed, and he asked me about school, and what it was like outside. I do not remember what else we talked about, or when, or how I left. But it was the last time we ate together, and talked of fishing and hunting, of canoeing and camping. I saw him one more time; two days before the end. He was unaware.

We had shared a fish. Looking back at it now, it was an act of communion. A final sharing of knowledge, and being together. A passing. The basis of that communion was the river, and the life and lifestyle it provided. Two people connecting, two adjacent generations. Two ages of humanity; one moving into the past, one into the future, bound together by memories of a river. Saying goodbye.

LARK RITCHIE, CHAPLEAU CREE FIRST NATION

vides water, air, shelter, and food. Land participates in the ceremonies and songs. And land is home". It is the land on which people are to live in a sacred manner, because land sustains all life and, without other forms of life, humans themselves could not survive (Deloria 2003). As expressed by Stan Loutitt of the local Moose Cree First Nation (Loutitt 2009: 5): "... we have never forgotten our forefathers and Elders who saw themselves as part of the land. They were born, lived, died, and are buried in many places in the land. Therefore, the land is the sacred resting places of our ancestors and together, forms our collective cultural memory and oral history".

Scholars suggest that this deep connection and care that First Nations people have for land or place contrasts with the attitudes towards land evident in persons of settler origin, largely due to the different lenses the two groups use to view their life in North America (Ross 2006, Deloria 2007, Atran and Medin 2008). Whereas First Nations view their life here through the lens of place—tracking past, current, and future generations in one place on the land—persons of settler origin tend to view life here through the lens of time. For example, persons of settler origin may be able to trace when their forefathers landed on the shores of North America, and then how the family and subsequent generations moved and settled across the continent. While to First Nations people land is home and an integral part of one's whole existence, persons of settler origin tend to view land as more of a commodity—a place to live or recreate, if only for a while, before a different piece of land may be used.

First Nation traditional worldviews

In Canada, as in most western countries, governance is based upon a western materialistic worldview¹⁰ which presumes all that exists is the physical world where all things are material and limited to a given point in space and in time with natural laws operating through cause and effect. Although religious freedom is recognized, explicitly bringing religion or the sacred into government policy is limited. In Ontario's forest management planning process, as long as the sacred refers to something tangible, a cultural heritage value (e.g., burial sites, archaeological sites), then accommodation can be made. For example, First Nation sacred sites can be identified and forest harvesting avoided in the specific area with allowance of a buffer around the area (OMNR 2007). However, more encompassing concepts such as animals or plants having sacred relationships or the land itself as sacred, are difficult to incorporate into a governance structure based upon the materialistic worldview. For example, the Ontario Ministry of Natural Resources states that the ministry is "science-based"¹¹ thus the sacred as defined by traditional First Nations is difficult to incorporate towards influencing policy, decisions and operations.

¹⁰Terminology for the "western" society worldview and its science is not very clear. Although the terms "western" or "Euro centric" do not really apply anymore, because this worldview also dominates countries in Asia, South America, and Africa, in this paper we use the term "western" for convenience. Thus the term is meant to include all "analytical" or "materialistic" worldviews, not just in western Europe or in North America

¹¹See Ontario Ministry of Natural Resources Science for the sustainable future: A science strategy. Internal Report. 36 p.

For those holding a traditional First Nations worldview¹², much opposition to chemical herbicides can be related to the incongruity of the practice with their traditional worldview. To this end, a brief introduction to the traditional First Nations worldview is provided below, which is both contrasted to the western materialistic worldview of mainstream society and discussed in the specific context of herbicide use. While each First Nation and language group has many forms and variations in beliefs and practices, for purposes of discussion this introduction draws on the commonalities of emotional attachment and deep respect for the living world across First Nations. The discussion is not meant to enable readers to fully understand the traditional worldview, which would take decades of learning under the personal guidance of First Nation Elders and Knowledge Holders.

Responsibility and reciprocity

Traditional First Nations feel a special responsibility to continue caring for the land generation after generation, the stewardship principle reflecting a spiritual connection with the land established by the Creator (Alfred 2009). Since this responsibility has been handed down by the Creator, it is inherent; consequently, it can never be extinguished by the “Crown” or any other outside authority. There is a sense of responsibility that the land will take care of humans but in turn humans have to ensure the land is cared for, what in English would perhaps be referred to as “reciprocity” (Quote 5). Using herbicides in forestry for efficient commodity production is seen as an affront to responsibility for taking care of and respecting relationships with all things, and an affront to the understanding of reciprocity. Disrupting the natural processes of an inherited gift is considered irresponsible, regardless of the potential benefits identified by resource managers.

In addition, traditional First Nations find particularly disconcerting with the western materialistic worldview the attitude of people towards other life forms: the idea that humans are the pinnacle and at the centre, and all other entities are there to serve human needs even beyond what is needed for survival. Traditional First Nations believe that all life originates with the Creator, and therefore all life forms must be respected equally (Quote 6). To First Nations, herbicide use goes against the circle of life by deeming certain life forms as “weeds”, which are then killed *en masse* by chemicals to make way for commodity production of conifer species. Archie Nolan, Traditional Elder, Missanabie Cree First Nation emphasized that “there is nothing in traditional First Nations teachings that allow for mass killing of life forms.”

Commentary

The responsibility that comes with the gift of land and life is emphasized by Edmund Metatawabin of Fort Albany First Nation (Royal Commission on Aboriginal Peoples 1996): “[Mushkegowuk of James Bay] hold a belief that the Creator

¹²The term “traditional” can be misleading, because it may imply that the culture is somehow static, caught in the past. Like other cultures, First Nations cultures change through time, except that there is a colonial history of a systematic imposition of outside beliefs. As such the term “traditional” in context of this paper refers to a pre-contact-based worldview additionally shaped by post-contact influences.

Quote 5. Responsibility and reciprocity

This inherent responsibility to care for the land is inherited with the gift of land and life from the Creator. Fish, trees, plants, berries ... signed sort of a covenant that they would give to the humans to help them to live but they [humans] had to manage things in a good way, so all will not disappear. How can the plants and animals, birds, fish take care of us when the humans have taken everything for profit?

ARCHIE NOLAN, TRADITIONAL ELDER, MISSANABIE CREE FIRST NATION

Quote 6. Respect all life

Life begins with the Creator, therefore all life forms must be respected equally. Herbicide application goes against the hoop of life by deeming certain life forms as “weeds” which are then killed by chemicals to make way for commodity production of conifer species. There are people who say that these chemicals are harmless but why does foliage die then when applied?

There is nothing in traditional Aboriginal teachings that allow for the killing of life forms. It is one thing to harvest specifically for survival but herbicide application is seen as a killing using chemicals to generate profit. Further concern is expressed that broad chemical application kills food and medicinal plants. Who is to disagree with this, perhaps ones who are not connected within the circle of life? It is up to you as individuals to ponder and wonder about this and how it affects us now and how it will affect future generations to come. Respect and love for all life is the key to life.

ARCHIE NOLAN, TRADITIONAL ELDER, MISSANABIE CREE FIRST NATION

put them on this land, this garden, to oversee and take care of it for those that are not yet born.” Stan Loutitt of the local Moose Cree First Nation (Loutitt 2009: 5) expresses the concept of reciprocity for taking care of the land: “We love our land and have a special sacred attachment to it. Our philosophy is we believe that we must care for the land as it has cared for us.” The view that the natural world contains commodities of monetary value without reference to spiritual connections is seen as an extreme devaluation of nature from a traditional perspective (Alfred 2009). While it is one thing to kill for survival, killing without reverence is seen as a spiritual mistake (Laduke 1999). It is viewed as inappropriate for humans to attempt to control or manipulate forests in this manner (Stevenson and Webb 2003); nature and the environment are to be treated with respect.

The concept of balance and ways of knowing

Within a western materialistic worldview, herbicide safety may be judged only on physical effects (cause and effect), using scientific experimentation as the tool for assessment. To traditional First Nations, however, the issue of herbicide use is much deeper than the focus on narrowly parameterized physical observations.

The traditional First Nations worldview is expressed in a relationship to the land and the environment where reality combines the physical and metaphysical to achieve a balance that influences the First Nations philosophy of living or way of life (Bird 2005, 2007; Fixico 2009). This balance can be expressed through the Medicine Wheel representing the

alignment and continuous interaction of the physical, mental, spiritual, and emotional aspects of human nature that must be cultivated within us and used to make decisions. The Medicine Wheel is a life framework that helps people see the interconnectedness of themselves with the rest of creation. Each aspect of human nature must be equally developed in a healthy, well-balanced individual, and learning in a whole and balanced manner requires all four aspects to be engaged in the process (Lane *et al.* 2004). The centre of a Medicine Wheel is the balance that gives us the ability to look in all directions and appreciate and respect all things, giving an existence in balance with life and the universe (Lane *et al.* 2004, Fixico 2009).

Isabell Souliere, Missanabie Cree First Nation, illustrates this view in a discussion on collecting plants for food, medicines and shelter (Quote 7). Although Isabell does not consciously reference the Medicine Wheel, we can see the balance in action in her words¹³. The physical need for plants provided by the earth in order to survive, and the mental knowledge of where and when to collect plants is similar to a western empirical approach. However, the spiritual aspect plays an integral part of harvesting plants with the laying of tobacco or using them in sacred fires; the emotional cannot be separated either in the positive sense of respecting plants and seeking comfort from plants or in the negative sense of reacting to herbicide spraying. When Isabell says the food is “contaminated”, she stresses that it is more than the western materialistic definition of a simple physical contamination; rather the essence of the plants have been contaminated creating a change in the biological systems, the contamination “becomes” the plant. In turn, any living beings eating herbicide-sprayed vegetation are eating the contamination, introducing this whole contamination into themselves which is not healthy on a physical, mental, emotional and spiritual level. Winona Laduke, author and member of the Mississippi Band of Anishinaabeg, echoes this view, feeling that the recovery of First Nations people is tied to the recovery of the food, because food itself is medicine: not only for the body, but for the soul, for the spiritual connection to history, ancestors, and the land (Laduke 2005: 210).

Commentary

Traditional First Nation participants feel that under the western materialistic worldview, the way of gaining knowledge has limited itself to only the mental realms of the Medicine Wheel (and then only to a portion of the mental realm) as it affects the physical realm. Indeed, under the assumption that the material world is all there is to reality, science does very well. In comparison, gaining knowledge within a traditional First Nation worldview involves much more than what a western science approach would consider local experiential or anecdotal knowledge, or points on a map. They “observe and analyze everything holistically using [our] mind, spirit, emotion, and body” (Regan 2010: 52). By analogy, gaining knowledge and its application is a massive cumulative synthesis that takes into account the physical, mental, spiritual, and emotional

¹³After hearing this quote, we (the compilers) approached Isabell to ensure our interpretation of her using the Medicine Wheel was correct. She was actually surprised at the connection to the Medicine Wheel since she does not consciously make this connection. It is simply the way she inherently thinks.

Quote 7. A unified and balanced view

When we collect our medicines and our food that the earth provides us with it is collected at a certain time. We have much respect for the plant and see it as a living being as we are. We ask the plant to help us for what we are picking it for and we lay our tobacco down in appreciation of what we take. We also harvest plants at a certain time of the year and some are collected at different times of the year. Each plant is affected differently some are hardier than others and we have to be careful that we don't totally kill out a plant that we use for medicines.

The plants or vegetation provide many things in our lives, they provide a multitude of uses in Aboriginal Peoples lives. They not only provide healing, they provide connections to the earth, with yourself and your family, and with your community. We seek comfort through our plants for protection of ourselves and our families and carry much respect for our medicines. We use the plants (medicines) in our ceremonies in many ways, we use them when we fast. We line the shaaphtawaan¹⁴ with medicines, we use them in our sacred fires, we cook and drink medicines and we use them for protection and for care in our lives. We give them to others as gifts. Plant use in our traditional life has always been there but is now being threatened by the use of the chemicals. Some plants are harder to gather and some can't be used at all because of the chemicals on them.

I once took my children out to pick berries for our first outing with my children to teach them what my mother had taught me. We were excited to be in the bush and not in the city and there was much excitement among all of us. We went to an area that my mother once took me for berries. We picked and did not eat them because we wanted to wait to put all the berries together. While picking I noticed something different. I was heart struck and feeling scared that I made a mistake bringing the children in the area I chose. We went back to the entrance and then saw a sign about the spraying of herbicides which I did not notice on the way in through the excitement. I was ashamed that I had to tell the children we couldn't use the berries because they are contaminated. My kids were devastated and so was I. We dumped them and said a few words and then went to look for another place but could not find a place that was not sprayed.

— ISABELL SOULIERE, MISSANABIE CREE FIRST NATION

¹⁴In English referred to as “long lodge” which is used for ceremonial purposes.

aspects simultaneously, what Nuu-chah-nulth author E. Richard Atleo refers to as an “*integrative methodology on the non-physical and physical domains*” (Atleo 2011: 63). The First Nation mind seeks to comprehend relationships that are seen as keys to understanding the world and the universe. Knowing and gaining new relationships is essential to well-being and existence (Fixico 2009).

Historically, during pre-contact times, First Nations survived by passing critical knowledge down from generation to generation through unbroken ancestral teachings, comprised of a shared history of experiences, innovations, and inventions (Alfred 2005). First Nations have survived for a long, long time in Canada under an unforgiving environment (Atleo 2011) because they were able to conduct this synthesis or integrative methodology, drawing information and lessons from life experiences, Elders, parents, grandparents, community knowledge, community stories, intuition, plants, and animals, as well as spiritual forms. The whole of what is articu-

lated in Medicine Wheel teachings is involved in the process (Lane *et al.* 2004), to literally make a personal life-and-death decision or one which could impact the survival of a community or even of future communities for seven generations, as is often expressed.

Unlike in the empirical scientific method, an individual may not be able to partition and articulate all the information used to make a decision. The decision is expressed as what perhaps the western materialistic world would mislabel as intuition, but it is more akin to a sixth sense or an identity with “becoming” nature (Ross 2006, Watson and Huntington 2008). In addition, worlds beyond what we experience physically can play a role through, for example, dreams or *miteewin* (Omushkego Cree term for what is loosely captured in the term “shamanism” or perhaps more precisely in the term “medicine society”) and the use of the *koosaapachikan* (Omushkego Cree term for spirit lodge or “shaking tent”) (Bird 2005, 2007; Deloria 2006, Atran and Medin 2008).

Although these historical, traditional ways of knowing may not be practiced in their entirety in modern times due largely to Canada’s historical assimilation policies and the legacy of colonialism (Milloy 1999, Metatwabin 2014, Fontaine 2010), remnants of these practices exist to various degrees, at least to the extent that some First Nations do not place complete dependency on only the empirical realm. Thus even simple phrases from First Nations people that “something feels wrong” with the use of chemical herbicides may derive to various extents from their traditional methods of gaining knowledge.

Commentary

First Nations opposition to the use of herbicides in forestry is not necessarily about wanting to return to a past life but rather largely about needing a better attitude towards the earth—of having a balanced frame of mind with a commitment to use of the land in ways that respect the spiritual and cultural connections First Nations have with land (Alfred 2009). Looking at the whole suggests that the prevailing assumptions of western materialistic civilization may be incomplete (Atleo 2004). More than 300 years of industrialization under a western materialistic worldview have brought advances in science and technology that are evident to all, but so are associated negative impacts such as collapsing ecosystems, extinction of species, contamination of the land, and a modern-day global environment in crisis with climate change (Laduke 1999, Atleo 2004, 2011). This unhealthy condition of nature, regardless of its origin, is seen as symptomatic of a system that is not functioning within the rules set out by nature, a system out of balance, and now is a critical time for emergence of the traditional First Nations advances of relationality and respect for all life forms (Atleo 2004). Indeed, the realization that we must change the fundamental manner in which we inhabit this planet is growing, and traditional First Nations perspectives offer us another way of moving towards greater balance and harmony (Laduke 1999, Davis 2009, Atleo 2011). To First Nations, the attitude behind herbicide use is merely a part of the whole attitude that nature can be used by humans however we wish, for whatever we desire, and for as much as we can extract, with little or no regard for consequences. Finding alternatives to herbicide use in forestry is seen as a step towards achieving this balance and harmony.

Risk perception as affected by the legacy of mistrust

Risk perception is affected by the lens through which one views the world (Krewski *et al.* 1995, O’Riordon 1995, Peters and Slovic 1996). In general, risk tolerance is less for communities who do not perceive potential benefits associated with the risk (Alhakami and Slovic 1994, Cavanagh *et al.* 2000), and less for communities who do not perceive feelings of empowerment (Flynn *et al.* 1994, Decision Research 1995, Finucane *et al.* 2000, Satterfield *et al.* 2004). From the perspective of a forest practitioner, applying herbicides over thousands of hectares for the purpose of growing desired trees is minimal risk to humans or the environment if herbicides are used according to label instructions. However, from the First Nation community perspective, historical and current experiences dealing with government and industry means their view is through this lens of a constant fight for empowerment and a legacy of mistrust. For such a community, the thousands of hectares treated with herbicide are within their home and even the remotest possibility of contamination to the land presents an unacceptable risk.

Mistrust of the regulatory framework

Trust in government, its institutions and regulatory framework (Terwel and Daamen 2012) is a particularly important factor in discussions about herbicide use. Due to the negative colonial legacy, there is a host of historical and current reasons why First Nations mistrust non-Aboriginal society, especially its governments and their agencies (Adams 1989, Cardinal 1999). Broken trust has a long history in the relationship between First Nations and the Canadian government (Adams 1989, Cardinal 1999), and historical events have lasting effects (Quote 8). During the focus sessions, most First Nation par-

Quote 8. Why should we trust?

When did the MNR¹⁵ ever look out for our interests? Why is it always a big fight with the MNR to get them to recognize our treaty rights? Before the courts said we had the right to hunt and fish, C.O.’s [Conservation Officers] used to chase us if we were hunting or fishing outside of MNR rules. Why did the MNR fight us when we ask an end to cedar harvesting?¹⁶ Why does the MNR allow dams to flood cedar trees along the rivers? Where is the government when the town dumps its sewage into the river? We’re now told to be cautious about eating fish, deer and moose because of contamination – instead of just warning us why doesn’t the government simply stop everyone from polluting? Does it really matter whether herbicides are to blame for contaminating forests or something else that just falls from the sky. There just is something wrong with what we’re doing today. In trying to make lots of money we have traded for a healthy forest. How crazy is that? How can I trust the MNR when they say “don’t worry, we’re looking after the environment?” Now the MNR is telling us that herbicides are safe. Why should we trust the government to look after our health and the health of the land?

COMPILED FROM DISCUSSIONS WITH
JOHN TANGIE, ELDER AND FIRE KEEPER, MICHIPOCOTEN FIRST NATION

¹⁵Ministry of Natural Resources and Forestry.

¹⁶In 2009, Chapleau Cree First Nation sought a moratorium on the harvesting of eastern whitecedar (*Thuja occidentalis*). Eastern whitecedar is one of four sacred plants so holds special significance to traditional First Nations (see Kelly and Larson 2007; MERC 2009).

ticipants expressed at least one story of deep mistrust of authority as embodied in particular by government agencies. When questioned about trusting Canadian governments and institutions, the response from the First Nation participants is nearly always a sarcastic laugh.

Participants at these sessions mistrust the regulatory framework which assumes the definitiveness of the scientific evidence that concludes that herbicides are safe for the environment and people. They point out that there are far too many historical examples of chemical products that the regulatory framework has deemed “safe” only to be found later that the product is harmful, if not toxic. Examples articulated to the group range from the use of DDT (Rosner and Markowitz 2013), thalidomide (Khan *et al.* 2006), polychlorinated biphenyls (PCB, Jensen 1972), 2,4,5-T (Ritter *et al.* 2013), bisphenol-A (Vogel 2009), and recently, neonicotinoid insecticide negative impact upon bee reproductive success (Sandrock *et al.* 2014). The regulatory framework did not seem to work in these examples. Although perhaps herbicides in isolation may not have a negative effect, herbicides added to the list of pollutants may be *the* factor that pushes a system from healthy to unhealthy.

In particular, participants question how effective or even committed the government is in its role of protecting the health of the environment and people in First Nation communities. The perception, right or wrong, that governments and their agencies allow pollution, or are indifferent to it, to take place on traditional First Nations lands for economic expediency, simply adds to the mistrust of government institutions and industry to protect the environment and human health of First Nation communities. Certainly issues such as the inability of the Ontario government to act in a timely manner to identify and prevent methylmercury pollution of fish (Fimreite and Reynolds 1973) of the Wabigoon and English River systems in northwestern Ontario from pulp and paper mill effluent during the 1970s¹⁷ foment distrust. More recent examples of the mistrust of the regulatory framework is a Grassy Narrows blockade by members of the Asubpeeschoseewagong First Nation who see the activities of the forest industry as detrimental to the land¹⁸, the reported failure of the Ontario government to eliminate air quality pollution from industrial facilities affecting the health of the Aamjiwnaang First Nation (ECO 2014), and concerns over human health risks from the bioaccumulation of PCB in the community of Akwesasne (Newman *et al.* 2006, 2009)

¹⁷Methylmercury pollution resulted in serious health consequences for Asubpeeschoseewagong (Grassy Narrows) First Nation and the Wabaseemoong (White Dog) First Nation, who rely on fish as a staple in their diet and are located downstream from the paper mill. The methylmercury contamination was so severe that an outbreak of Minamata disease (methylmercury poisoning) was diagnosed in these two First Nations communities (Harada *et al.* 2005). Although the Ontario government issued a pollution control order in 1970 (the same year that mercury pollution associated with the pulp and paper industry was finally brought to the public's attention; Fimreite 1970), mercury release into the river continued and the government did not enforce the control order (Suffling and Michalenko 1980). A compensation settlement was negotiated in the mid-1980s, but mercury poisoning had already occurred and symptoms still persist today (Harada *et al.* 2011).

¹⁸Keewatin v. Minister of Natural Resources 2011 ONSC 4801; Court File No. 05-CV-281875PD.

Commentary

The point of the previous examples is to emphasize that government and industry need to understand, and accept as legitimate, the reasons why First Nations communities may be loath to tolerate risk and trust decision-makers with their use of scientific evidence to argue that application of registered herbicides on traditional First Nations lands is safe. Because previous negative experiences result in suspicion toward governments and other institutions (Kurreuther *et al.* 1993), it is expected that any assurances by government, its institutions, and industry about the safety of the use of herbicides are met by First Nations with suspicion and opposition. Given this low risk tolerance and mistrust of decision-makers, some re-evaluation of science education efforts aimed at First Nations may be required. Specifically, it may be much more productive to spend the time needed to build trusting and inclusive relationships ahead of any assertive educational efforts to demonstrate to First Nations communities the safety of registered herbicides, which may otherwise simply be interpreted as a defensive measure to justify herbicide use.

Gaining trust is within the control of government and industry and, if understood and overcome, at minimum will allow sincere dialogue to begin. Because of the historical role of governments in the oppression of First Nations, and what is perceived as the current attitude of government and its institutions of placing political expediency ahead of First Nation rights and concerns, the government and its agencies in particular, face the challenge of gaining trust. Until trust is gained, there will be continued skepticism from First Nations on the government's claims that herbicide use in forestry will not harm the environment and is not detrimental to human health.

Imposition of the primacy of the western materialistic worldview

During the focus group sessions, First Nation participants appear to have an almost paradoxical attitude towards western science. On the one hand, they appear to accept that science is needed to find alternatives to herbicides for vegetation management in forestry (several research scientists have presented at HAP meetings); on the other hand, there is a negative attitude towards science, a discipline in which they seem to resent the hubris around the science belief that it is definitive that registered herbicides will not have negative impacts upon the environment or human health. In general, First Nation participants do not necessarily feel that science is wrong but that the western materialistic worldview that science operates under is too narrow (explained above concerning the Medicine Wheel). However, they do have deep negative feelings towards the attitude they feel government and industry carry— that the western materialistic worldview represents the epitome of an advanced society and the very process of scientific inquiry is a hallmark of civilization.

First Nation participants in the focus sessions took personal offence to the western materialistic worldview being imposed on them as the one true reality and western science as the only legitimate form of gaining knowledge. Thus, western science is the only valid way of judging whether herbicide applications are acceptable for human and ecosystem health. First Nation participants objected to the presumption that they are then expected to accept the primacy of western science, to the exclusion of their own knowledge, experiences, and concerns. This imposition can be viewed not only as dis-

respectful, invalidating or dismissive of their core belief system (Fletcher 2003, Asselin and Basile 2012), but as the ongoing perpetration of the colonial relationship between the Canadian government and First Nations—an expression of the unequal power relationship where all knowledge must conform to what is accepted under the western materialistic worldview (Nadasdy 2003). This power relationship has a sordid history amongst First Nations with one result being the imposition of residential schools upon First Nation children in an attempt to replace their traditional worldview with the prevailing European worldview of the time (Milloy 1999, Fontaine 2010, Metatawabin 2014). Thus attempts at imposing upon First Nations the western materialistic worldview and science concerning herbicides is a very personal concern.

Commentary

Attempts to only use western science to address traditional First Nation concerns about environmental and human health effects of herbicides can become offensive if it is viewed as invalidating or being dismissive of their core belief system. As expressed by Vine Deloria (1997: 7): “Regardless of what Indians have said concerning their origins, their migrations, their experiences with birds, animals, lands, waters, mountains, and other peoples, the scientists have maintained a stranglehold on the definitions of what respectable and reliable human experiences are. The Indian explanation is always cast aside as a superstition, precluding Indians from having an acceptable status as human beings, and reducing them in the eyes of educated people to a prehuman level of ignorance”. Thus defending the use of herbicides on the basis of science may be interpreted by traditional First Nations as a modern-day continuation of attempts to negate the First Nations way of life—a perception that “the basic substance of the problem of colonialism is the belief in the superiority and universality of EuroAmerican culture” (Alfred 2005: 109). This conclusion may be the result of misunderstanding but as Ross (2006) cautions—we need to be mindful of perceptions.

Possibly the largest hurdle to overcome in the dialogue about herbicide use is for forest practitioners and others who embrace the western materialistic worldview (and therefore, western science as the only way of knowing) to accept that the traditional First Nation worldview and ways of knowing are also valid, and avoid the trap of what Paulette Regan, Director of Research for the Truth and Reconciliation Commission of Canada, calls a “reassertion of the colonial status quo” (Regan 2010: 235). Viewing one worldview and associated knowledge system as more “advanced” than another is simply a value judgment, and it depends on the scale of assessment, the criteria applied, and who holds power to impose this judgment. Indeed, it is a western approach to see knowledge systems in a hierarchy, with some more valid or useful than others.

Ultimately, the point is not to argue whether one form of knowledge is “superior” to the other but rather to accept that the western materialistic and traditional First Nations worldviews both have integrity of their own, both represent a sensible and respectable perspective of the world and both are valid means of interpreting experiences. Not only should each be accorded respect and treated on equal-footing but, in fact, they are complementary (Cheveau *et al.* 2008; Uprety *et al.* 2012). Further, anthropologist Wade Davis (2007) points out that this comparison is not really the important question;

rather, what should matter is how the beliefs play out in determining a society’s impact upon the environment. As stated by E. Richard Atleo (2004: 63): “Whether the current environmental crisis being experienced by the earth is explained by an indigenous worldview or by science, the conclusion is the same: the environmental crisis is a crisis of imbalance and disharmony between human and nonhuman”.

Conclusion

In this paper, we have endeavoured to provide forestry professionals with an improved understanding that traditional First Nations concerns over chemical herbicide use are complex and multifaceted, and that their range of concerns cannot be adequately addressed using an approach centred on western science education. There was, and still are, strong, complex, sophisticated, and enduring First Nations worldviews and ways of knowing that deserve recognition and respect, which forest practitioners need to better understand and acknowledge as legitimate. Equally important is to understand and accept as valid First Nations’ interpretations of treaties and their reasons for mistrust. Thus, rather than concentrating time and scarce funding on attempts to “educate” First Nations communities that western science demonstrates that registered herbicides are safe when used as specified on product labels, time and resources may be more effectively spent on engagement, building relationships, and developing trust in order to arrive at solutions that are congruent with First Nations’ values and terms. Ultimately, the debate with First Nations on herbicide use really becomes a re-working of the conclusion of author Thomas King (2012): *How do traditional values mesh with the contemporary reality of forestry so that forest management on shared land allows First Nations communities to live their lives on their terms?*

The First Nation lens on opposition to herbicide use should not be seen as sources of disagreement or conflict, an impediment to “progress”, but rather as sources of diversity and enrichment based upon the spirit to share and co-exist in peace. If both sides on the herbicide issue are able to sit down to listen and to talk, common solutions to the challenges facing our environment today should be achievable using collective wisdom drawn from both worldviews. As we all face today’s global crises, Traditional Elder Archie Nolan reminds members of the HAP steering committee, “this isn’t just for us, it’s for you too, for our grandchildren and yours”.

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