

## Growing (with) Muskeg Oil Sands Reclamation and Healing in Northern Alberta

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[See table of contents](#)

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### Article abstract

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# Growing (with) Muskeg

## Oil Sands Reclamation and Healing in Northern Alberta

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**Abstract:** Scientists working for oil companies in the Athabasca region are developing methods by which to reclaim muskeg (boreal peatlands) on land disturbed by oil sands extraction. The Alberta government requires companies to reclaim disturbed land by achieving equivalent capability of the landscape to support an end land use. Indigenous community members instead define reclamation as establishing not only quantifiable ecological functions, but also relationships to their traditional territories. Tensions emerge as Indigenous concerns are often subsumed within bureaucratic discourses that favour scientific classification and quantification of land uses in reclaimed areas. Divergent responses to muskeg in reclamation activities are informed in part by these competing emphases on quantifiable landscapes as opposed to those that are relational and growing. This article traces this multiplicity through the examination of government and scientific literature and ethnographic fieldwork with Indigenous communities in northern Alberta. Muskeg is used as an analytical tool to explore competing conceptions of land reclamation. Mistranslation of polysemantic terms like *muskeg* occur on an ontological level, and settler colonial relations and power imbalances between competing languages and knowledge systems proliferate in reclamation activities.

**Keywords:** Athabasca oil sands; reclamation; wetlands; Indigenous Peoples; settler colonialism; ways of knowing

**Résumé:** Les scientifiques travaillant pour les compagnies pétrolières dans la région de l'Athabasca mettent au point des méthodes pour la remise en état du muskeg (tourbière boréale) sur les terres perturbées par l'extraction des sables bitumineux. Le gouvernement de l'Alberta exige des entreprises qu'elles remettent en état les terres perturbées pour obtenir une capacité du paysage permettant de soutenir une utilisation finale des terres. Or, les membres des

communautés autochtones définissent la remise en état non seulement comme la mise en œuvre de fonctions écologiques mesurables, mais aussi comme la restauration des relations avec les territoires traditionnels. Des tensions surgissent car les préoccupations des autochtones sont souvent noyées dans des discours bureaucratiques qui privilégient la classification scientifique et la quantification de l'utilisation des terres dans les zones remises en état. Les différents rapports au muskeg dans les activités de remise en état sont en partie fonction de cette divergence de priorités entre, d'une part, des paysages mesurables et, d'autre part, des paysages relationnels et cultivables. Cet article retrace cette multiplicité, à partir de l'examen de la littérature gouvernementale et scientifique et d'un travail de terrain ethnographique mené auprès des communautés autochtones du nord de l'Alberta. Le muskeg est mobilisé comme outil analytique pour explorer les conceptions concurrentes de la remise en état des terres. La mauvaise traduction de termes polysémiques tels que muskeg opère à un niveau ontologique, tandis que les rapports coloniaux et les déséquilibres de pouvoir entre langues et systèmes de savoirs concurrents imprègnent les activités de remise en état.

**Mots-clés :** sables bitumineux de l'Athabasca ; remise en état ; tourbières ; peuples autochtones ; colonialisme de peuplement ; modes de savoir

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The Canadian subarctic is widely covered by muskeg, a common term used broadly to refer to sphagnum moss- or sedge-dominated peatlands, acidic wetlands that accumulate decaying organic matter. Stemming from the Cree word *maskek*, *muskeg* translates roughly as “grassy bog.” The term was widely used in Canadian scientific and government literature until the Canadian Wetlands Classification System was introduced in the 1970s, when *muskeg* fell out of technical use in favour of the terms *bog* or *fen* (National Wetlands Working Group 1997). However, the term is so much part of the Canadian landscape vernacular that *muskeg* still remains in widespread use by the general public in subarctic Canada to refer to muddy, wet land.

Terms like *muskeg* are polysemantic (Anderson 2015, 271); that is, *muskeg* denotes an extensive variety of wetland types. It also signifies a range of ontological values. The Canadian government historically deemed muskeg “unproductive,” and dried or removed the landform across the subarctic region to construct roads and settlements, and extract natural resources. Today, the concern of constructing (as opposed to removing) muskeg shows another kind of valued productivity: ecological. Finally, muskeg also holds cultural importance for many Indigenous Peoples in northern Canada, to whom it can represent a site of

healing in a living, inhabited landscape. Because of these competing definitions, muskeg is an ideal landform through which to understand multiple conceptions of “land use” and “productivity.” Despite attempts to remove it from scientific discourse and the material landscape, muskeg endures.

Muskeg is always growing and changing: water levels rise and fall with the seasons, peat accumulates as decaying organic material collects, and its surface freezes in the winter, which allows seasonal access across an otherwise unstable landform. Muskeg is thus an affront to modern dualisms and appreciation for fixed, final forms. Muskeg exists as distinct entities to different actors: wetlands may be viewed as a wasteland by some, but as a place of spiritual, cultural, or ecological value by others. Muskeg, like any landscape, is always multiple and more than a simple backdrop for human action (Rodman 1992).

The Athabasca region in northeastern Alberta — where I situate my research — is home to nêhiyawak (Cree), k’ái tailé Dene (Dene), and otipemisiwak (Métis) peoples, and is part of the Western Boreal Plain ecozone, approximately 65 percent of which is covered by muskeg (Wylynko and Hrynshyn, 2014, 59). The land is also underlain by the third-largest reserve of crude oil (bitumen) globally, known as the Athabasca oil sands deposit. The oil sands are extracted either through strip mining or steam-assisted gravity drainage, an in-situ process. After the extraction of bitumen is complete, oil companies are required to reclaim — or reconstruct to a productive state — impacted or removed ecological systems such as muskeg. For Indigenous Peoples, homelands are disturbed by oil sands extraction, and reclaiming muskeg is entangled with concerns about Indigenous rights, healing, and renewing Indigenous well-being, a land-based way of life, and the “spirit in the land” (Buffalo et al. 2011, 4). Reclamation is as much about a spiritual, cultural-ecological process of healing — growing with the land — as it is about ecological functions. Yet Indigenous concerns and conceptions of reclamation are often subsumed within bureaucratic discourses that favour scientific classification and quantification of land uses in reclaimed areas. Rifts erupt between industrial, bureaucratic, scientific, and Indigenous reclamation narratives that respond to and construct wetland environments in divergent ways. Beyond attending to the mere multiplicity of muskeg, its reclamation points to uneven relationships and the ways in which powerful actors attempt to make equivalences between landscapes that are always multiple, growing, and in-between.

When I began exploring discursive tensions and relationships between people and muskeg as a doctoral student in 2012, I had a brief email exchange with a natural scientist who was studying contamination of wetlands in northern Alberta. He responded to my use of the term *muskeg* in my email with a gentle but firm suggestion that I drop the term entirely: if I wanted to have “scientific credibility,” I must avoid such an “imprecise term” because it “renders all discussion vague and therefore essentially meaningless” (personal communication, 2012). He continued to explain the national classification system that had replaced terms such as *muskeg*. The organic wetlands to which I was referring were actually bogs or fens, which are distinct in terms of water flow and soil acidity, and exist in a variety of vegetation assemblages. He concluded, “Without that firm scientific foundation, any descriptions that you produce will be dismissed” (personal communication, 2012).

This scientist’s emphasis on classification was in part due to his own positioning as a critic of the oil sands’ environmental record. The politicized nature of extraction often places scientific research under relatively strict scrutiny, and adhering to globally accepted standards of classification holds inflated importance. For example, industry, government, and Indigenous experts must use evidence that is defensible in court hearings regarding extractive projects. The language and tools of science are often placed at the forefront of extractive management and planning, which transforms political conflicts into debates among scientific experts (F. Li 2015, 76–77). The technocratic solution of reclamation becomes a struggle over whose scientific knowledge is legitimate, and whose language has the authority to influence decision-making.

I recount this interaction not to launch an ethnographic analysis of peatland science alone, but to demonstrate how standardized, discrete scientific terms — which are taken up by powerful actors including industry and settler governments — are often in blatant contrast to the terminology used by Indigenous peoples. In particular, Métis individuals in northeastern Alberta with whom I work<sup>1</sup> nearly always refer to peatlands as muskeg, often within the context of cultural experiences on the land. Months after my email exchange with the wetlands scientist, a different scientist, hired as a consultant to represent a First Nations community on a multi stakeholder reclamation committee, explained to me that these competing terminologies represent the fundamental challenge for Indigenous participation in mine reclamation planning and execution. Indigenous participation in reclamation activities then becomes a

problem of translation: What are different actors speaking about when they refer to reclamation of a bog, a fen, or muskeg?

This question is commonly posed by western scientists and bureaucrats in discussions of the challenges of centring Indigenous perspectives in reclaiming muskeg or other ecological systems. The question assumes the solution lies in mapping Indigenous terms onto natural scientific ones, and vice versa. Yet often the mistranslation occurs on an ontological level, as opposed to a purely semantic one, and settler colonial relations, including the question of whose language holds power to affect decision making, are often excluded from scientific, industrial, and bureaucratic reclamation discourses. Reclamation is popularly framed as a technocratic solution to the environmental disturbance and contamination caused by oil sands extraction. Instead, I argue that reclamation practitioners and decision makers must expand their conception of language into the ontological realm in order to take seriously and meaningfully engage Indigenous concepts of healing, reciprocity, and relationality in oil sands reclamation. This undertaking necessitates an understanding of settler ontological constructions of reclamation and landscape value, as well as how these concepts contrast with Indigenous conceptions of healing, tasks I take up in this paper.

Based on archival research, policy analysis, and ethnographic fieldwork with the Métis community in Fort McMurray since 2013, this paper describes competing ontological constructions and relational processes by which Indigenous and non-Indigenous Peoples engage with muskeg and reclamation. Throughout the paper, muskeg serves as an analytical tool to make evident the ontological disparities and competing perceptions of reclamation and relationships to the land. I understand ontologies as “ways of being and acting in the world of cultural and social subjects and agents, which are shaped by the subject’s knowledge of what the world is and how it is constituted” (Dussart and Poirier 2017, 8; see also Blaser 2013; Todd 2016). My focus on multiple ontologies in distinct sections is less to show discrete, bound worlds, but to instead help the reader understand where conflicts arise. Since reclamation is a concept founded in settler ontology, the first two sections trace settler state reclamation activities and discourse from attempts at regulating and removing muskeg through drainage for oil sands development to attempts at recreating muskeg landscapes post-extraction. This policy and narrative analysis reveals how current reclamation activities are historically contingent, which sheds light on why Indigenous communities often meet contemporary reclamation with criticism

even though industry and settler governments purport to include Indigenous Knowledge in reclamation activities. Accordingly, in the third section, I use an ethnographic vignette to describe a relational approach to reclamation, with a concept described as “growing with” the landscape or muskeg which was articulated to me by Métis education scholar and friend Sara Loutitt. “Growing with” points to an enduring linkage between sentient beings, including relationships of balanced reciprocity maintained by Métis people with the landscape — relationships that can be damaged by extractive activities and must be re-established during reclamation. In the fourth section, I explore where non-Indigenous and Indigenous discourses meet, examining how Indigenous Knowledges are (inadequately) incorporated into reclamation planning and practice through technical translations of traditional land use or cultural keystone species. Often mistranslation occurs on an ontological level, and settler colonial relations and power imbalances between competing languages and knowledge systems proliferate in reclamation activities. In this paper, I claim that divergent responses to muskeg in reclamation activities are informed in part by competing emphases on quantifiable landscapes as opposed to those that are relational and growing.

### **Utilitarian Responses to Muskeg: A Settler Colonial History of Improvement**

Settler colonial meanings of land use are characterized by Lockean definitions of property, which justified the reconstruction of landscapes like muskeg into those that are economically valuable. For Locke ([1690] 1980), nature exists as an inert material form, separate from human life. Mixing human labour with the environment transforms it materially and establishes a relationship of property. Locke considers unlaboured environments to be wasted potential, and specifically speaks of lands in North America as “waste” (Goldstein 2013). The right kind of labour is essential: in settler societies, these labours primarily involved making wetland, such as muskeg, suitable for settlement and agriculture. These activities are a means through which to “improve” the land, or make it productive (T. Li 2007). As anthropologist Tania Murray Li (2007) demonstrates in an Indonesian context, the ideology of improvement itself works to ontologically “produce” landscapes in need of such intervention. Indeed, to become property, muskeg must undergo a substantial process of measurement, labelling, drainage, and reclamation.

Indigenous inhabitants of subarctic Canada were often described in opposition to Locke's theory. That is, Indigenous Peoples were defined by what they do not do — namely, farm or settle permanently — and were thus not seen as landowners. Indigenous Peoples had not “productively engaged with their environment” (Povinelli 1995, 506). The connection between Locke's theory and the doctrine of *terra nullius*, or empty land, led colonial powers to justify and enact land acquisition in settler colonial territories such as Canada (Simpson 2014).

Land use is a performative settler colonial category through which the Athabasca region is represented as no longer Indigenous, but exclusively an extractive territory, in which Indigenous sovereignties are rendered invisible (Wolfe 1999). This reframing defines the land primarily in terms of its extractive use value. The complex relations and promises to share the land afforded by Treaty 8 are ignored for a clause in the Treaty that states that the land may be “taken up from time to time” for extractive activity (Treaty 8, [1899] 1966). This temporal association of “time to time” suggests that the activities of oil sands extraction will only occupy the landscape temporarily and will be effectively reversible. The promise of reclamation holds that, after extraction, oil sands leases will be returned to Crown (public) land and available to be used by Indigenous Peoples once again. The impacts of oil sands extraction on Indigenous Peoples' use and occupancy of their lands are thus only provisional. In this frame, reclamation is at worst a justification for taking up land for extractive activities.

Through a Lockean lens, muskeg is discursively and materially rendered an affront to the construction of oil sands infrastructure and as inherently less valuable than the oil deposits it covers: in short, muskeg is a problematic wasteland. During my doctoral fieldwork, on a plane ride from Fort Chipewyan to Fort McMurray, over the boreal forest and open-pit mines, a non-Indigenous man (later identified by a friend as an oil company representative) remarked as he looked out the window, “I don't know why those environmentalists are so concerned about oil sands' impacts. It's [the land is] all muskeg anyways” (author field notes, August 19, 2014). This statement implies, first, that muskeg is a worthless wasteland — a commonly held opinion in non-Indigenous Canada (Baker and Westman 2018, 151) — and second, that the removal of muskeg will improve the landscape.

In the nineteenth and twentieth centuries, the Canadian state responded to muskeg as a problematic landscape through attempts at socio-ecological



control, often by draining or removing muskeg to clear the way for settlement or natural resource development (Bower 2011). This kind of reclamation — muskeg removal — was a utilitarian response to an environment deemed “unproductive.” Government reports, guidebooks, and legislative statements from the early- and mid-twentieth century describe the removal of muskeg with this purpose to render the land useful or productive. In the 1950s, the Canadian government responded to muskeg’s lack of productivity by launching a national research working group on muskeg to document contemporary scientific knowledge of and to develop means to overcome the landform (for example, Radforth 1952, 1956; Walsh 1957; MacFarlane 1959; Radforth and Brawner 1977). After World War II, Canada’s industrial and military interests had turned towards subarctic Canada, but this kind of development in the subarctic was near impossible due to the prevalence of muskeg: it is difficult to spot, travel across, or build roads upon (MacFarlane 1959). Muskeg was known to engulf vehicles and houses. In the Athabasca region, muskeg prevented the construction of paved roads until the 1960s, and it was a culprit in numerous train derailments near Fort McMurray. During the early- to mid-1900s, the Alberta & Great Waterways Railway carried passengers from Edmonton to Waterways (now part of Fort McMurray) in a train colloquially deemed the *Muskeg Express*; unstable peatlands along the route caused frequent delays and slow travel.

The Canadian government framed muskeg as an impediment to the militarization and industrialization of the North, and established scientific committees to overcome this problematic landscape. Accordingly, muskeg became a knowledge frontier for the state, or, as a 1959 research report described it, an “engineering problem:” a difficult material, but one that could be controlled through advancements in science (MacFarlane 1959). The report concluded, “Muskeg was found to be a problematic but not a disorderly medium; on this basis, a classification system for engineering was developed” (MacFarlane 1959, 639). This treatment of muskeg reflects a history of colonial control of the environment and state governmentality: this was a landscape to be triumphed over through scientific classification and technocratic solutions, and ultimately made productive by creating access to natural resources. Here, muskeg renders colonial and extractive processes more difficult, which justifies its removal.

Thus, attempts to “improve” muskeg landscapes involved the removal or transformation of muskeg — a type of reclamation. Road construction often opted for building on top of muskeg, as draining a large area was both costly and materially challenging. From the 1960s onwards, “floating roads” were often

constructed in the Athabasca region, which involved the placement of stabilizing material such as gravel and mesh mats to allow the road to be laid atop muskeg. Today, muskeg is drained and removed, particularly on oil sands leases. An entire “de-watering” industry is committed to the task of drainage. Infrastructure areas and open-pit mines often require continuous drainage, as water seeps back into the bottom of mine pits or floods infrastructure. Muskeg persists, despite attempts to remove it.

By the 1970s, debates in the Alberta legislature further conceptualized muskeg as a wasteland in need of enhancement. In 1974, Legislative Assembly member Peter Trynchy proposed Bill No. 6, the Forest Development Research Trust Fund Act, which would provide funding for applied research to improve the forestry sector. Trynchy discussed potentially using the fund to devise methods to remove muskeg in order to grow commercial forests: that is, to change this “non-productive land” or “wasteland” into a renewable resource.<sup>2</sup> Member Charles D. Drain agreed that draining muskeg to support largescale timber growth, and, in his words, learning to make these areas “useful” would be a “very, very worthwhile achievement.”<sup>3</sup> This discourse persisted in the Legislature, and in 1978, during a discussion of the Maintaining Our Forests Program, Members of the Assembly favourably discussed draining even a small amount of these vast “non-productive” muskegs to plant trees, and, as Member Don Getty affirmed, left as a productive “memento” or “favor” for future Albertans.<sup>4</sup> The Legislative Assembly provided \$1 million in funding to the program. However, as muskeg covered an estimated 28 million acres of Alberta, this project was never scaled up province-wide.<sup>5</sup>

The settler rhetoric of improving land utility also informed early mine reclamation discourse. Importantly, the term *reclamation* here represents a distinct process to restoration: put simply, restoration seeks to return a damaged landscape to its prior state, while reclamation attempts to turn a degraded or useless landscape into one that is once again useful or productive. In other words, reclamation is about restoring the land’s use value. In Alberta, initial reclamation legislation and regulatory language in the 1960s and 1970s spoke to “returning” the land “to a state which will support plant and animal life or be otherwise productive or useful to man at least to the degree it was before it was disturbed. In many instances land can be reclaimed to make it more productive, useful or desirable than it was in its original state” (Powter et al. 2012, 47). This ideal of making the land “more productive” or “better than” before industrial disturbance draws directly from the state’s conceptualization of the landscape

in terms of its utilitarian value. From such a view, the pre-mining landscape, predominantly muskeg, was unproductive; therefore, mine reclamation would “improve” the landscape’s productivity by providing environmental conditions to support forestry and agriculture.

Ultimately, technical reports and government documents are ontologically generative and hold performative power to shape land utility both discursively and materially. The landscape is first discursively described as a wasteland, and then materially acted upon to make it so (Voyles 2015). In Canada, muskeg environments were discursively constructed as wastelands: worthless, unproductive, and obstacles to be overcome. The state project of removing muskeg reacted to this ideational construction and attempted to “improve” the land (T. Li 2007) by affording Lockean land uses to assert domination and control of land and resources. Until the latter half of the twentieth century, settler responses to muskeg were not centred on establishing equivalent land uses, but removing the landform entirely. Of course, this task of removal, while having detrimental impacts to watersheds and ecosystems, always remains incomplete due to the vastness of wetlands and seepage of water back into “de-watered” spaces.

### **Growing Muskeg: Creating Equivalence through End Land Use, 1993–Present**

Since 1993, reclamation regulation no longer claims that the post-extractive landscape will be an improvement on pre-disturbed muskeg. (However, oil companies hold on to this rhetoric in their environmental impact assessments and consultation with Indigenous communities to justify landscape disturbance; see Westman 2013). Instead, regulation focuses on the ability of the landscape to support what are called “end land uses.” The Alberta government requires oil companies to reclaim disturbed land by achieving “equivalent capability” of “land use” (Alberta 2014, 97), or rebuilding the productivity of a landscape. This definition recognizes that the reconstructed landscape will be different than its pre-extractive state, but the goal of reclamation remains to construct a landscape with value that is equal to that of the prior landscape in terms of land use. Here, a post-extractive landscape is defined as equivalent to its pre-extractive state through a calculation of an ability to support specific land uses. Historically, these land uses included cattle ranches, commercial forests, and agricultural areas (see Powter et al. 2012).

The process of making equivalence involves making environmental matter quantifiable and comparable through discursive and technical tools (F. Li 2015). Similar to the reduction of the environment to classifications in the National Wetlands Working Group categories, the tools used to measure equivalence and to determine whether a reclaimed site successfully achieves its intended use (or is successfully reclaimed) include government classification systems such as the Land Capability Classification System (LCCS, CEMA 2006).<sup>6</sup> The LCCS classifies the ability of a landscape to afford certain “end land uses.” Scientists determined land classes in the LCCS based on “numeric values assigned to soil and landscape characteristics” (CEMA 2006). Equivalence is reached once these landscapes reach certain thresholds: pH levels, topsoil thickness, and vegetative growth. Under this system, muskeg was deemed Class 5, or an “unproductive” landscape class (2006, 6).

In recent decades, there has been a regulatory shift towards reclaiming land with biodiversity similar to that of natural boreal forests, with the Alberta Environmental Protection and Enhancement Act (EPEA) redefining “equivalent capability” in reclamation as creating landforms capable of supporting “a diverse self-sustaining, locally common boreal forest landscape, regardless of end land use” (Alberta 2014). Reclamation practices have now begun to incorporate ecological productivity, not only economic productivity. With the incorporation of ecological productivity, a primary goal of reclamation is ecological conservation, not only economic use. However, the official discourse surrounding reclamation success and goals remains rooted in a language of utility.

Accordingly, since approximately 2009, oil sands companies have put effort towards reclaiming or constructing muskeg. After increased public pressure for ecological conservation and advances in scientific understanding regarding the creation of peatlands (see Wylynko and Hrynshyn 2014), a legal mandate from the Alberta government in EPEA approval conditions required testing a fen model in the field. In response, two large-scale oil sands companies that have operated open-pit mines in the Athabasca region, Suncor and Syncrude, are currently piloting fen reclamation projects. The Suncor Pilot Fen Project, now called the Nikanotee fen, meaning “future” in Cree, is one such project. It requires rebuilding a hydrological system to create conditions for a peatland to grow.

The hydrological system of the reclaimed fen involves the placement of a synthetic sheet underground that directs groundwater flow into the fen (Daly et al. 2012). Revegetation trials include planting sphagnum moss, sedges, and other fen species, and weeding unwanted species like cattails. The scientists’

aim is to create conditions for the fen to grow into an ecological system that functions similarly to naturally occurring fens in the region. To determine ecological equivalence, the project compares the reclaimed fen to three reference sites, all different kinds of peatlands that could provide clues as to the future functions of the reclaimed fen. In the pilot project, scientists are growing peatlands and determining if the growth of the land, as a material entity for humans to act on, matches the reclamation model. Thus, the nature of peatlands is defined through materiality and environmental functions: constructing and growing the matter necessary to classify the landform as a fen according to the national classifications system (National Wetlands Working Group 1997).

Suncor celebrates the fen reclamation project as a success, and as some scientists continue to research and accept the project, others are skeptical about whether these reclamation projects will create ecological equivalency (Timoney 2015). Although reclamation is often cited in approval documents as a mitigation of the impacts of oil sands development, the practice in fact involves a significant loss of biodiversity (Rooney, Bayley and Schindler 2012). While ecological functions are now also considered in reclamations' constructions of equivalence, a loss of biodiversity remains. Furthermore, Indigenous ways of knowing are often overshadowed by natural sciences in reclamation policy and practice.

### **Growing with Muskeg: Métis Knowledge and Healing Wet Landscapes**

The following is an excerpt from my field notes, recorded after a canoe trip on the Athabasca River from Fort McKay to Fort Chipewyan, Alberta, in August 2014. I describe a stop along the river where the group of Métis community members and researchers participating in the trip harvested medicine:

*I reached down into the cold, muddy water, searching. The water was a cool relief to the hot sun. I found the stem of the reed in front of me, and followed it down into the muck, to the root of the plant. Elbow deep in the swampy pond, I dug around the root to free it from the mud, finally pulling it to the surface with a splash. The brown and white striped rhizome was covered in tiny reaching roots, cased in mud. After rinsing the root in the water quickly, I gently tossed it to the edge of the pond, where a pile was forming from the group's efforts.*

Cattails and bulrushes grew along the edges of the pond, in the swampy areas. Our group was interested in harvesting ratroot, a staple medicinal plant commonly used by Indigenous Peoples in northeastern Alberta, Canada, including Métis, Dene, and Cree people. In Cree, ratroot is known as *wacaskomicisowin*, meaning

muskrat food. To scientists, ratroot is sweet flag or *acorus americanus*, a light green reed with a seedpod that smells like a flower. Ratroot grows in muskeg and open water in the Athabasca region, where we were harvesting that afternoon.

Sara Loutitt, Métis teacher and scholar, *kokum* (grandmother), and my friend, helped to lead the medicinal harvest with our group of nine Métis, Cree, and non-Indigenous individuals. Moments before I was elbow-deep in the cold mud searching for roots, my teacher offered tobacco and uttered a prayer of thanks to Mother Earth. If this protocol is not followed, Sara explained, the root's *maskihkîy* (medicine) does not work to heal the body. The prayer and offering also ensures that the *wacaskomicisowin* grows back more plentifully the following year; without the ceremony, the medicine would not return. I told Sara about anthropologist Julie Cruikshank's (2005) writing about glaciers, and Elizabeth Povinelli's (1995) about rocks. Reframing their questions, I asked, "Do the plants listen?" Sara affirmed, "The plants hear the prayer."

The landscape here is an active agent in a reciprocal relationship of give and take. Anthropologist Janelle Baker documents a similar exchange in her fieldwork studying berries with Cree individuals: when Baker addressed the research group through their Facebook page with the question, "Can berries and their plant parts listen?" Elizabeth Orr of Fort McKay, Alberta, answered, "If you take berries or roots you talk to the plants for the reason you want it for as like medicine for yourself or someone else. Berries or roots are very powerful to heal an ailment, that you have or someone else, so you pray to the Creator and Mother Earth and offer tobacco, and yes they can hear you" (Baker and the Fort McKay Berry Group 2019, 137). Loutitt's and Orr's replies highlight how Métis and Cree people in northeastern Alberta are "bound to various cycles of reciprocity" (Baker and the Fort McKay Berry Group 2019, 136). Respect must be shown to berries and medicines through actions such as speech, harvesting, consumption, and sharing protocols (136). These practices ensure the health and well-being of both the plants and the people who harvest and consume them.

On another occasion, Loutitt and I met for coffee and continued our conversations about reclamation. She described relationships between Métis people and the environment by explaining that human and nonhuman elements of the landscape grow *with* each other. "Growing with" involves acts of tending to the land through ceremony and maintaining reciprocal relationships over decades, multiplied across a community and generations, strengthening Métis relations to both the land and within the community. Our ratroot harvest was an example of this social and material process of growing with the land.

But relationships with the land are being disrupted in the Athabasca region by ongoing extractive activities. As our conversation about growing with the land continued, Loutitt described racism, intergenerational traumas, and social barriers faced by her family and community. She related these issues directly to ongoing legacies of settler colonial processes, oil sands expansion, and related Indigenous dispossession of land.<sup>7</sup> She continued to speak about what reclamation must accomplish, given these impacts. When you consider only ecological matter in environmental restoration or reclamation, Loutitt explained, something is missing. “The spirit, the culture is missing,” she said. She pointed to two trees across the street at a local school: a young spruce and poplar. With intent, she told me that these trees are not the same as those in the bush; they lack spirit and connections to ancestors. I recalled how other Métis community members explained to me that once an industrial disturbance takes place, the spirit of the land is also disturbed and cannot simply be replaced. Loutitt affirmed that the loss of spirit of other-than-human beings like ratroot, and her community’s relationship to such medicines and the land as a whole, must also be reclaimed. Reclamation here is more than returning a “land use” by planting trees or recreating ecological function: it is inherently relational and spiritual.

Oil companies continue to translate “equivalent capability” of land use by telling Indigenous communities in public meetings that reclamation seeks to “put the land back” to support their Indigenous rights to hunt, trap, and otherwise harvest from the land (author field notes, 13 July 2014).<sup>8</sup> Variations of this phrase, such as “return the land back to nature” (author field notes, 7 March 2019), are commonly used by oil companies in meetings with Indigenous communities. Yet the meaning of “putting the land back” is inherently different for Indigenous and non-Indigenous community members. To Indigenous Peoples, as Loutitt explained, reclamation requires not only achieving ecological or economic productivity, but also reclaiming a cultural landscape. “Putting the land back” therefore suggests not only a return of the ability of the land to support Indigenous Land Use, but also the return or reclamation of positive reciprocal, spiritual, and cultural relations between Indigenous communities and the land.

More fundamentally, muskeg is not simply a material entity for some Métis individuals. A Métis Elder noted in an oral history interview that muskeg — and the mud it contains — is where medicines grow.<sup>9</sup> Moreover, the water in muskeg is seen as a delicacy, as muskeg acts as a filter or purifier. Métis Elders I work with often note that, decades ago, they used to drink water in the muskeg by

digging a hole, allowing the sediment to settle, and scooping out water with a pail. Animals such as bears are also known to dig drinking holes in muskeg, which they return to regularly. Muskeg water was always pure and cool, Elders have explained to me, but extractive changes on the land have led to a mistrust of muskeg water and discontinuance of this practice for many. Muskeg is thus inherently medicinal and central to the socio-ecological health of the landscape and the people who dwell there.

As in the ratroot harvest, the land emerges not as a separate entity to be “mixed” with human labour (Locke [1690] 1980), but as a sentient entity to which humans are bound through reciprocal responsibilities (Ghostkeeper 2007). The mud in which I stood — and muskeg in a more general sense — is not only a material thing to be used, classified, or made productive through resource extraction. When I stood in the mud, I was overcome with the feeling that our presence at the pond, harvesting ratroot, connected our group to those humans and other beings who had come to the area in the past to take the same root, and to those who were yet to come: we were connected to and part of a place-based social and spiritual history that Loutitt described as a process of “growing with” the land. Muskeg is part of a landscape that supports non-linear temporal relationships with future generations and ancestors that must be respected. Adhering to ceremonies such as giving tobacco maintains balance and strengthens these relationships to the landscape, thus encompassing the work required to sustain a healthy landscape.

When harvesting ratroot, Loutitt spoke about relating to muskeg and medicinal plants by maintaining balanced reciprocity to ensure ecological abundance. The reciprocal relationship is enacted through a harvesting protocol that Métis Elder and scholar Elmer Ghostkeeper describes as “spirit gifting” (2007, 11). Spirit gifting is a process of maintaining Métis livelihoods “through a series of continuous relationships established by gift exchanges with plants and animals” (11). Here Métis ontology extends relationships of gifting to other-than-human landscape features, recognizing them as sentient and spiritual agents that are equal to and sometimes more powerful than humans. Potawatomi scholar Robin Wall Kimmerer eloquently describes that in many Indigenous ontologies, the

essence of the gift is that it creates a set of relationships. The currency of a gift economy is, as its root, reciprocity. In Western thinking, private land is understood to be a ‘bundle of rights,’ whereas in a gift economy property has a ‘bundle of responsibilities’ attached



(2013, 28) — broadly, to act as caretakers of the land (Carroll, 2015, 140). She describes how harvesting another medicine — sweetgrass — also ensures ecological abundance, while western scientists often advocate “that the best way to protect a dwindling species is to leave it alone and keep people away” (163). However, the harvest of ratroot, similar to Kimmerer’s example of sweetgrass, is understood by Métis people to ensure its regrowth in years to come, as the gift of the medicine responds to proper care and adherence of protocols.

In this view, damage to the land is a breach of reciprocal responsibilities: extractive activities “take” more than they “give.” When the land is impacted by industrial development, some Métis individuals explained to me that the spirit in the land is disturbed, and prayers are not as easily heard by the Creator or Mother Earth. The material environment is therefore not all that is damaged by oil sands extraction: spiritual relations to the land are correspondingly broken. Environmental impacts are also connected to a broader system of settler colonial relations that continues to impact Indigenous communities across generations. For Métis individuals like Loutitt, reclamation requires an action of “growing with” a sentient environment and re-establishing spiritual and cultural relationships to place. Reclaiming muskeg is not so much a purely material task of constructing the muddy matter as it is a processual healing of relationships to the land. The healing afforded by growing with recognizes affliction is not just of the physical body or physical world but also of the spirit (Iseke 2010).

Loutitt’s concept of “growing with” is a central tenet to healing as a relational process, and embodies a relationship-based approach to Indigenous environmental governance (see Carroll 2015, 140). Species come into being not as sole entities but together through mutual and responsive relationships (Baker and the Fort McKay Berry Group 2019). Being elbow-deep in the mud, harvesting medicines from plants that could hear Loutitt’s prayer, our group was experientially “growing with” mud and ratroot as each being responded to one another. When Loutitt provided an offering to the ratroot and the land through ceremony, the ratroot responded by offering its medicinal roots, freed from the mud with a splash. Immersed in the mud, we connected with the spirit in the land and those who harvested before us. Here, muskeg is not a piece of land to be removed, enclosed, or constructed, but an entity that humans must be accountable to as inter-species relationships are formed and reinforced. Muskeg entangles with humans in a recursive system of accountabilities, relations, and responsibilities of reciprocity and care that are always in process or always growing.

To echo Loutitt, reclaiming muskeg is not only material work but must also involve reclaiming, revitalizing, and restoring relationships between the land and people. When she explained that the “spirit is missing” from current reclamation practices and policies, my teacher was speaking to reclamation’s technical emphasis on western science and engineering to the exclusion of spirit. Reclamation is more closely related to healing for many Indigenous Peoples: it is a process of correcting reciprocal relationships with the land and its inhabitants, in order to ensure a future in which future generations and the land can be well. Given the relational character of reciprocity, healing, and growing with, it is unsurprising that utilitarian discourses claiming that the environment will be made equivalent or “put back” through reclamation are often met with extreme scepticism from Indigenous communities. In reclamation, Indigenous spiritual and relational aspects of the landscape are often not incorporated, and a settler colonial discourse of landscape utility dominates.

### **Traditional Land Use and Cultural Keystone Species: Where Spirit Turns Technical**

In addition to an emphasis on ecological productivity, oil companies include Traditional Land Use (TLU) in their reclamation plans. Since the 1970s, as a means of having their perspectives and narratives of landscapes heard in natural resource management negotiations, Indigenous communities lobbied for the incorporation of TLU in oil sands planning to increase their political leverage and decision-making power. The Manitoba Métis Federation defines TLU as “the full spectrum of activities and outcomes derived from and/or associated with harvesting of animals, fish, plants and other natural materials for social, cultural, health, and economic well-being” (Lacombe 2012, 4–5). Thus, TLU is directly connected with well-being and healing: just as the harvesting of ratroot by our group was not solely an extractive activity, TLU practices are connected with the sociocultural, spiritual, and physical well-being of Indigenous communities and the environment. As ethnobotanist Leslie Main Johnson notes, “There is widespread agreement among Indigenous Northerners that on-the-land activities are needed for effective healing from trauma, promotion of well-being through reconnection to tradition, and learning of identity” (2019, 5). The practice and teaching of TLU is thus of central importance to the healing required for reclamation.

However, the means by which oil company and government discourse deems Indigenous Peoples “traditional land users” is reminiscent of Locke’s

labour theory. Yet unlike Lockean uses that privilege agriculture and permanent settlement, TLU focuses on subsistence practices, including harvesting medicinal plants such as ratroot. TLU is often represented in technical documents such as Environmental Impact Assessments and reclamation plans (Westman 2013) as a purely extractive activity. In a TLU section of an impact assessment, for example, the ratroot harvest with Sara Loutitt described above would be translated into a point on a map, indicating where the plant was taken at a given moment, and the relational and spiritual aspects of the harvest would be less visible. The visible moment of a subsistence activity or ceremony in bureaucratic discourse thus becomes the precise instance of harvest or extraction (Joly et al. 2018). Moreover, industry-led research on TLU has been criticized as an “extractive” industry in itself, “extracting and refining specialized land-based knowledge from First Nations [and Métis] communities, while violating the existing laws of the land and principles of respect and reciprocity” (Baker and Westman 2018, 144).

In recent decades, TLU has been included as a potential end land use in reclamation plans, alongside uses such as commercial forestry and recreation. Often, regulatory documents assume that reclaiming muskeg will ensure the future landscape’s use for subsistence purposes simply by providing habitat for species that can be harvested from the land, such as ratroot, moose, fur-bearing animals, or berries (Westman 2013). The assumption is that if culturally important species are present on the landscape, that is enough to ensure Indigenous peoples’ use of the land. As another “end” goal of reclamation, TLU thus becomes static, quantified, and focused on “resources.” This approach obscures the place-based, spiritual relationships inherent in Loutitt’s explanation above of growing with sentient environments as a whole. Reclaiming the spirit in the land is omitted as technical classification dominates reclamation plans and activities.

As anthropologists Baker and Clinton Westman (2018) note, much of the knowledge Indigenous Peoples share with oil companies about their TLU can be mapped into technical documents used for reclamation and consultation; yet spiritual and other relational forms of knowing, which are part of TLU, do not often align with scientific reporting. Baker and Westman describe hearing stories from Cree Elders in northern Alberta about a water snake/serpent that:

moved between lakes via underground rivers and muskeg. Many people have seen them surface and know where these rivers run. An Elder expressed concern for these creatures in a consultation meeting on a company’s activities, regarding a new ‘de-watering’ process where

wetlands are drained so that bitumen is more easily extracted. The scientist at the meeting told him that under water serpents are just superstitions. The Elder then refused to meet with them again. (2018, 148)

In regulatory documents or even reclamation plans, TLU is often subsumed into points on a map or a list of species to be planted, erasing or downplaying spiritual elements or relational aspects of growing with the landscape.

In an attempt to respond to a lack of spiritual or cultural consideration in oil sands reclamation, ethnobotanists working for Fort McKay First Nation developed a model of Cultural Keystone Species (CKS Garibaldi 2009). CKS are “culturally salient species [or places] that shape the cultural identity of people in a major way, as reflected in the fundamental roles these species have in diet, material, and/or spiritual practices” (Garibaldi 2009, 324). For instance, as a culturally significant medicinal plant, ratroot may be identified as a CKS. The intention behind this model is for reclamation planners to attempt to reclaim certain landforms or conditions for culturally important species and landforms. Adopting CKS may then provide practitioners a better chance at reclaiming landscapes that are meaningful for Indigenous communities. This approach is important for providing communities with a culturally-relevant, practical way to be involved in reclamation management efforts and revegetation practices. The model renders Indigenous ways of knowing easily translatable for incorporation into reclamation planning and management.

However, due to this translation, the model also runs the risk of misrepresenting cultural landscapes. The CKS model risks losing its cultural salience when taken up by companies in a way that does not allow for healing or relationality but operates from a utilitarian definition of muskeg — or mistranslates Indigenous ontology into settler ontology. As another Métis friend shared with me, oil companies often wrongly assume that the act of planting a single species is enough to make reclamation successful for Indigenous Peoples (author field notes, 9 June 2014). The CKS model risks placing too much value upon one species, one place, or one attribute, without which everything collapses, and reinforces the idea that returning material affordances of TLU will mean successful reclamation for Indigenous people. The fact remains that the dispossession of Indigenous Peoples from their land brought more hurt than can be healed simply by planting ratroot and (through the end of a lease term and return of the reclaimed area to Crown land) designating the land as open to Indigenous Peoples for practicing their rights. Opportunities need to be provided for Indigenous Peoples to begin the process of growing with the land

once again — as a mutual process between humans and each non-human aspect of the environment or “web of life” (Hopkins et al. 2019, 326) as a whole. Missing in current reclamation practice is an ongoing dialogue between oil companies and Indigenous community members, and an ability for communities to reclaim relationships with the land and grow with muskeg and the broader landscape on an ongoing basis.

## Conclusion

*Muskeg* is a polysemantic term — denoting multiple wetland types, but also at once an engineering problem, a technical interest, a site of ecological productivity, a cultural place, an area where medicine grows, a place with plants that listen, and a cultural keystone place. Attending to the multiple ways in which settlers and Indigenous Peoples characterize and engage with muskeg serves as an analytical tool which illuminates the need for expanded definitions of land use in oil sands reclamation policies and practices, incorporating not only settler colonial definitions but also Indigenous ways of knowing and healing. Reclamation policy and material practices must reconcile their reflections of historically contingent settler colonial conceptualizations of utility, which emphasise static or “end” forms, separate human and natural realms, and perpetuate an erasure of Indigenous perspectives of reclamation. Ultimately, for my Métis teachers such as Sara Loutitt, the practice of reclamation requires the consideration of relationality and healing fundamental to Indigenous environmental governance — concepts that come up against calculable definitions of “productivity” and “equivalence” reinforced by the settler state.

Similar to the discourses and practices of co-management that anthropologist Paul Nadasdy (2005) documents in the Southwest Yukon, dominant narratives and practices of oil sands reclamation can constrain the ways people can act or even think about post-extractive landscapes. At present, the (re)construction of more or less artificial and biodiversity-impooverished muskeg landscapes and focus on technological classifications of use limit the ability of reclamation to correct the reciprocal relationship with the land and its inhabitants for Indigenous Peoples. For reclamation to be successful for the Métis individuals with whom I work, reclaiming muskeg (and other environments) must involve a holistic view of growing *with* sentient landscapes, and balancing reciprocal relationships with the land — both are limited under current reclamation policy and practice. The ontological conflicts around muskeg and its reclamation reflect broader dynamics of cultural loss and state compensation.

To attend to multiple definitions of muskeg and the broader northeastern Albertan landscape, oil sands reclamation policy in Alberta requires a shift away from constructing utilitarian equivalence, towards providing opportunities for Indigenous healing. In short, reclamation requires culturally relevant approaches to constructing muskeg that recognize growing with the landscape, elbow-deep in the mud.

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## **Notes**

- 1 Since 2013, I have maintained a reciprocal research partnership with the Fort McMurray Métis community, with whom I have worked as both an academic researcher and a consultant.
- 2 Legislative Assembly of Alberta, *Alberta Hansard*, 15 March 1974 (Peter Trynchy), 273.
- 3 Legislative Assembly of Alberta, *Alberta Hansard*, 15 March 1974 (Charles D. Drain), 274.
- 4 Legislative Assembly of Alberta, *Alberta Hansard*, 24 October 1978 (Donald Ross Getty), 1509.

- 5 Legislative Assembly of Alberta, *Alberta Hansard*, 24 October 1978 (Donald Ross Getty), 1509.
- 6 The LCCS is no longer in use, as it was deemed scientifically unsound for reclaimed oil sands leases: the landscape characteristics at its foundation were established for undisturbed soils, and so equivalences could not be made with reclaimed sites. However, while the Criteria and Indicators Framework (AESRD, 2013) sets the current recommended objectives for reclamation, the LCCS remains a pertinent example as the classification system has yet to be replaced and the construction of the landscape according to a valued use persists.
- 7 The Truth and Reconciliation Commission (TRC) of Canada deemed Canada's treatment of Indigenous Peoples a form of cultural genocide, with the goal of assimilating Indigenous populations and gaining control of their territories. For comprehensive documentation of the impacts and legacy of settler colonial institutions such as the Indian residential school system, see the Commission's report (TRC 2015).
- 8 First Nations' rights in northern Alberta to hunt, trap, fish, and gather plants are upheld in Treaty 8. Métis communities are not signatories to this Treaty; their rights are protected in section 35 of the Canadian Constitution Act, 1982.
- 9 McMurray Métis Community Knowledge Keeper, interview code MPII-32.

## References

- Alberta (Government of). 2014. *Environmental Protection and Enhancement Act*. Edmonton, AB: Alberta Queen's Printer.
- Alberta Environment and Sustainable Resource Development (AESRD). 2013. *Criteria and Indicators Framework for Oil Sands Mine Reclamation Certification*. Prepared by Mike Poscente and Theo Charette of Charette Pell Poscente Environmental Corporation for the Reclamation Working Group of the Cumulative Environmental Management Association, Fort McMurray, AB. 18 September 2012.
- Anderson, David G. 2015. "Home, Hearth and Household in the Circumpolar North." In *About the Hearth: Perspectives on the Home, Hearth and Household in the Circumpolar North*, edited by David G. Anderson, Robert P. Wishart, and Virginie Vaté, 262–282. New York and Oxford: Berghahn Books.
- Baker, Janelle M., and the Fort McKay Berry Group. 2019. "Cranberries Are Medicine: Monitoring, Sharing, and Consuming Cranberries in Fort McKay." In *Wisdom Engaged: Traditional Knowledge for Northern Community Well-Being*, edited by Leslie Main Johnson, 117–142. Edmonton: University of Alberta Press.

- Baker, Janelle M., and Clinton N. Westman. 2018. "Extracting Knowledge: Social Science, Environmental Impact Assessment, and Indigenous Consultation in the Oil Sands of Alberta, Canada." *The Extractive Industries and Society* 5 (1): 144–153.
- Blaser, Mario. 2013. "Ontological Conflicts and the Stories of Peoples in Spite of Europe: Toward a Conversation on Political Ontology." *Current Anthropology* 54 (5): 547–568.
- Bower, Shannon Stunden. 2011. *Wet Prairie: People, Land, and Water in Agricultural Manitoba*. Vancouver: UBC Press.
- Buffalo, K., C.E. Jones, J.C. Errington, and M.I.A. MacLean. 2011. "Fort McKay First Nation's Involvement in Reclamation of Alberta's Oil Sands Development." In *35th Annual B.C. Mine Reclamation Symposium*. Lake Louise, AB.
- Carroll, Clint. 2015. *Roots of Our Renewal: Ethnobotany and Cherokee Environmental Governance*. Minneapolis: University of Minnesota Press.
- Cruikshank, Julie. 2005. *Do Glaciers Listen?: Local Knowledge, Colonial Encounters, and Social Imagination*. Vancouver: UBC Press.
- Cumulative Environmental Management Association (CEMA). 2006. *Land Capability Classification System for Forest Ecosystems in the Oil Sands*, 3rd ed. Prepared for Alberta Environment, Edmonton, AB.
- Daly, Christine, Jonathan Price, Fereidoun Rezanezhad, Rémy Pouliot, and Martha D. Graf. 2012. "Initiatives in Oil Sand Reclamation: Considerations for Building a Fen Peatland in a Post-Mined Oil Sands Landscape." In *Restoration and Reclamation of Boreal Ecosystems: Attaining Sustainable Development*, edited by Dale Vitt and Jagtar Bhatti, 179–201. Cambridge, UK: Cambridge University Press.
- Dussart, Françoise, and Sylvie Poirier, eds. 2017. *Entangled Territorialities: Negotiating Indigenous Lands in Canada and Australia*. Toronto: University of Toronto Press.
- Garibaldi, Ann. 2009. "Moving from Model to Application: Cultural Keystone Species and Reclamation in Fort McKay, Alberta." *Journal of Ethnobiology* 29 (2): 323–338.
- Ghostkeeper, Elmer. 2007. *Spirit Gifting: The Concept of Spiritual Exchange*. Raymond, AB: Writing on Stone Press.
- Goldstein, Jesse. 2013. "Terra Economica: Waste and the Production of Enclosed Nature." *Antipode* 45 (2): 357–375.



- Hopkins, Debra, Tara L. Joly, Harvey Sykes, Almer Waniandy, John Grant, Lorrie Gallagher, Leonard Hansen, Kaitlyn Wall, Peter Fortna, and Michelle Bailey. 2019. "Learning Together': Braiding Indigenous and Western Knowledge Systems to Understand Freshwater Mussel Health in the Lower Athabasca Region of Alberta, Canada." *Journal of Ethnobiology* 39 (2): 315–336.
- Iseke, Judy. 2010. "Importance of Métis Ways of Knowing in Healing Communities." *Canadian Journal of Native Education* 33 (1): 83–97.
- Johnson, Leslie Main, ed. 2019. *Wisdom Engaged: Traditional Knowledge for Northern Community Well-Being*. Edmonton: University of Alberta Press.
- Joly, Tara L., Hereward Longley, Carmen Wells, and Jenny Gerbrandt. 2018. "Ethnographic Refusal in Traditional Land Use Mapping: Consultation, Impact Assessment, and Sovereignty in the Athabasca Oil Sands Region." *The Extractive Industries and Society* 5 (2): 335–343.
- Kimmerer, Robin. 2013. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. Minneapolis: Milkweed Editions.
- Lacombe, P.M. 2012. *Manitoba Metis Traditional Use and the Bipole III Project*. Prepared for Manitoba Métis Federation. Submitted to Manitoba Clean Environment Commission with Respect to Manitoba Hydro's Bipole III Application.
- Li, Tania Murray. 2007. *The Will to Improve: Governmentality, Development, and the Practice of Politics*. Durham, NC: Duke University Press.
- Li, Fabiana. 2015. *Unearthing Conflict: Corporate Mining, Activism, and Expertise in Peru*. Durham, NC: Duke University Press.
- Locke, John. (1690) 1980. *Second Treatise of Government*. Edited by C.B. Macpherson. Indianapolis: Hackett Publishing.
- MacFarlane, I. C. 1959. "Muskeg Research: A Canadian Approach." *Highway Research Board Proceedings* 38: 638–650.
- Nadasdy, Paul. 2005. "The Anti-Politics of TEK: The Institutionalization of Co-Management Discourse and Practice." *Anthropologica* 47 (2) : 215–232.
- National Wetlands Working Group. 1997. *The Canadian Wetland Classification System*, 2nd ed. Waterloo, ON: Wetlands Research Centre, University of Waterloo.
- Povinelli, Elizabeth A. 1995. "Do Rocks Listen?: The Cultural Politics of Apprehending Australian Aboriginal Labor." *American Anthropologist* 97 (3): 505–518.

- Powter, Chris, Neil Chymko, Gordon Dinwoodie, Darlene Howat, Arnold Janz, Ryan Puhlmann, Tanya Richens, Don Watson, Heather Sinton, Kevin Ball, Andy Etmanski, Bruce Patterson, Larry Brocke, and Ralph Dyer. 2012. "Regulatory History of Alberta's Industrial Land Conservation and Reclamation Program." *Canadian Journal of Soil Science* 92 (1): 39–51.
- Radforth, Norman W. 1952. "Suggested Classifications of Muskeg for the Engineer." *Engineering Journal* 35 (11): 1–12.
- . 1956. *Muskeg Access, with Special Reference to Problems of the Petroleum Industry*. Technical Memorandum, 43. Calgary: National Research Council (Canada) Associate Committee on Soil and Snow Mechanics, Petroleum and Natural Gas Division.
- Radforth, Norman W., and C.O. Brawner. 1977. *Muskeg and the Northern Environment in Canada*. Toronto: University of Toronto Press.
- Rodman, Margaret C. 1992. "Empowering Place: Multilocality and Multivocality." *American Anthropologist* 94 (3): 640–656.
- Rooney, Rebecca C., Suzanne E. Bayley, and David W. Schindler. 2012. "Oil Sands Mining and Reclamation Cause Massive Loss of Peatland and Stored Carbon." *Proceedings of the National Academy of Sciences* 109 (13): 4933–4937.
- Simpson, Audra. 2014. *Mohawk Interruptus: Political Life across the Borders of Settler States*. Durham, NC: Duke University Press.
- Timoney, Kevin P. 2015. *Impaired Wetlands in a Damaged Landscape: The Legacy of Bitumen Exploitation in Canada*. Cham: Springer International Publishing.
- Todd, Zoe. 2016. "An Indigenous Feminist's Take On The Ontological Turn: 'Ontology' Is Just Another Word for Colonialism." *Journal of Historical Sociology* 29 (1): 4–22.
- Treaty 8. Treaty No. 8 Made June 21, 1899 and Adhesions, Reports, Etc.* (1899) 1966. Reprinted by Roger Duhamel, FRSC, Queen's Printer and Controller of Stationery. Ottawa: Indian Affairs and Northern Development.
- Truth and Reconciliation Commission of Canada. 2015. *Honouring the Truth, Reconciling for the Future: Summary of the Final Report of the Truth and Reconciliation Commission of Canada*. Ottawa: Truth and Reconciliation Commission of Canada.
- Voyles, Traci Brynne. 2015. *Wastelanding: Legacies of Uranium Mining in Navajo Country*. Minneapolis: University of Minnesota Press.

- Walsh, J.P. 1957. *Some Economic Aspects of Construction in Muskeg Areas, with Particular Reference to Oilfield Roads*. Technical Memorandum, 47. Proceedings of Third Muskeg Research Conference. Ottawa: Association Commission on Soil and Snow Mechanics.
- Westman, Clinton. 2013. "Social Impact Assessment and the Anthropology of the Future in Canada's Tar Sands." *Human Organization* 72 (2): 111–120.
- Wolfe, Patrick. 1999. *Settler Colonialism and the Transformation of Anthropology: The Politics and Poetics of an Ethnographic Event*. London: Cassell.
- Wylynko, David and James Hrynyshyn. 2014. *Guidelines for Wetlands Establishment on Reclaimed Oil Sands Leases (Third Edition)*. Fort McMurray, AB: Cumulative Environmental Management Association.