ECOLOGICAL RESTORATION AS INDIGENOUS ENVIRONMENTAL JUSTICE:

A case study of the Upper Great Lakes Métis in Sudbury, Ontario

by

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ABSTRACT

Indigenous peoples have long-standing relationships with the lands and waters in their communities and can, therefore, be disproportionately affected by the environmental impacts of resource extraction and industrial development. As such, ecological restoration offers social and environmental implications that have the potential to transform communities and promote Indigenous environmental justice. This thesis examines the relationship between ecological restoration and Indigenous environmental justice, specifically focusing on the Upper Great Lakes Métis in Sudbury, Ontario.

Sudbury has a long history of mining and industrial development that has led to severe environmental degradation. However, the implementation of a successful 're-greening programme' over the last four decades has remarkably restored components of Sudbury's damaged landscapes. Despite the success of the scientifically-based restoration programme, there has been no research on how the Métis living in Sudbury perceive its processes and goals. This study seeks to fill this gap by exploring how the Métis perceive their environment and how they can contribute to restorative environmental work in the region.

Using a mixed-methods approach, this study uncovers local perspectives on ecological restoration and environmental justice whilst drawing upon environmental justice frameworks, decolonising principles, and Two-Eyed Seeing. Through the use of ethnography with Métis participants and restoration professionals, the study uncovers local concerns regarding well-being and the environment. The study finds that the Upper Great Lakes Métis prefer a restoration approach incorporating Indigenous and Western scientific knowledge, underscoring the importance of Two-Eyed Seeing. This finding emphasises that acceptance of ecological restoration projects requires recognition of locally-valued forms of environmental justice. As seen in the literature, forms of justice may vary by Indigenous community. Thus, if restoration processes and outcomes are to incorporate Indigenous ways of knowing, pan-Indigenous approaches should be eschewed in favour of accommodating multiple understandings of well-being.

This study contributes to Indigenous scholarship on ecological restoration and environmental justice, underscoring the importance of recognising the power dynamics between various social groups, including governments, industry, the scientific community, and other Indigenous peoples. It also highlights the need to confront these dynamics to promote Indigenous environmental justice, a concept that varies by community.

DISCLAIMER

This document describes work undertaken as part of a PhD programme at the School of Geography, Earth, and Environmental Sciences, University of Birmingham. All views and opinions expressed therein remain the sole responsibility of the author and do not necessarily represent those of the department or the University.

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LIST OF ABBREVIATIONS

CAQDA	Computer-ass sted Qua tat ve Data Ana ys s Software
CBPR	Commun ty-based Part c patory Research
CIHR	Canad an Inst tutes of Hea th Research
DOC	D sso ved Oxygen Concentrat on
EJ	Env ronmenta Just ce
EMA	European Med c nes Agency
FNPCELS	F rst Nat ona Peop e of Co our Env ronmenta Leadersh p Summ t
FPIC	Free, Pr or, and Informed Consent
HHRA	Human Hea th R sk Assessment
IEJ	Ind genous Env ronmenta Just ce
IK	Ind genous Know edge
INCO	Internat ona N cke Company
IPSG	Ind genous Peop es Spec a ty Group
IRM	Ind genous Research Methods
MNC	Mét s Nat ona Counc
MNO	Mét s Nat on of Ontar o
MOE	M n stry of Env ronment
N	N cke
NRM	Natura Resource Management
OCAP	Ownersh p, Contro , Access, and Possess on
PAR	Part c patory Act on Research
PCMNO	Prov s ona Counc of the Mét s Nat on of Ontar o
RCAP	Roya Comm ss on on Abor g na Peop es
RGS-IBG	Roya Geograph ca Soc ety-Inst tute of Br t sh Geographers
S	Su phur
SDHU	Sudbury D str ct Hea th Un ty
SO_2	Su phur D ox de
SRFN	Serpent R ver F rst Nat on
TEK	Trad t ona Eco og ca Know edge
UNDRIP	Un ted Nat ons Dec arat on on the R ghts of Ind genous Peop es
USEPA	Un ted States Env ronmenta Protect on Agency
VETAC	Vegetat ve Enhancement Techn ca Adv sory Comm ttee

GLOSSARY

Anishinaabe	A group of three culturally-related Indigenous peoples: the Ojibwe, Odawa, and Potawatomi
biomass	Organic material from plants and animals
Indigenous Elder	A person with life experience and knowledge of traditions and teachings
Eurasian Watermilfoil	An invasive perennial aquatic plant
First Nations	Distinct Indigenous peoples and early inhabitants of what is now known as Canada; there are 634 recognised First Nations governments in Canada today
flushing rate	The exchange ratio or water renewal rate
founder-controlled pioneer species	The first species to colonise a newly established environment after a disturbance
Glencore	A Swiss multinational mining company; formerly XStrata
harvesting	A term employed by Indigenous peoples to infer the process of gathering plants, fish, and wild game for food, medicine, livelihood, and ceremony
INCO	A Canadian mining company and leading producer of nickel in the 20th century; purchased by Vale in 2006
Inuit	A culturally distinct Indigenous people who traditionally inhabit the Arctic and sub-arctic regions of North America
Métis	An Indigenous people who became culturally distinct through the ethnogenesis of First Nations mothers and European fathers during the North American fur trade
Ojibwe	An Anishinaabe people who inhabit southern Canada, including regions around the Great Lakes
smelting	A process of applying heat and reducing agents to extract metal products from ore
trapline	A route along which a trapper sets traps to harvest furbearing mammals
tumpline	A strap (often around the head or chest) used by Indigenous peoples and early settlers to carry heavy loads and packs
voyageurs	18th and 19th century French Canadians and Métis who transported furs by canoe in the early days of the fur trade
Vale	A Brazilian multinational metals and mining company; purchased INCO in 2006
XStrata	A former Anglo-Swiss multinational mining company; now Glencore

1. INTRODUCTION

After centuries of Indigenous suppression and dispossession in what is now known as Canada, there remains a dearth of research regarding Métis environmental justice. The Métis – one of three distinct Indigenous peoples in Canada's *Constitution Act, 1982,* section 35 – are distinct from the Inuit who inhabit Canada's Arctic regions and the First Nations who live across North America (Government of Canada, 2024; Henri et al., 2018; Macdougall, 2017). Métis peoples emerged from the ethnogenesis of half-European and half-First Nation people who, over generations, derived distinct knowledge and practices from both of their progenitors (Macdougall, 2017). In the early years of Canadian colonisation, the federal government considered the Métis as a 'dangerous class' in need of assimilation; as such, there was no 'safe' place for the Métis to practice their culture during the 19th century (Truth and Reconciliation Commission, 2015). Nevertheless, the Métis were not easily assimilated and, like the Inuit and their First Nations kin, retained their customs and connections to the lands and waters in which they had lived for generations.

The Métis tradition of passing land-based knowledge down to subsequent generations continues today, and one manner in which they do this is through oral storytelling. One of the first stories I heard upon tackling this research was the story of a local Métis family's moose hunt:

We always take our kids out in the bush. We were in Killarney [a historic Métis community, 50 kilometres south of Sudbury] for the weekend, and it was harvesting

season. Dad shot a moose; he got it! My daughter (she was young at the time) she saw it; she saw the moose go down, and the next Monday at school, I got called in [to the school] and the teacher said, 'We need to curb your daughter's stories.' I asked her, 'Like what?' And she said, 'Well, today, she told the class that she was holding hands with a moose!' So, I had to explain that everyone who will eat from the moose has to help clean that moose…that she [my daughter] had a role in it, and when I was a kid, I had a role. My daughter's job was to move the feet. So, technically, she was holding hands with a moose! Well, that teacher backed up to the wall, had to put her hands on it to steady herself and said, 'I don't want to know about helping rabbits take off their jackets, do I?'

Though an amusing story, it speaks to the complicated layers and nuances of Métis ways of life, subsistence harvesting, intergenerational connections, knowledge transfer, historic community attachment, and misrecognition – all key components of this thesis.

As a proud citizen of the Métis Nation myself, I recognize that our collective well-being is inherently tied to the health of the lands and waters on which we depend. When the species and habitats we rely on – such as moose, deer, grouse, fish, berries and more – are threatened, it has a direct impact on our communities. To date, scholarly research addressing ecosystem impacts and Métis populations in Ontario is entirely absent in the current literature. Indeed, research documenting Métis environmental injustices beyond western Canada is scarce. Thus, the justification for this research: this thesis uses the Métis sash – a distinctively Métis symbol – as a device to untangle the proverbial threads of identity, land use, industrial impacts, and traditional knowledge using Sudbury, Ontario, as a case study. The thesis begins by making a case for Métis belonging in the Sudbury region, progresses by discussing industrial mining impacts on the local Métis way-of-life, and concludes with a look at how Métis participation in ecological restoration can help enhance and improve social and environmental outcomes.

The sash, depicted in Figure 1-1, is widely considered the most recognizable cultural emblem of the Métis throughout Canada. The multipurpose woven sash was traditionally worn around the midsection and used as a belt, tumpline, towel, sewing kit, tourniquet or scarf while traversing waterways and participating in the fur trade. As a significant unifying symbol, the sash serves as the basis for the framework of this thesis. The colours of the Métis sash and their respective meanings were used to structure this project into three distinct empirical sections, each corresponding to a specific colour:

- Red / Black – Métis identity;
- Green / Blue – land and water impacts;
- Yellow / White – the healing and restorative work of a people and a place.



Figure 1-1: The Métis sash (*source: author, 2024*)

While there are sometimes variations ascribed to the meanings of sash colours across communities, there is a shared understanding of the historical and cultural significance of the sash within the Métis Nation. This project applies commonly shared understandings of the colours whereby the prominent red threads signify the blood of the Métis that was shed through the years fighting for rights and identity. Blue and green threads represent the strong Métis connection to the water and land, respectively, while also symbolising the depth of the Métis spirit and the fertility of a nation. Yellow threads acknowledge the importance of seasonality – the ebbs and flows of the sun, which determine our prosperity on the land, while white is said to connect us to the Creator. Lastly, some sashes include black threads as a symbolic gesture to recognise the sad era of suppression and dispossession; many, however, choose to forego its inclusion. The empirical chapters of this thesis reflect on these colours and their meanings concerning Métis identity in the Upper Great Lakes region.[1] Specifically, it examines how the Métis community living in the industrially impacted Sudbury region can heal themselves while restoring the land.

1.1. Sudbury, Ontario: A Case Study of Environmental Devastation

The Sudbury basin was formed approximately two billion years ago when a meteorite crashed into Earth; the hole was so deep that the basin remains visible from space today (Ames & Farrow, 2007). The metal-rich meteorite and its impactful strike left a landscape abundant in minerals, particularly nickel. Sudbury, Ontario, Canada (Figure 1-2) has one of the largest nickel ore deposits in the world and is widely referred to as the ‘Nickel City’

[1] The Upper Great Lakes in this thesis refer to the northern shores of Lake Superior and Lake Huron (Figure 3-4).

or the ‘Nickel Belt’. For more than a century, and continuing today, people worldwide use nickel mined and smelted in Sudbury in their daily lives.

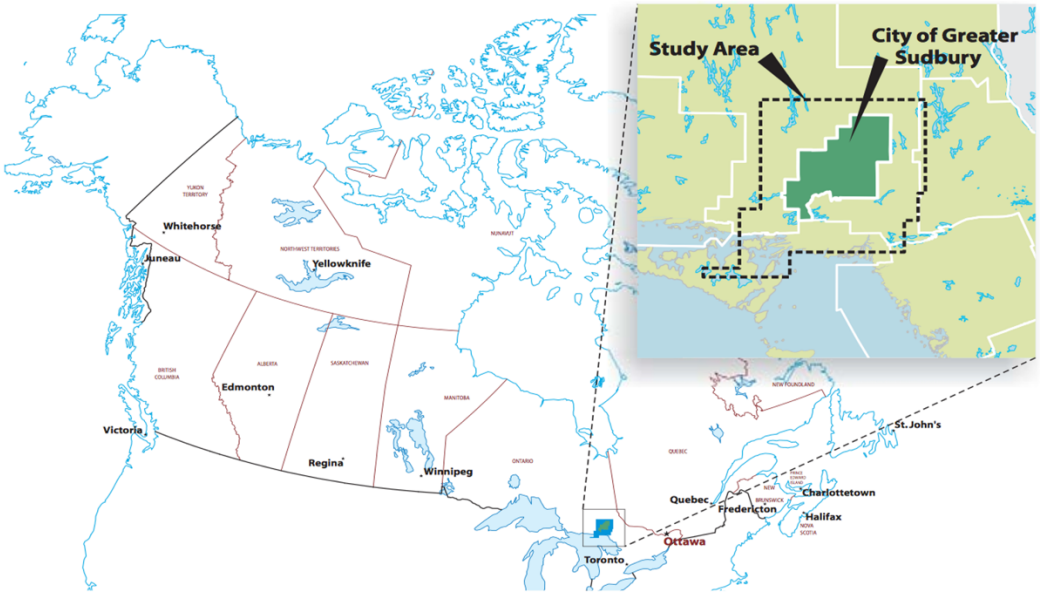


Figure 1-2: Map of Sudbury, Ontario (*source: Sudbury Soils Study, 2008*)

Many millennia after the meteorite impact, but before Sudbury’s metals made their global mark, European settlers to the Great Lakes region wrote about abundant natural resources. In particular, the 18th-century settlers wrote about Indigenous harvesters’ curious practice of leaving behind plenty of wild rice at the end of the seasonal harvest (Kimmerer, 2013). The settlers perceived the remaining rice as unequivocal evidence of laziness and lack of industry among the first peoples. The settlers, however, did not understand that the Indigenous peoples in the Great Lakes region lived by a set of principles collectively known as the *Honourable Harvest* (Kimmerer, 2013). Traditional oral stories of the Honourable Harvest, which are still passed along today, instruct Indigenous peoples in the Great Lakes region to take only what is needed and to ensure

something is always left behind for Shkagamik-Kwe.[2] Abiding by this practice ensures that Indigenous relationships with the natural world will be sustainable tomorrow, next year, and even seven generations into the future – the Seventh Generation Principle.[3] Whether the harvest is rice, berries, plants, fish, game, or Sudbury's lucrative nickel deposits, local Indigenous Elders teach that relationships must be in balance: never take too much so that you exceed the capacity to give again, never take too little so that traditions will fade.

Humankind has undoubtedly 'taken' more from Sudbury than it has 'given' over the last century. Natural resource exploitation for the sake of economic development has become commonplace in countries rich with natural resources, such as Canada. Gifford Pinchot (1998, p. 505), a John Muir contemporary, notes that 'without abundant resources, prosperity is out of reach.' However, prosperity and abundance have assuredly different definitions for an Indigenous subsistence harvester than for a forester and politician like Pinchot. Indeed, when economic development dollars are at stake, habitat protection and restoration – the tenets Indigenous harvesters depend upon – become an environmental arms race. In Sudbury's case, it took over 7000 acidified lakes, 100,000 hectares of decimated land, and an international reputation as one of the most polluted regions in the world before people conceded that mining was having a cataclysmic impact on the local region and even beyond (Gunn, 1996; Keller et al., 1998; Winterhalder, 1996).

[2] Shkagamik-Kwe is the Ojibwe term for Mother Earth, a term commonly used by both the Anishinaabe and the Métis peoples of the Great Lakes region. By registered population, the Ojibwe are among the most numerous Indigenous groups in Canada; in Ontario, the Ojibwe are the largest group of the Anishinaabe peoples (Anthony, 2007). Many of Ontario's Métis have distant Ojibwe and/or Cree heritage.
[3] The Seventh Generation Principle is a Haudenosaunee (Iroquois) philosophy that is now a commonly referenced principle among many Indigenous peoples in Ontario.

1.1.1. Sudbury's Historic Mining Legacy

During the construction of the Canadian Pacific Railway in the late 19th century, blasting and excavation near *Ste-Anne-des Pins* (Sudbury's historic name) revealed the lucrative nickel deposits to new Canadian settlers (Wren, 2012). Mining operations commenced soon afterwards to fill the universal demand for nickel coins, knives, weapons, and other items requiring nickel's strength and flexibility. While the mining operations damaged the landscape, it was the smelting process that devastated Sudbury's lakes and forests (Gunn, 2012; Keller et al., 1998). In the early days of mining, the metal-rich sulphide rocks encasing the nickel and copper were burned in open roast yards the size of football fields (Figure 1-3). This roasting would drive off the sulphur in the rock but also blanket the region in clouds of smoke. Between 1890 and 1930, approximately 28 million metric tons of ore were processed in the roast yards (Gunn, 1995). The vegetative losses from the acidic smoke were compounded by the fact that the roast yards – sometimes left burning for months at a time – were fuelled by the local logging industry.



Figure 1-3: A Sudbury roast yard, circa 1915 (*source: INCO/Vale Archives, n.d.*)

Metal extraction could occur at higher temperatures when smelters eventually replaced roast yards. The intensified fumigation released large amounts of metallic dust and sulphur dioxide (SO_2) into the atmosphere; it is estimated that for every ton of nickel produced, eight tons of sulphur was processed (Bouillon, 1995). Thus, at peak smelting emission in the 1960s, the Sudbury mining industry was releasing a staggering two million metric tons of SO_2 into the atmosphere each year – more than any other point source in North America (Botkin & Keller, 1998). The resultant acid rain, metal fallout, and soil erosion destroyed the landscape. Regretfully, the term 'Sudbury' became a measurable unit of pollution in early acid rain literature, and environmental activists donned T-shirts emblazoned with 'No Sudbury' symbols (Restoration Participant 08).

During the 1950s, aerial views of Sudbury's landscape revealed extensive vegetative damage. Early reports disclosed disturbed vegetative zones by distance from smelter: severe to very severe damage (2 miles from smelter), severe to considerable (4 miles), and considerable to moderate (4.5 miles) (Gorham & Gordon, 1960). By the 1970s, North America had implemented SO_2 regulations because of the scientific literature proving acid rain's significant role in widespread biological losses. Consequently, Sudbury's mining giant constructed the world's tallest smokestack to disperse emissions – an ambitious endeavour with some regretful consequences. At a major UN conference in 1972, Swedish scientists proposed that air pollution was regional (not just local) and that Sudbury's sulphur compounds – because of the newly erected smokestack – were causing acid damage as far away as North America's Atlantic coast (Potvin & Negusanti, 1995). Figure 1-4 shows Sudbury's infamous smokestack at the centre of the city's blackened landscape.



Figure 1-4: INCO superstack, circa 1972 *(source: Bouillon, 1995*)

The 'damage zone' was even more significant than the initial aerial views originally suggested. Trees more than thirty kilometres from the smelters were suffering needle and

leaf damage from sulphur dioxide; black spotting from metallic dust fallout was also prevalent (Amiro & Courtin, 1981). Ultimately, the acidic smelting fumes were responsible for 20,000 hectares of barren land and an additional 80,000 hectares of semi-barren land (Gunn, 1996). Only a stunted monoculture of white birch could survive in the sparse soil on Sudbury's blackened granite rock (Amiro & Courtin, 1981). Once the trees perished, there was no leaf litter to add to the soil profile and any remaining vegetation suffered as a result of soil erosion. Long, severe winters and hot, humid summers – weather extremes typical of Sudbury's humid, continental climate – exacerbated the effect of soil deterioration. As a result of acidification and metal contamination, trees died, birds and animals disappeared, and acid-laden lakes ceased to support aquatic life.

During the 1980s, the topic of acid rain moved to the forefront of public consciousness, and governments were forced to act on this threat. Municipal officials realised that Sudbury's horrific case of environmental degradation would be stifling for the local economy. The Canadian mining company International Nickel Company (INCO) – now owned by Brazil's Vale Limited – spent hundreds of millions of dollars on SO_2 abatement projects in an effort to reduce wet sulphate deposition (and the harmful emissions released along with them). Meanwhile, scientists at the city's university, Laurentian University, discovered that liming watersheds was having a tremendously positive impact on the landscape. The late Dr Keith Winterhalder formulated an effective mixture to amend Sudbury's soil using limestone and fertiliser. This two-step process of applying dolomitic limestone and fertiliser is still widely used in Sudbury today and is effective at raising soil pH values (Gunn, 1996). Together, government, industry, regional groups, and schools created a committee named VETAC (Vegetation Enhancement Technical

Advisory Committee) to provide expertise and guidance toward ecological restoration (City of Greater Sudbury, 2024d).

1.1.2. Sudbury's Ecological Recovery

VETAC believed that if land reclamation could be achieved, tailings stabilisation,[4] lake neutralisation, and reintroduction of extirpated species would eventually follow (Gunn, 1996). There was, however, no prescriptive strategy to guide the process – no restoration of this scale had ever been attempted. Restoration was complicated by the fact that Sudbury has large areas of Precambrian rock (granite that cannot effectively neutralise SO_2). Furthermore, mining and smelting operations had left few adequately vegetated buffers to guard lakes against urban and industrial runoff. Predictably, some of the most heavily acidic lakes (pH less than 6.0) were found near the smelter complexes (Pearson et al., 2002), and widespread losses of fish species had occurred in these lakes (Beamish & Harvey, 1972). Distance alone, however, was not the only mitigating factor; some lakes closest to the smelters were scarcely affected despite heavy exposure to fallout and watershed fumigation (Keller & Gunn, 1995). Larger lakes with longer flushing rates (including Sudbury's primary drinking water source, Lake Ramsey) were seemingly more resilient to pollution effects (Keller & Gunn, 1995).

As smelting emissions have continuously declined over the years, many lakes show improved sulphate and pH concentrations, accompanied by increased dissolved organic

[4] Sudbury contains thousands of hectares of tailings ponds, which are lagoons filled with mining waste (Gunn, 1996). Ore from the mines is crushed to powder; powdered ore minerals are then separated from the powdered waste rock. This powdered waste rock–*tailings*–are transported by pipeline as wet slurry to tailings ponds.

carbon (DOC) (Keller, 2019). Moreover, metal concentrations – both those related to acid leaching and smelting – are also seemingly decreasing (Keller, 2019). While chemical recovery is a promising objective, the effects of climate change on this complex system have not yet been thoroughly studied or realised. Scientists had a brief glimpse of a future scenario during the drought of 1986 and 1987. During this period, some lakes saw moderate levels of re-acidification as stored sulphur and metals were oxidised and then later mobilised into lake water upon resumption of wet conditions (Restoration Participant 12)

Unsurprisingly, acidified, metal-contaminated lakes cannot support a wide variety of aquatic life. While recolonising species of phytoplankton and zooplankton have been noted in chemically recovered lakes, natural recolonisation rates for sensitive species such as lake trout are much slower (Gunn, 1996). As acid and metal-tolerant species tend to dominate lakes, distorted predation patterns and altered community structures have emerged. These shifts inevitably affect food webs at all trophic levels, including at the top with Sudbury's avid anglers and hunters. Further, as native species have vacated Sudbury lakes due to acidification and metal contamination, gaps left in ecosystems have opened doors for invasive species to proliferate. In recent years, Sudbury's lakes have been plagued with exotic species. For these already struggling lakes, alien species aggravate native species' repopulation, thereby inhibiting complete biological recovery.

Similarly, Sudbury's forests, though recovering in terms of biomass, remain low in species diversity and are therefore susceptible to invasive species. Further, much of

Sudbury remains dominated by vegetative species with an ability to invade and hold ecological gaps. Undeterred, city and mining officials continue to encourage coniferous plantings; to date, conifers account for close to 100 percent of tree plantings done today (VETAC, 2022). Unfortunately, the Canadian Forest Service (2011) postulates that the Greater Sudbury area could have an unsuitable climate for many of these coniferous species by 2100. These forest changes (past, present, and possibly future) pose significant obstacles for those who depend upon the lands and waters for subsistence, including the Métis participants in this study.

1.2. The 'Sudbury Soils Study'

As Sudbury's landscape gradually re-greens, it is easy to forget that it was once so ecologically damaged. Figure 1-8 displays Sudbury's drastic ecological succession resulting from local environmental initiatives. Despite obvious signs of physical improvements, Ontario's Ministry of Environment (MOE)[5] opted to test more than 8000 soil samples from beaches, parks, schools, daycares, and residential areas in 2001 to determine if historic soil contaminants posed a human health risk to area residents (Sudbury Soils Study, 2008). The MOE sampling confirmed that metals and arsenic levels surpassed the ministry's toxicological criteria for contaminated sites and legislated requirements for a more detailed study and risk assessment (Sudbury Soils Study, 2008). Mining companies, Vale and Xstrata (now Glencore), accepted the recommendation and began working together to establish a comprehensive study – the Sudbury Soils Study.

[5] Ontario's Ministry of Environment (MOE) was renamed the Ministry of Environment, Conservation and Parks (MECP) in 2018, which it remains as of 2024.

Partners in the study, together in alliance with Vale and Xstrata, included representatives from Ontario's Ministry of the Environment (MOE), the Sudbury District Health Unit (SDHU), the City of Greater Sudbury, and Health Canada's First Nations, Inuit Health Branch (Sudbury Soils Study, 2008).[6]



Figure 1-5: Barren land around smelter in 1970 (left) and in 2015 (right) *(source: City of Greater Sudbury, n.d.)*

One of the major conclusions from the 2008 industry-funded Sudbury Soils Study was that health risks were not occurring from Sudbury's mining and smelting legacy. Despite

[6] The federal government made a commitment to improve the health of *all* Indigenous people in 2017 (including the Métis); before this time, and throughout the duration of the Sudbury Soils Study, the national health ministry's branch mandate was to serve First Nations and Inuit peoples.

this assurance, some local residents, particularly Indigenous harvesters who subsist on the land, remained unconvinced (Clarkson, 2011; Sudbury Soils Study, 2008). In 2011, a news headline based on Cancer Care Ontario data raised local residents' alarm. The headline, *'Sudbury in cancer death zone'* was based on previously unpublished data by Cancer Care Ontario. Though Sudbury had its share of regretful titles during the late 20th century (for example, home of the world's largest smelting complex, home of the Western hemisphere's tallest smokestack, home to thousands of acres of tailings ponds, and tens of thousands of hectares of barren land), the worrisome cancer data prompted a 'he said-she said' dispute between the mining companies and workers' unions regarding the validity of the soils study results. As is often the case in complex problems with no simple solutions, apathy and inaction eventually set in. Given the volatile history between the two groups, it was easy to appreciate why public interest in the soils study results waned alongside the debate. I believed, however, that the stakes were simply too high to dismiss the study. Consequently, I embarked on my own objective examination of both the exposure and hazard assessments of Sudbury Soils Study human health risk assessment (HHRA) for my 2014 master's thesis. I analysed how exposures were assessed, what toxicology criteria were used, and how these assessment choices stack up against regulatory agencies' best risk assessment practices (see Appendix I for more information related to the critical analysis of the soils study).

Based on the findings in my critical analysis, too many chemicals were screened out, too many samples were deemed statistical outliers, too many exposure pathways were excluded, and too many toxicology gaps exist to conclude that 'no harm is occurring' in Sudbury communities. Ultimately, I concluded that the Sudbury risk assessment lacked

data on potentially worrisome metals and that several exposure pathways were excluded or lacked data in the assessment. These exclusions included critical fetal and infant routes and local food ingestion rates, potentially underestimating risk in select populations, including the Métis, who were not considered or consulted in the study. If, indeed, the Metis were a thought at all during the study, it is possible that the Sudbury Soils Study authors may have erroneously believed First Nations patterns were similar to, and therefore protective of, Métis patterns. There are, however, flaws in this assumption, and this thesis tackles some of these inherent errors in subsequent chapters. For instance, the Métis have settlement areas and historic communities but no treaty territories like the First Nations.[7] Thus, Métis hunters and gatherers typically must purchase private land, form rental agreements with private landowners, or harvest on what is known as Crown land in their ancestral regions.[8] Because mining companies own vast swaths of land in the Sudbury region, some Métis resort to private deals to hunt and harvest on mining land – a potentially dire situation as presented in empirical chapters of this thesis.

[7] Treaty Territories are lands defined through treaty negotiations and agreements between Indigenous peoples and the Government of Canada. Approximately 35 percent of Canada is covered by First Nations treaties. Though the Métis have land agreements with governments, they were largely unsuccessful at negotiating historical treaties. See and Treaties and agreements: https://www.rcaanc-cirnac.gc.ca/eng/1100100028574/1529354437231#

[8] 'Harvesting' is a term used by Ontario Métis for fishing, hunting and trapping, although it is also commonly used for berry picking, medicine collecting, and wood cutting. Crown land is the term used to describe land owned by the federal or provincial governments. Crown land in Ontario is managed by the Ministry of Natural Resources and Forestry (Government of Ontario, 2023). The Métis Nation of Ontario has nine regions across the province. MNO citizens are permitted to harvest with a harvester's card in the region of their ancestral connection.

1.3. The Métis living in Sudbury

While the City of Greater Sudbury is on the traditional territory of the Atikameksheng Anishnawbek, many more First Nation communities exist within the Sudbury District. Notably, First Nation hunters and gatherers have the right to harvest on non-privatised land in their treaty area (Figure 1-9). Early Canada acknowledged the co-existence of First Nations and non-First Nations on treaty territory and contended that the First Nations would benefit from the emerging economy (Morrison, 1996). Consequently, the harvesting rights of the Anishinaabe people (those First Nations near present-day Sudbury) were retained for both commercial and subsistence harvesting, and overall, the agreement was deemed a great success at the time. While early treaty negotiations were heralded for benefitting both the Anishinaabe and the settlers, the Métis were excluded from agreements (Morrison, 1996). As Morrison (1996) states in his treaty report for the Royal Commission on Aboriginal People, '*If it was better to be Ojibwe in Canada than in the United States, it was far worse to be a halfbreed*.'[9] Stated otherwise, though the Ojibwe fared better in Canada than in the United States, the Métis fared much worse. Canadian politicians adamantly refused to deal with '*halfbreeds'* and noted that there would be no recognition of Métis property claims. Consequently, the Métis were forced to pivot. Some Métis remained around the Great Lakes without treaty rights, some Métis identified as *Indians*[10] (as noted in Huron and Superior band lists), and some Métis moved to western

[9] The term 'halfbreed' was used pejoratively against Métis in the annals of history as a reference to their mixed Indigenous and European ancestry. The term has recently been reclaimed by some contemporary Métis as a source of pride and identity, but it is generally accepted that it can only be used by those whom the term has been used against.

[10] The term 'Indian' should be avoided in most contexts unless used as a historical reference or government policy (e.g. The Indian Act or 'status Indian'). The term originates from early European explorers who mistakenly believed they had arrived in India, not North America. First Nations is now the preferred term, though each community has their own particular nuance and may prefer Indigenous.

Canada in search of land and opportunity. Though literature about the Métis who stayed behind in the Upper Great Lakes (Lake Superior and Lake Huron) is scarce, engaged and active Métis communities persist, as demonstrated in empirical chapters of this thesis.



Figure 1-6: Robinson-Huron 1850 Treaty Territory (in yellow)
(source: Whitefish River First Nation, 2020)

Today, the Métis Homeland in Canada is classified as the three prairie provinces (Manitoba, Saskatchewan, Alberta) and parts of Ontario, British Columbia, and the northern United States (Métis National Council, n.d.). There are an estimated 18,000 citizens of the Métis Nation in Ontario today, though it is difficult to determine how many more would self-identify if not for the residential school system (Métis National Council,

n.d.).[11] Statistics Canada (2023) reports that more than 9200 individuals in Sudbury's population of 166,000 self-identify as Métis. However, a private Sudbury Métis Citizens' page on Facebook has only 1300 followers, and the Métis Captain of the Hunt in the region estimates the number of Métis harvesters between 300 and 400 citizens.

Despite valiant efforts at defining Métis peoples, no single definition is deemed acceptable to everyone. Chris Anderson (2014), a prominent Red River Métis scholar, asserts that only individuals with a historical connection to the Red River settlement in western Canada's prairie provinces should be regarded as Métis.[12] Others adamantly reject this opinion and contend that just as First Nations differ across the vast country of Canada, so too do Métis. Consequently, the Métis can sometimes be informally described as Acadian Métis, Eastern Métis, Great Lakes Métis, Red River Métis, and Western Métis. Regardless of semantics, under section 35 of Canada's Constitution, the Supreme Court of Canada defines Métis via 'Powley criteria' (Government of Canada, 2015). Powley criteria, or the Powley test, requires that an individual wishing to obtain Métis status in Canada must meet three criteria: self-identify as Métis, be accepted by a present-day

[11] Residential schools for First Nations, Métis, and Inuit children existed in Canada from the 17th century until 1996 (Government of Canada, 2021). Children were forcibly removed from their families and homes and were often subjected to harsh discipline, physical, emotional, and sexual abuse, neglect, malnutrition, and starvation. These schools were primarily operated by churches and religious organisations, though funded and administered by the federal government in an assimilation effort to destroy Indigenous culture and identity. The intergenerational effects of the trauma incurred at residential schools include broken relationships between parent and children, lower levels of educational attainment, violence, and addiction.

[12] The confluence of the Red and Assiniboine Rivers (what is now Winnipeg, Manitoba) was once a prominent location of the fur trade. By 1812, the area was home to Ojibwe, Cree, and a large population of Métis who had travelled west from Ontario. When the territory (known at the time as Rupert's Land) was eyed by settlers to be transferred to the new Dominion of Canada, the 1869-1870 uprising led by Métis leader Louis Riel ensued. Because of the Red River Resistance (also known as the Red River Rebellion), the Manitoba Métis Federation maintains that the Red River Valley is the origin and the core of the Métis Nation (Manitoba Métis Federation, 2024).

Métis community, and prove ancestral connections to a historic Métis community (Métis Nation of Ontario, 2017). Further, according to *R. v. Powley* [2003], 'Métis are distinctive peoples of mixed ancestry who developed their customs, practices, traditions, and identities separate from their Indian, Inuit, and European ancestors.' While there are Métis across the country who believe that the Powley test is unduly restrictive and a pervasive symptom of paternalistic colonialism, others contend that opening Métis citizenship to anyone who claims identity or has mixed Indigenous and European ancestry opens a minefield of interpretation issues and ignores the very distinct culture and language of the first Métis people.[13]

1.4. Aims and Objectives

The main overarching purpose of this research is to contribute to the enhancement of the environmental and social outcomes of the Métis people in the Sudbury region. Once the most ecologically damaged landscape in the world, Sudbury is looking for new ways to restore its lands and waters. Thus, my primary aim is to consider how Métis ecological knowledge can help protect and heal Sudbury's industrially damaged ecosystems whilst redressing the social and environmental injustices that have afflicted the Metis. While considering this quandary, the following research objectives are:

- To document how the Métis people in Sudbury perceive their Indigenous identity and practice their traditional ways;

[13] For the purposes of this thesis, and to avoid the political ramifications of identity claims, the criteria for participation as a Métis citizen in the ethnographic interviews hinged on self-identity and acceptance in the present-day Sudbury Métis community, *not* on proof of ancestry or historical ties.

- To identify parameters of injustice affecting the Métis way-of-life, including how industrial impacts and ecological pressures are impacting traditional ways in the Sudbury region;
- To determine how Indigenous knowledge, and more specifically, Métis ecological knowledge, fits within Sudbury's ongoing environmental restoration programme;
- To develop conceptual associations between Métis way-of-life impacts, epistemology, and Indigenous environmental justice.

To summarise, this thesis draws upon principles of environmental justice to determine how ecological impacts of mining (and its associated industries) have been experienced by an often overlooked and vulnerable group, the Upper Great Lakes Métis in and around Sudbury. The project addresses how acknowledgement of Métis knowledge in Sudbury's re-greening can potentially alleviate some social and environmental burdens. To make this argument, this thesis draws upon social and environmental justice literature to strengthen the case that ecological restoration is an important component of Indigenous environmental justice (Sandlos & Keeling, 2016a,b).

1.5. Theoretical and Empirical Contributions

Ecological restoration is a process whereby history intersects with the present and the future. As such, I envision restoration as a process with the potential to address past environmental injustices whilst decolonising knowledge of the present, and healing the land for the future. Thus, this thesis contributes to the theoretical debates on how environmental justice can be achieved for Indigenous peoples.

Theoretically, this thesis eschews pan-Indigenous approaches in environmental justice and outlines a framework for Métis epistemology inclusion in traditionally colonial environmental restoration processes. As such, this thesis makes three distinct empirical contributions. Firstly, as an essential foundation for building a concept of Métis environmental justice, it compiles evidence to develop an understanding of Métis identity in the Upper Great Lakes region. Secondly, it provides stories of how historical mining practices and pollution have disproportionately burdened the Métis. Lastly, it offers a case study of how Métis sovereignty and knowledge could contribute to a comprehensive and holistic understanding of land and water restoration, which has been exclusively grounded in Western science.

This research draws upon existing justice literature and frameworks (see Fraser 1995, 2000, 2001; Honneth, 1996; Nussbaum, 2006, 2011; Rawls, 1971, Schlosberg, 2007, Young, 1990) to help explain this case study's distributional, recognition, and procedural harms. Indigenous environmental justice, specifically in terms of reciprocity and ways-of-knowing, is also considered in relation to how best to restore industrially-ravaged ecosystems, particularly those that Indigenous harvesters rely upon for sustenance, ceremony, and leisure (McGregor, 2004a, 2018b; Todd, 2016a, 2018; Whyte, 2011, 2017, 2022). Environmental restoration, however, is configured around first identifying community history, community impacts, and community needs. This form of research, therefore, advocates for community-based participatory research (CBPR) that is consistent with Indigenous and Métis principles. Using culturally appropriate methods such as learning workshops, trap-line tours, and ethnographic interviews helps facilitate

a casual, conversational, reciprocal flow of information sensitive to interviewees' comfort level and offers a framework for future research.

At present, there is a gap in the literature explicitly related to how industrial impacts and ecological restoration processes affect the Métis way of life along the Upper Great Lakes. One reason for this lack of literature is that the Métis, specifically the Métis in Ontario, are seemingly trapped in a cycle of proving their continued presence and connection to territory and land. This historical lack of recognition corresponded to the absence of Métis participation in the aforementioned Sudbury Soils Study. Participatory exclusion continues today with the absence of Métis knowledge in Sudbury's award-winning re-greening programme.

Inspired by the work of Beckett, Keeling, and Sandlos, this thesis argues for a broader, more inclusive ecological restoration process that corresponds to the needs of the people who rely on the lands and waters the most, the Indigenous peoples. Whether from a lack of recognition, misrecognition, land contamination, land access barriers, or culturally inappropriate land restoration, the way the Métis in Sudbury conceptualise dispossession is at the forefront of this project (see Richmond & Ross, 2009). Because the Métis are distinct and have dissimilar harvesting practices compared to First Nation harvesters and local anglers, I argue that Métis ways-of-life in the Sudbury region have been uniquely impacted by industrial contamination. Further, I argue that the pan-Indigenous approach toward environmental justice is not particularly palatable to the Métis living in Sudbury and, as such, suggest ways to address their concerns.

1.6. Thesis Organisation

This thesis untangles the interwoven threads of identity politics, industrial impacts, and environmental restoration. I begin by making a case for Métis belonging in the Sudbury region and progress by characterising industrial impacts specific to the local Métis way-of-life. The thesis concludes with a look at how Métis participation in Sudbury's regreening programme can help decolonise restoration, thereby improving environmental outcomes and working towards Indigenous environmental justice and reconciliation.

Chapter 2: Literature Review and Conceptual Framework

Chapter 2 considers the literature on environmental justice that has emerged since Rachel Carson's *Silent Spring* and Bullard's 1980s movement. Social justice scholarship (see Fraser, Honneth, Nussbaum, and Young), which has been drawn on to conceptually develop environmental justice (see Agyeman, Gleeson & Low, Holifield, Schlosberg, Schrader-Frechette, Sze, and Walker) is explored, with theoretical concepts of distribution, recognition, procedural justice, and the capabilities approach introduced. The chapter then investigates the more recent evolution of Indigenous environmental justice (see Coulthard, McGregor, Todd, and Whyte). Aspects of overlap between traditional frameworks of environmental justice and newer dimensions of Indigenous environmental justice are reviewed while also examining how the contemporary concept of justice to non-humans relates to Indigenous knowledge. Lastly, Indigenous knowledge, including

the concept of Two-Eyed Seeing,[14] is introduced as a component of ecological restoration and, therefore, Indigenous environmental justice. The Métis positionality in relation to Two-Eyed Seeing considers how Métis environmental justice may be distinct from Indigenous environmental justice in parts of Canada.

Chapter 3: Research Methodology

With the case study context and theoretical groundwork in place, Indigenous methodologies are introduced. Section 3.2 continues by reflecting on the positionality of the author. Chapter 3 then moves on to explain the rationale for approaches taken in both the data collection and data analysis. Quantitative and qualitative data collection processes are described for Métis participants (questionnaire, interviews, tours, participant observation) and for restoration practitioner participants (interviews, tours). The chapter also outlines the analysis process, including the use of computer-assisted qualitative data analysis software (CAQDAS), while highlighting some of the challenges of its use in Indigenous research. Additionally, barriers faced while conducting the case study are presented alongside a more general reflection on performing research alongside the Métis.

[14] Two-Eyed Seeing is a concept conceived by Mi'kmaq Elder, Albert Marshall, that recognises the strength of Indigenous ways-of-knowing and the strength of Western ways-of-knowing (Bartlett et al., 2012). In Marshall's words *'Two-Eyed Seeing' refers to learning to see from one eye with the strengths of Indigenous ways of knowing and from the other eye with the strengths of Western ways of knowing and to using both of these eyes together* (Bartlett et al., 2012, p. 335).

Chapter 4: Métis Identity in the Upper Great Lakes

There are competing ideas within Canada about who is Métis. As this research is based in the province of Ontario, understanding the nuances of national, provincial, and local Métis identity is important. Though colonial definitions of Indigenous identity are contentious in Indigenous communities, the blunt fact is that the Canadian government only recognises Métis within strict parameters. Thus, this chapter reviews these parameters as they relate to the Upper Great Lakes Métis, specifically to the Métis living in Sudbury, Ontario. Despite ongoing debates regarding identity and recognition at the national and provincial levels, this chapter demonstrates that the Métis population in the Upper Great Lakes region has not been assimilated into mainstream society, as some scholars and leaders claim. On the contrary, this chapter underscores that the Métis living in Sudbury have well-defined notions of their identity and the Indigenous practices on the land that are significant to their traditional ways.

Chapter 5: Industrial Impacts and Métis Environmental Injustices

Following the establishment of Métis living in Sudbury, this chapter discusses justice issues specific to Métis ways-of-life in the region. Unlike the First Nations in the area, the Métis do not occupy treaty land. As such, in the spirit of collaboration and reconciliation, mining companies frequently and conditionally offer some of their private land to Métis harvesters. Though often perceived as a goodwill gesture on both ends (the corporations and the Métis citizens), this chapter demonstrates how harvesting in contaminated landscapes is possibly detrimental to Métis physical well-being and way-of-life. Beyond documenting ethnographic stories of harvesting berries, fish, and game without land

access, this chapter emphasises concern among Métis harvesters who question whether their reliance on their environment for sustenance and nourishment increases their exposure to industrial contaminants.

Chapter 6: Ecological Restoration as Environmental Justice and Reconciliation

In contrast to the first two empirical chapters, which rely heavily on data from Métis participants, this final empirical chapter draws on data gathered from Métis participants *and* restoration practitioners. The chapter explores Sudbury's re-greening programme, which was formed after government regulations and local efforts to reduce pollution began in the early 1970s (City of Greater Sudbury, 2021a). There is, however, one notable absence in the affectionately dubbed 'Sudbury Story' – Sudbury's Indigenous peoples.

This chapter explores conflicting worldviews (Indigenous and settler societies) and the effects varying perspectives have on efforts to reduce contaminant exposure and restore the environment. While uncovering the restoration process of the city's regreening programme, it examines how historically marginalised people – specifically, the Métis – have been sidelined in the ecological recovery process. Lastly, the chapter considers how knowledge sharing could help repair the system – the natural and the societal. Theoretically and empirically, this chapter advocates for situating ecological restoration as a component of environmental justice. It suggests that restoration utilising Métis knowledge contributes to Métis environmental justice and, more broadly, Indigenous environmental justice and reconciliation.

Chapter 7: Conclusion

In the final chapter, Chapter 7, the original research questions are revisited and answers are formulated based on the thesis content. Challenges that emerged throughout the empirical chapters are taken into consideration, and recommendations to address them are provided. The chapter concludes by reflecting on the nuanced aspects of justice explored in this thesis and pondering how future research that incorporates Métis knowledge in ecological restoration can play a pivotal role in advancing broader initiatives for Indigenous environmental justice and reconciliation.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1. Introduction

Robert Bullard defines environmental racism as 'any policy, practice, or directive that differentially affects or disadvantages individuals, groups, or communities based on race or colour' (Bullard, 1990, p. 98). Throughout the 80s, racial aspects to the spatiality of sites of probably environmental toxicity in the United States became increasingly identified (Bullard, 1990; Gilio-Whitaker, 2020; United Church of Christ Commission for Racial Justice, 1987). Bullard (1990) established that economically and politically marginalised communities faced disproportionately high environmental ills. As such, strategies of resistance against these environmental injustices emerged as grassroots movements by activists and engaged communities who wished to speak up for themselves (Cole & Foster, 2001).

From these grassroots strategies and from initial scholarship in social justice, a number of theoretical considerations concerning environmental justice have been developed. The objective of this chapter is to review many of these theoretical notions of environmental justice while contemplating if Western frameworks of environmental justice can help inform strategies of resistance for Indigenous peoples, specifically the Upper Great Lakes Métis. Importantly, Whyte (2021) asserts that achieving environmental justice in Indigenous communities requires an understanding of kinship. Indeed, Indigenous peoples around the Great Lakes have treaty-making traditions based on kinship bonds, which provide early examples of how environmental justice was secured (Lytwyn, 1997;

Simpson, 2008; Whyte, 2021; Witgen, 2011). Though these treaties and treaty rights have been continuously violated, the purpose of these binding contracts was to build relationships through reciprocal responsibility (Stark, 2010).

More recently, environmental justice has been intrinsic to Indigenous peoples' fight for recognition, self-determination, and resource sovereignty (see Adamson, 2017; Coolsaet, 2016; McGregor, 2018a; Schlosberg & Carruthers, 2010; Ulloa, 2017; Whyte, 2016b, 2017; Winter, 2017, 2019). However, despite the momentum seen recently in Indigenous environmental justice and decolonial theory, Parsons et al. (2021) argue that its examination is still frequently framed within Western notions of environmental justice and that this framing does not always account for Indigenous worldviews, particularly regarding human and more-than-human kinship. The authors contend that even recent EJ work performed by Indigenous researchers (see Álvarez & Coolsaet; Rodriguez & Inturias; and Whyte) is often situated within Western liberal philosophies and legal systems, thereby potentially missing crucial Indigenous ontologies and epistemologies.

As stated in the introductory chapter of this thesis, this research aims to examine social and environmental factors affecting traditional ways-of-life from a Métis perspective, *not* from a pan-Indigenous perspective. While environmental justice research and case studies have exploded among Canada's First Nations communities, there is a dearth of EJ literature relating to Métis peoples, and none at all regarding Upper Great Lakes Métis in Ontario. Métis oral history acknowledges that the Cree once bestowed the Métis people with the name *Otipemisewak* (the people who own themselves), signifying that Métis people are not part-European and part-Indigenous, but wholly and uniquely their own with

a distinct cultural and social history (see Todd, 2018). Similarly, Métis and Anishinabek oral histories both recognise that the Anishinabek in the Upper Great Lakes region of Ontario once referred to Métis as *Aabitaawizininiwag* (native with mixed ancestry) – a distinct name to signify a distinct identity (Miner, 2015). As such, this research contemplates Otipemisewak/Aabitaawizininiwag/Métis/Upper Great Lakes Métis environmental justice through a Two-Eyed Seeing approach, including both Western and Indigenous conceptions of environmental justice.

Additionally, this thesis conceptualises environmental restoration as a means to progress socio-ecological connections and mitigate historical impacts. While working towards my research goals, I draw upon differing strands of environmental justice and decolonising theory literature. This chapter begins by outlining the dominant framings of environmental justice (EJ) and then proceeds by articulating that the EJ framework, while useful, does not sufficiently elucidate the many nuances of Indigenous environmental justice (IEJ). Theoretical discussions of Indigenous environmental justice are often best articulated in terms of identity, culture, way-of-life, and sovereignty. Moreover, notions of identity and culture are uniquely conceptualised among Indigenous nations, and thus, it is vital to examine the applicability (or lack thereof) of a pan-Indigenous umbrella in individual scenarios. Despite the challenges of positioning aspects of Indigenous environmental justice in a Westernised framework, by rejecting a one-size-fits-all pan-Indigenous approach, I argue that there is merit for situating restoration ecology within both concepts of Western environmental justice and Indigenous decolonial practices, particularly in cases involving Métis who have evolved from both cultures.

This literature review begins with an overview of the roots of the environmental justice movement in section 2.1 and moves on to an examination of social justice scholarship as it applies to environmental justice in 2.2. In section 2.3, environmental justice literature is reviewed in terms of environmental justice theory, with distributive, recognition, procedural, capabilities, and justice for non-humans elements of justice discussed. In an effort to understand the limitations of the environmental justice framework in this research, the chapter introduces Indigenous environmental justice in section 2.4 and goes on to consider Métis environmental justice in section 2.5. Section 2.6 considers ecological restoration as a potential component of Indigenous environmental justice, while section 2.7 furthers the discussion by highlighting ways in which the aforementioned could be achieved, namely via the inclusion of Indigenous Knowledge and, more specifically, Two-Eyed Seeing. Section 2.8 goes further and examines decolonisation as a suitable, though nuanced, approach to dismantling injustices in Indigenous communities. Lastly, in section 2.9, the chapter identifies gaps in current literature and argues for means by which this study can connect to existing scholarship and advocate for the inclusion of traditional Métis knowledge in environmental restoration.

2.2. Origins of the Environmental Justice Movement

The 1962 publication of Rachel Carson's *Silent Spring* highlighted the complexity of environmental harms and arguably heralded the environmental movement in the United States. The Civil Rights Act of 1964, which prohibited discrimination based on race, colour, and origin, and the National Environmental Act of 1969, which promoted anti-pollution legislation, furthered the movement in the United States (if only unintentionally). It was,

however, the Warren County, North Carolina protest of 1982 that catapulted environmental justice into the minds of Americans. In 1978, a waste removal business hired by the Ward Transformer Company illegally dumped soil containing toxic polychlorinated biphenyls (PCBs) along roadsides of rural North Carolina (Bullard, 1990). Upon discovery of the dumping, government officials cleared the path to open a landfill in a town that was home to primarily African Americans (Bullard, 1990; McGurty, 1997). Hundreds of black and non-white activists protested the Warren County landfill, concerned that toxins would leach and contaminate their groundwater. Ultimately, the landfill remained, but the environmental justice movement was born.

A year later, in 1983, the U.S. General Accounting Office performed a landfill study, which revealed that approximately three-quarters of industrial toxic waste landfills in the southeastern United States were located in close proximity to black communities (Bullard & Wright, 1987). The term environmental racism gained traction from these findings, and Bullard (1996) argued that in addition to toxic and hazardous siting, racism also played a factor in environmental planning and decision-making. Minority communities and communities of colour were disproportionately bearing greater environmental risks in mid-20th century America, and race, colour, and national origin became established indicators of environmental inequality and injustice (Bullard, 1993a,b, 2001; Bullard & Wright, 1993; Holifield, 2001).

When Bullard (1990, 1993a,b) first began writing about the environmental justice movement, he did so without attempting to define it precisely. Nonetheless, discourses

regarding environmental ills distribution, racial recognition, and meaningful participation were all evident in his writing, and the term' environmental justice' had been circulating in America since the 1980s (Bullard, 1990; Schrader-Frechette, 2002). Bullard wrote that the call for environmental justice was embedded in society's larger struggle against oppression and dehumanisation. At the time of Bullard's initial observations, there were scholars and critics who dismissed environmental racism concerns as unsubstantiated accusations. Been (1994) argued that market dynamics led to the observed pattern of poor, non-white communities being located near toxic landfills, factories, incinerators, and mines. United States courts, meanwhile, declared that discriminatory *intent*, and not simply *impact* – contrary to Bullard's definition of environmental racism – must be proved to proceed with legal action (Rechtschaffen et al., 2009). The discussion of intent and impact remains relevant to environmental justice even today, as groups of people continue to cope with environmental contaminants from the past. Even without examining the power dynamics and social structures of *why* marginalised communities are occupying contaminated land, one can envision the layers of injustice regardless of any potential discriminatory intent. This layering or nesting of structural and environmental inequality will surface later in the chapter with discussions of how colonialism has profoundly affected environmental realities and experiences for generations of Indigenous individuals (McGregor, 2009; Whyte, 2016a,b, 2018a,b).

The early environmental justice movement gained even more prominence in 1991 when activists assembled at the First National People of Colour Environmental Leadership Summit (FNPCELS). The Summit heightened awareness of the environmental justice

movement and brought public health, land use, resource allocation, community participation, and other elements into the fold of environmental matters (Bullard, 2005). The Summit also produced the Seventeen Principles of Environmental Justice; these principles have been instrumental in solidifying the objectives of the environmental justice movement and helping it grow beyond the United States.[15] Despite attempts to define and solidify the objectives of environmental justice, it remains a somewhat contested term. The definition widely accepted in the movement's country of origin is derived from the United States Environmental Protection Agency (USEPA) (2024). Here, environmental justice is defined as,

'*The fair treatment and meaningful involvement of all people regardless of race, colour, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means that: (1) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (2) the public can contribute to regulatory agency's decision-making; (3) their concerns will be considered in the decision-making process; and (4) the decision-makers seek out and facilitate the involvement of those potentially affected.*'

This USEPA definition distinctly outlines that impartiality, objectivity, and equality ('fairness') are essential in environmental decision-making processes. Today, conceptions of environmental justice take on expanded notions of social justice and include many facets of equality. While environmental racism is still commonly regarded as a practice that differentially disadvantages individuals or groups based on race, environmental

[15] Refer to http://www.ejnet.org/ej/principles.html for the Summit's seventeen adopted principles of environmental justice.

justice is a term that continues to evolve and now encompasses justice beyond the skewed distribution of environmental ills toward communities of colour. Distributive justice, along with conceptions of participation, recognition, and capabilities, inform environmental justice literature. To this end, there are many theories and discourses of justice that could be used to clarify relationships between social and environmental justice. Rawls, Young, Honneth, Fraser, Taylor, Sen, and Nussbaum are a handful of social justice theorists whose works help inform social elements of environmental justice in this research.

2.3. The Environmental Justice Framework

2.3.1. Introduction

What gets distributed in a just society? How does just distribution occur? While John Rawls's *A Theory of Justice* (1971) arguably blazed the trail for social justice scholarship, the vision of environmental justice, as mentioned, began as a crucial grassroots movement to address disproportionate burdens of environmental degradation in marginalised communities (Bullard, 1990; Palamar, 2008; Schrader-Frechette, 2002). Rawls's work on moral philosophy, though far from the only theory to provide context to environmental justice, is an exemplary one to dissect the intersectionality of society and the environment because of its legacy of exulting the 'goodness of justice' (Rawls, 1971).

Consider an example of a government issuing mining permits on rural Indigenous lands: Rawls's veil of ignorance[16] would ask that we consider this scenario without knowing our place in it. Perhaps we would be government officials making permit decisions; perhaps we would be mining executives with decades of experience; perhaps we would be unemployed miners hoping to re-enter the workforce; perhaps we would be Indigenous Elders who have lived on the land for generations. A utilitarian[17] approach to this example would allow a negative impact on a minority if it benefited the majority. Thus, a mining permit may be granted if it could benefit thousands of unemployed workers and the economy in general. A Rawlsian position, however, would not allow granting of the permit if it could be demonstrated that it would negatively impact an already-disadvantaged group (in this case, Indigenous Elders). Regardless of who we could be in this heuristic exercise, Rawls intends to philosophically broaden our perspectives on justice. Under the Rawlsian veil of ignorance, a consideration of society without knowing one's eventual place in it makes it inconceivable that anyone would support oppression in the form of discrimination or environmental racism. Murdock (2021) notes that more contemporary views of environmental justice rightfully involve acknowledging, honouring, and

[16] Rawls (1971) contemplates what constitutes a just society and theorises that it was one you would choose if you did not know your role in it (an 'original position'). He invokes thought experiments to compel people to step back from particular perspectives they may hold and raises a 'veil of ignorance' – his fictional representational device – in an effort to achieve broader viewpoints in society. Without knowing one's place in society, Rawls imagines that people with equal ability will agree on principles of social cooperation. In a hypothetical scenario where individuals are unaware of their abilities, social status, or economic position, Rawls imagines that people will choose two primary principles of justice:

1. The Principle of Equal Basic Liberties: Each individual has an equal right to fundamental freedoms such as assembly, speech, and conscience.
2. The Difference Principle: Disparities should be arranged in a manner that maximizes the welfare of the least advantaged members of society.

[17] Utilitarianism is an ethical theory that generally encompasses a view that the morally correct action is the action that produces the most good (Posner, 1979).

respecting environmental contexts, histories, heritages, and identities' such that no community is ever labelled powerless or disposable' (p. 15).

Though distributional equality is inherently coupled with environmental justice in the United States (Bullard, 1990, 2018; Pellow, 2004; Pulido & Pena, 1998), an increasing number of theorists assert that environmental movements demand justice, including fair distribution, recognition, capabilities, and functioning for communities and individuals (Schlosberg, 2007). While conceptions of distribution are obviously essential in environmental justice theory, Pulido (1996) argues that the environmental movement must also focus on cultural identity. She suggests that, while redistribution is important, power relations must also be addressed in environmental justice. Dobson (1998) approvingly cites Pulido's work yet also emphatically agrees with Barry's (1995, 1999a) more narrow distributive interpretation of justice, citing that how we divide Earth's benefits and burdens will be near the top of social, political, and economic lists for a long time. If, however, we ascribe to the notion that all justice is distributive, as Dobson (1998) and Barry (1995,1999a) tend to suggest, we risk ignoring important concepts – including identity, recognition, procedure, and capabilities – which have the potential to improve environmental outcomes and political processes.

Moreover, while EJ has become a conceptually broad and widely discussed field of international study, environmental injustices are still commonly experienced at a local level. In terms of industrial pollution, as examined in this thesis, contamination tends to produce primarily local impacts (Agyeman et al., 2003). Though polluting industries can

often increase economic prosperity in a general geographic region, local communities exposed to the pollution generated from industrial activity often have a disproportionately low share of the wealth generated (Brulle & Pellow, 2006). Further, marginalised groups tend to fare worse in these circumstances due to concomitant factors such as lack of healthcare access and poor health literacy (Agyeman et al., 2003). There is an overabundance of empirical cases in environmental justice literature where social inequalities and environmental hazards from industrial contamination co-exist. For example, low land prices, the existence of other industrial complexes, and inexpensive labour markets often make siting more feasible in marginalised communities (Banzhaf et al., 2019; Mohai & Saha, 2015). While the examination of wide-ranging empirical cases is beyond the scope of this research, it is important to recognise that environmental justice issues today go far beyond 'toxics' and 'remediation', which are two environmental justice issues explored at length in this thesis.

2.3.2. Distributive Environmental Justice

As discussed in the previous section, the environmental justice movement emerged from the wider call for social justice by concentrating on disproportionate environmental harms in communities of colour. Since EJ's emergence from social justice and principles of 'fairness', there has been a swell of scholarship and literature in the field. Unlike distributive social justice, however, distributive environmental justice has been largely empirical by nature. Thus, while philosophers have firmly established theoretical notions of distribution in social justice, theoretical perspectives of distribution in environmental justice are somewhat more elusive.

Empirical environmental justice studies tend to focus on the unfair distribution of environmental risk and exposure (see Acsh, 2009), siting issues (see Been, 1993), and land use patterns (see Arnold, 1998; Rothstein, 2017). However, additional distributional EJ aspects are increasingly observed in the literature. Studies examining the distribution of beneficial environmental programmes and policies – including parks, safe drinking water, food security, public transportation, and restoration efforts, among others – are increasingly positioned under the distributive environmental justice banner. Each study has the potential to facilitate awareness and political action to address a particular distributional disparity. To this end, distributive justice and distributive environmental justice, specifically, have a number of potential applications to benefit society (Walker, 2012).

The distributional approach to environmental justice asserts that inequality occurs when environmental risks and environmental benefits are not shared across demographic and geographic spectrums (Schlosberg, 2007). Though specific cases are far too numerous to mention, a relevant example from the Upper Great Lakes is the small community of Serpent River First Nation (SRFN) on the northern shore of Lake Huron, where a sulphuric acid plant operated to serve nearby uranium mines in the 1950s (Knibbs, 2022).[18] Though the plant closed in 1963, it left a legacy of toxic contamination, including documented

[18] Serpent River First Nation is 130 kilometres west of Sudbury and is featured as an example in this literature review because its contamination and associated community impacts have been documented, studied, and are in the process of being addressed as of November 2023 (Knibbs, 2022). Though different from Sudbury's issues of contamination in terms of contaminants, scale, scope, and peoples impacted, it serves as an additional local example of environmental injustice that is in the process of being dealt with environmentally and socially. See https://anishinabeknews.ca/2022/11/22/former-acid-plant-causes-continued-devastation-over-half-a-century-later/

health issues for SRFN community members, including pregnancy loss, chronic bronchitis, and skin/eye irritation (Knibbs, 2022). Significant contamination of land and water near the site – a site that remains accessible as harvesting territory for both First Nations and Métis – has been recorded. Clearly, an environmental injustice has been inflicted on the SRFN community and the injustice continues today as Indigenous harvesters maintain their way of life on these contaminated lands. Whenever one community experiences greater harms than another, issues of distributive justice arise.

Nevertheless, distributive justice is not a fixed concept and distributional outcomes can be influenced by a number of factors, both past and present (Kaswan, 2022; Walker, 2012). For example, past discriminatory land use decisions can have repercussions on disadvantaged groups today (Kaswan, 2022), and conversely, past decisions may not have caused initial distributional disparities, but because of evolving social dynamics (e.g. post-siting affordable housing near industrial areas), disparities have emerged (Been, 1993; Lambert & Boerner, 1997). In complex and multilayered scenarios such as these, distributive justice becomes part of a framework where recognition and participation, among other restorative devices, can support environmental justice.

2.3.3. Recognition as a Component of Environmental Justice

Theorists Iris Marion Young (1990) and Nancy Fraser (1995, 1997a,b, 1998, 2000, 2001) challenge distributional theory by examining *why* unjust distributions exist. Young and Fraser – alongside Honneth (1996, 2001) and Taylor (1994) – assert that distributional injustices arise from social contexts whereby recognition (or rather, a lack of recognition)

is linked to inequity. Recognition in this regard can be considered as the way in which we respect others, including their cultures, identities, knowledge systems, and self-worth (Coolsaet &Néron, 2020). However, theoretical notions of recognition are nuanced, and ways in which theorists apply distributive concepts and participation parity can underscore the differences in the varied approaches. For example, the illustrious ‘Fraser-Honneth debate’ highlights the complexity of recognition and redistribution in tackling injustice: while Fraser emphasises the importance of addressing oppressive systemic structures towards recognition and redistributive justice, Honneth, like Canadian theorist Charles Taylor, sees redistributive justice *as* recognition (Fraser & Honneth, 2003). Regardless of the theorists' differences, Taylor, Fraser, and Honneth all appreciate that recognition plays a complex but crucial role in an equitable society. These social theorists contend that examining the context of oppression rather than focusing on only distributional elements of injustices is essential.

Meanwhile, environmental justice discourses have also embraced approaches to justice beyond its distributive origins, including recognition (see Fraser, 2009; Fraser & Honneth, 2003; Scholsberg, 2004, 2007). Misrecognition can occur through a hierarchisation of cultural values, potentially leaving some communities feeling inferior or even invisible (Fraser, 2000; Fraser & Honneth, 2003). When knowledge generated by these communities is dismissed or ignored, it can create a struggle for recognition (Coolsaet, 2016). In this regard, understanding a community's knowledge and the historical context in which it is produced can ensure acknowledgement of a group's different circumstances, needs, and capacities. By considering the knowledge and perspectives of marginalised

groups (who are often the most impacted by environmental injustices), more effective and equitable solutions can be achieved. In other words, when recognition is regarded as a crucial dimension of social justice, its significance towards valuing unique experiences and perspectives of marginalised communities in environmental decision-making becomes evident.

Pulido (1996) articulates that the environmental movement promulgated by environmental racism can be best understood through the fight to change exclusionary political and cultural systems. Echoing the need for systemic change, Waldron (2020) writes that environmental health inequalities (those resulting from negative environmental exposures) must be understood through a wider social context where structural inequalities such as education, employment, and housing create increased vulnerabilities. Indeed, recognition in environmental justice theory can lead to policies and initiatives that prioritise community engagement, representation, and the incorporation of local and traditional knowledge.

The increasingly cited notion that recognition plays a key role in environmental justice has been described by Scholsberg (2007) as 'a matter of cultural survival' (p. 63). Zoe Todd (2015, 2016a,b, 2017, 2018), a Métis anthropologist from western Canada, has written extensively on Indigenous peoples' relationships to land and water. In her work, she highlights ways Métis peoples have been historically marginalised and dispossessed from their lands and waters. Todd advocates for incorporating Indigenous knowledge systems, including Métis-specific knowledge, into environmental justice discussions. Beyond

empowering the Métis through a voice in policy and decision-making, recognition of their knowledge and traditions also affirms the dignity and worth of a people who has long been silenced in environmental decisions.

2.3.4. Procedural Environmental Justice

As discussed from recognition and distributional perspectives, marginalised communities have been disproportionately impacted by environmental hazards such as pollution and waste. Often, however, a community's determination on whether an environmental outcome is distributionally just is based upon their perceived fairness of the procedures leading to the outcome, not only the outcome itself (Rechtschaffen et al., 2009). The USEPA (2024) defines procedural justice as '*the meaningful involvement of all people regardless of race, colour, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.*' In other words, procedural justice ensures that all stakeholders have a fair and equitable opportunity to participate in decision-making processes (Bell & Carrick, 2017; Clayton, 1998).

Theoretically, procedural justice demands participation in decision-making at the community level, or 'a seat at the table' (Bullard, 1993; Schlosberg, 2004). Procedural justice is not strictly about equal distribution of a good or a harm; rather, it is about information, participation, and consent in the formation and implementation of decisions about the environment, and thus, is considered an important dimension of the environmental justice framework (Haluza-Delay et al., 2009). Free, prior, and informed

consent (FPIC)[19] is an increasingly popular tool to ensure that a community has given consent to or rejected a project that may negatively impact their community. However, the practical ability of some marginalised communities to participate in and influence environmental decision-making is still restricted and, therefore aspirational in a few ways (Suiseeya, 2021). For example:

i) Expert knowledge may be privileged over public knowledge (Rechtschaffen et al., 2009). Traditionally, relying on the knowledge of experts was the preferred mechanism for making decisions (Skinner-Thompson, 2022). While public participation is increasingly being incorporated into local environmental decisions, there is still acknowledgement that those with education, resources, and political power predominate (Rechtschaffen et al., 2009).

ii) Participation can be in the form of 'notice-and-comment' decision making (Skinner-Thompson, 2022). In these situations, participation is often defined, designed and controlled by outsiders of the marginalised community. In some cases, notices about the opportunity to be involved in decision-making might be distributed to the community with invitations to comment on items that will impact the community's environment. Unfortunately, this type of involvement

[19] FPIC is a legal principle used to advance environmental justice and was codified by the 2007 United Nations Declaration on the Rights of Indigenous Peoples. This principle emerged because Indigenous peoples are disproportionately impacted by environmental change. *Free* implies consent without coercion; *Prior* means consent sought before project initiation; *Informed* implies basic information about the project's benefits and risks; and *Consent* means affirmation that a project is okay to proceed. In practice, however, both Canadian developers and governments frequently, and sometimes controversially, use *consultation* instead of *consent*.

can lead to tokenism instead of meaningful engagement and participation (Peterson & Lupton, 1996).

iii) Defining the 'community' in community participation is not always easy. Community participation may require consideration of what constitutes a community beyond the strict definition of place. This is particularly true in Indigenous communities where individuals often retain citizenship to a band or nation but frequently reside hundreds or even thousands of kilometres away.

Arnstein's (1969) *Ladder of Participation* aspires to full and democratic participation in decision-making processes. In Canada and in many Indigenous communities, including the Métis Nation, decision-making generally falls on representatives of particular groups and communities. Thus, Suiseeya (2021) notes that procedural justice must consider how representation emerges in a group – who speaks for whom? Consequently, concepts of representation, recognition, and procedural justice become intertwined and convoluted. According to Schlosberg (2004), 'if you are not recognised, you do not participate' (p. 519).

2.3.5. The Capabilities Approach

While Rawls's theory of justice has been heavily discussed and debated since its debut (Cohen, 1993; Pogge, 2010), it has also endured countless critiques and attempts toward updates. While Rawls (2001) contends that his theory of justice works in 'normal' cases, critiques of the Rawlsian lack of consideration for situational diversity is, in part, why the capabilities approach arose. To this end, the capabilities approach became a theoretical framework first articulated by Sen and developed by others, which focuses on the

opportunities available to people (Sen, 1973, 1974, 1979a,b). Capabilities provide a manner of understanding well-being and what constitutes a good life (Nussbaum 1985, 1997; Sen, 1999a). In other words, capabilities refer to the freedom that individuals have to choose and pursue a life of value (however they may define it). Human capabilities represent the substantive freedoms from which individuals can choose what they can do or be, or as Sen (1992) states, achieve different 'functionings' (p. 40). For example, if trapping on an ancestral trapline is a functioning, then the opportunity to do so is the corresponding capability. Not all capabilities, however, are equally important or essential for justice. While Sen (1999b) contends that the determination of important capabilities should be achieved through collective deliberation, Nussbaum (1997; 2011) believes in a list of central capabilities.[20]

Original capability scholars such as Sen, Nussbaum, and others wish to make social structures more just by using the capabilities approach as a metric of justice and well-being. Some Rawlsians insist, however, that capabilities are too difficult to measure accurately and, therefore an unsuitable amendment to Rawls's theory of justice; other Rawlsians, however, believe that there may be justification for a combined social primary goods/capabilities metric of justice (Richardson, 2006). Capability scholars recognise that an equal distribution of resources will not always produce equal outcomes (Berges, 2007); different people require varying levels of resources to produce similar outcomes (Robeyns, 2005). Variations of circumstances in peoples' lives have meaningful impacts on the lives

[20] Nussbaum's (2011) list of central capabilities includes: life, bodily health, bodily integrity, senses/imagination/thought, emotion, practical reason, affiliation, other species, play, and control over one's environment.

they are able to achieve. Capabilities can accommodate these differences (variations of social, economic, political, and personal conditions), which can shape a person's realised opportunity (Holland, 2020; Sen, 1992). Recognising these differences in susceptibility and vulnerability to environmental ills allows us to consider different levels of well-being in cases of environmental injustices (Holland, 2020). Capability researchers contend that the approach can function as a framework for elucidating the connections between well-being and the environment (Hillerbrand, 2015, 2018; Melin et al., 2021). As a multi-dimensional view of well-being, the capabilities approach can include all aspects and conceptions that people deem important. For example, applying the capabilities approach to environmental justice along the Upper Great Lakes, one could argue that access to a healthy environment is a precondition for realising capabilities in the Indigenous way of life, including harvesting. Anything negatively impacting the environment could, therefore, lead to a capability deprivation.

The United Nations Declaration on the Rights of Indigenous Peoples (2007), in keeping with both Sen's collective democratic capabilities and Nussbaum's list of central capabilities, asserts that Indigenous peoples have the right to identities, customs, practices, spiritual traditions, histories, philosophies, and legal systems meaningful to them. Thus, employing the SRFN example again (which is distinct from yet geographically relevant to this research) demonstrates that lake access to parts of Lake Huron known to have contaminated sediment allows Métis harvesters the capability to fish for sustenance. It is, however, simultaneously increasing toxin exposure among the Métis, thereby generating negative consequences for oneself and anyone who may share a meal. It is,

therefore, essential to understand *how* the Métis traditionally and currently utilise the lands and waters; this understanding is a prerequisite for conceptualising environmental justice in capability terms.

Just as capabilities can be considered metrics of well-being and, therefore, justice, so too can the lack of capabilities (Ton et al., 2019). A lack of capabilities could be due to a distorted power dynamic or the result of deficient social and material structures. Understanding sources of power and human capabilities is critical for governments and communities in the beginning stages of enacting change – environmental or otherwise. Accordingly, governments must help their communities expand their freedoms (capability sets) to allow engagement in activities that are meaningful and of value. Stated otherwise, capabilities can be the outcome of policies. When governments fail to address the needs of their people, social, economic, and political threads of communities are subject to failure. Consequently, Nussbaum (2000) and Sen (2005) call for governments to meaningfully address the capability barriers in their communities. While both scholars recognise that participation in decision-making processes hinges on a person's agency to act, neither explicitly addresses the significance in terms of procedural environmental justice.

2.3.6. Justice for non-humans

Ecological justice was a term coined by Low and Gleeson (1998), which stated, '*The struggle for justice as it is shaped by the politics of the environment… has two relational aspects: the justice of the distribution of environments among peoples, and the justice of*

the relations between humans and the rest of the natural world. We term these aspects of justice: environmental justice and ecological justice. They are really two aspects of the same relationship' (p.2). However, some environmental justice theorists argue that justice cannot apply to nature or, indeed, non-humans. They contend that nature and non-humans in nature do not have the capacity to understand justice or the distribution of goods in an environment, so, therefore, must be excluded. Rawls (1971) notes that animals, plants, and nature are outside the doctrine of justice since justice is a social conception and, therefore, an inappropriate framing for ethical relations with non-humans. Barry (1995, 1999a) concurs, suggesting that justice cannot be extended beyond humans because humans and nature are not moral equals. More recently, Walzer (2008) states that it is the lack of the ability to 'hope' that differentiates humans and non-humans in the context of justice.

Nevertheless, conservationist Aldo Leopold (1949) offered that nature demands consideration, if not moral equality. He suggested an expansion of environmental ethics over Earth's living systems. Indigenous groups, however, have long adhered to this notion that humans are merely one part of the natural environment. As such, Indigenous peoples have always been in step with environmental ethics regarding the question of control over nature; it is not a 'man versus nature' relationship, but rather, a more respectful, symbiotic relationship (Berkes, 1993). Schlosberg (2007), who conceptualises justice for non-humans as ecological justice, is among a growing number of scholars (e.g., Attfield & Humphreys, 2017; Berkey, 2017; Elliot, 1984; Plunkett, 2016; Strang, 2016) who contend that justice can apply to both humans and non-humans.

Extending the boundaries of environmental justice is not without precedent. Rawlsian justice allows for the inclusion of sentient, though not morally capable, individuals. Rawls, Barry, and indeed most justice theorists willingly make exceptions for children and the elderly. Additionally, Nussbaum (2006) considers interspecies justice when she extends capabilities to individual animals. The core of her argument here is that humans have a responsibility to extend capabilities theory to animals to respect their dignity. She exclaims that imagining and storytelling can be used to remind us of the diversity of species in a term she calls sympathetic imagining (Nussbaum, 2006). This parallels Rodman's (1983) observations that, although we might never get inside a muskrat's head, we can be quite certain that the view differs from our own – a plurality of perspectives. Concerns of paternalism or plurality of perspective, however, are somewhat irrelevant in Indigenous concepts of environmental justice, where, depending on geography and culture, that same muskrat might be considered kin (see Kimmerer, 2013; McGregor, 2009; Todd, 2015; Whyte, 2020a, 2021). Thus, while ecological justice and Indigenous environmental justice share complementary thought patterns, the worldview, ontology, motivation, and purpose behind the two concepts are quite distinct.

2.4. Indigenous Environmental Justice

Though the environmental justice movement in the United States began with objections to the siting of toxic facilities near poor, black communities (Bullard, 1990, 1993), similar movements in Canada began much later, and often in response to Canada's resource-based industries near Indigenous communities (e.g., Coates, 1991; Hacquebord, 2009; Keeling & Sandlos, 2012; Morse, 2003; Piper, 2013; Venier et al., 2014). Moreover,

Walker and Bulkeley (2006) have alleged that environmental justice issues can be 'intensely geographical' (p. 655). This statement is undoubtedly true in Canada, where remote, northern, and already disadvantaged Indigenous communities frequently neighbour resource-rich regions of the country (Notzke, 1994). These regions are attractive and lucrative for extractive industries, and unfortunately, Canada's extractive industries have legacies of polluted and denuded land (Kuyek, 2019). Canada's resource industry and its associated struggles certainly substantiate Walker's (2012) claim that environmental justice is situated and contextual.

As noted by Vickery and Hunter (2014), academics to date have contemplated several aspects of Indigenous environmental injustice; examples include environmental threats to Indigenous cultures and traditional ways of life (e.g., Adamson, 2011; Hoover et al., 2012; Schlosberg & Carruthers, 2010; Tsosie, 2007; Yenneti & Day, 2015), resource exploitation (e.g., Schindler, 2010; Smith & Frehner, 2010), and environmental health (e.g., Kelly & Fussell, 2015; Shriver & Webb 2009). Environmental justice researchers have taken findings one step further to state the case for increased Indigenous participation in research and decision-making processes (Minkler et al., 2008; Shepard et al., 2002; Shrader-Frechette, 2002; Sze and London, 2008). Ishiyama (2002) and Schlosberg and Carruthers (2010) note that environmental justice includes Indigenous peoples' fight for autonomy and recognition, including in terms of decision-making and resource sovereignty. Despite this acknowledgement of Indigenous peoples' fight for environmental justice, a growing number of Indigenous voices have become critical of IEJ inclusion into traditionally Western discourses of environmental justice (see Álvarez & Coolsaet, 2020;

McGregor, 2018a; Whyte, 2016a). The following section unpacks this criticism, while also re-imagining the potential for a plurality of knowledges within the EJ framework.

2.4.1. Indigenous Conceptions of the EJ framework

In his book, *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition* (2014), Glen Coulthard, a Dene First Nations scholar from Canada, argues that western theories and frameworks are inadequate in capturing and addressing Indigenous peoples' struggles. Coulthard specifically targets Rawls's social justice theory by emphasising that it does not adequately align with the collective practices of Indigenous societies. Further, he states that Rawls's theory does not take into account the cultural differences, historical injustices, and ecological debt that have impacted Indigenous people. Beyond his critique of Rawls, Coulthard (2007, 2014) rejects the use of Western liberal frameworks, suggesting they tend to reinforce existing power relations instead of challenging them. While he does not outrightly reject environmental justice frameworks, he provides a nuanced perspective on them, contending that they perpetuate colonial control. Coulthard's assertions are rooted in his belief that Indigenous struggles are inherently linked to environmental and land stewardship issues. As such, he contends that Indigenous land rights and self-determination must be central to any discussion of justice for Indigenous peoples in Canada.[21]

[21] Indigenous peoples have been practicing their own forms of government before the establishment of what is now known as Canada. In the spirit of reconciliation, the Government of Canada is working to undo federally imposed systems of governance on Indigenous nations, including the Métis Nation of Ontario. Canada recognizes that Indigenous peoples have the right to self-government in section 35 of the *Constitution Act, 1982*. Self-government is a step toward Indigenous self-determination, which is a fundamental Indigenous right and principle of international law, as established in the United Nations Declaration on the Rights of Indigenous Peoples (2007). See: https://www.justice.gc.ca/eng/declaration/index.html, https://www.metisnation.org/governance/self-government/

Coulthard's (2007) critique of recognition is from the perspective that its framework reinforces the legitimacy of settler colonialism while obscuring the ongoing Indigenous struggles for sovereignty. He argues that the focus on recognition diverts attention from the work of actually addressing structural injustices faced by Indigenous peoples. He suggests that recognising Indigenous identity, culture, and rights within Western frameworks too often places Indigenous peoples in a subordinate state, dependent upon colonial institutions for recognition and protection. Consequently, Coulthard is also critical of some approaches to Indigenous self-determination (e.g. Charles Taylor, 1994), claiming these approaches do too little to dismantle inherently racist systems. He argues that by situating Indigenous claims into any Western framework, Indigenous framing is weakened. As such, Coulthard (2014) disputes that recognition as a means of asserting identity can reconcile past Indigenous histories with colonialism. Instead of recognition, Coulthard (2014) advocates for a politics of refusal, where Indigenous peoples refuse to participate in settler institutions and practices.

Just as Coulthard rejects recognition as justice for Indigenous peoples, he also rejects conceptions of procedural justice (which are often intricately linked with recognition). According to Coulthard (2014), even when decision-making processes aim to be fair and transparent, they can still produce outcomes that perpetuate injustice and harm for marginalised groups, particularly Indigenous peoples. Frequently, spaces for participation have been controlled by governments and corporations who are too often committed to

their own goals rather than those of the communities (Banisar et al., 2011; Paloniemi et al., 2015). Thus, Coulthard invokes Arnstein's orginal 1969 assertion that a redistribution of power (from the powerful to the marginalised) is required in the quest to achieve true procedural justice. In other words, procedural justice requires a rethinking of structures and relationships in society, which is not at odds with the thinking of other theorists such as Fraser, Young, and other EJ scholars. Arguably, however, Coulthard's criticism of procedural justice in this regard could be considered a critique of the ineffective *application of procedural justice* rather than theoretical *ideal of procedural justice* itself.

Kyle Whyte (2011, 2017), though less critical of Western frameworks than Coulthard, also contends that recognition and procedural justice must be accompanied by action which addresses underlying structural and systemic factors. Specifically, Whyte (2017) emphasises the importance of recognising and respecting Indigenous knowledge, governance systems, and self-determination in environmental decision-making processes. Herein lies the departure of thinking between EJ and IEJ; IEJ holistically encompasses the Indigenous ways of being, knowing, and, ultimately, purpose (D. McGregor, personal communication, 2020). Nevertheless, it is not unfeasible to imagine IEJ employing Western notions of EJ while simultaneously centring Indigenous knowledge and tradition. This thesis argues that an appropriate application of a plurality of knowledges – Western and Indigenous – can improve environmental justice outcomes, not perpetuate them.

When environmental justice is grounded in Indigenous epistemological and ontological foundations, a framework emerges that highlights the importance of mutually respectful relationships among all relations (including all living things and entities not considered living by Western society, such as water and Earth itself). Indigenous tradition demands full intergenerational consideration of the natural world, which is not necessarily the case in different geographies or cultures. However, as discussed, many Western justice theorists also recognise that nature is a part of our shared community and that we have a responsibility to uphold the integrity of natural systems. Thus, recognising a plurality of knowledge is a position that Western EJ theorists do not necessarily oppose. While EJ and IEJ frameworks may differ in their epistemological and ontological roots, they are not fundamentally at odds.

Christine Winter (2019b), a Maori philosopher, leans toward Coulthard's severe critique of the applicability of EJ frameworks in Indigenous communities. Similar to Tuck (2009) and Whyte (2018a,b), she writes that Western justice theories tend to perpetuate settler projects and should be firmly rooted in Indigenous ontologies if environmental justice is to be achieved. Likewise, Deborah McGregor (2018b) stresses that Indigenous worldviews, philosophies, and knowledges of Indigenous peoples must be central tenets in IEJ. McGregor, an Anishinaabe EJ scholar, contends that environmental justice for Indigenous people requires an understanding of their worldview and ways-of-knowing and being (McGregor, 2009, 2018b). Both McGregor and Whyte, however, routinely situate their research within Western environmental justice frameworks. Whyte (2016a, p.12-51) writes that 'settler colonial theory presents important possibilities for further work

elaborating phenomenologies and theories of justice related to environmental justice.' Elaborating on this possibility, sections 2.6 and 2.7 continue the discussion of re-imagining environmental justice through Métis and Two-Eyed Seeing approaches. These approaches underscore the feasibility of centring Indigenous knowledge while also applying the best aspects of Western theory.

2.4.2. Toward an IEJ Framework

Many researchers recognise that ascribing Western concepts of well-being to Indigenous peoples can be problematic (see Adamson, 2011; Burger et al., 2010; Harris & Harper, 1997, 2011; Martin, 2002; Ranco et al., 2011; Vickery & Hunter, 2014). Further, Western framings and indicators of environmental justice do not necessarily capture the complexity of Indigenous peoples' connection to their land or apply the relational aspects of human and more-than-human well-being and development. Thus, addressing inappropriate or inappropriately applied indicators and metrics is a potential first step toward achieving IEJ justice within a Western framework. Harris and Harper (1997, 2011) offer several measures of injustice for Indigenous groups based on these connections, including the inability to practice subsistence lifestyles (hunting, fishing, trapping) or traditional practices (access to sacred sites, traditional medicines, cultural landmarks, sacred ceremonies).

Through an Indigenous lens, ecosystems shape and influence everything from medicine and education to nourishment, ceremony, jobs, and recreation. While educational, legal, and healthcare systems are all considered in justice theory, the usefulness in illustrating how these systems can be applied to environmental justice does not always fully work

within the Indigenous context. Taiaiake Alfred (1999, 2005) and Jeff Corntassel (2008) move away from colonial discourses and prefer to encourage Indigenous peoples to act toward their own self-agency. Likewise, Eve Tuck (2009) adds that participation only from the margins of oppression and deprivation serves to reproduce narratives of damage and brokenness. As such, she advocates for Indigenous frameworks that are *desire-based* instead of *damage-based*. Highlighting the importance of desire-based frameworks attentive to self-agency potentially becomes another differentiator in an IEJ framework. As Indigenous nations throughout Canada continue to sign sovereignty and self-government agreements with the federal government, it is hoped that desire-based environmental justice frameworks could increasingly inform these nations' futures.

The Métis Nation of Ontario is a recent example of an Indigenous nation that has signed a self-determining self-government agreement (Government of Canada, 2023b; Métis Nation of Ontario, 2023). In practice, however, and as noted by Coulthard (2007, 2014) and Whyte (2017), sovereignty and legal policy do not guarantee justice in colonial structures. Though these authors are no doubt referencing governmental and institutional structures, this thesis examines whether the pan-Indigenous approach these structures take with Indigenous peoples may also be problematic. Indigenous nations in Canada, though categorised, are often lumped together as one voice in education, industry, and government. While convenient, this assemblage negates the inherent cultural differences between First Nations, Métis, and Inuit Indigenous peoples across Canada. This inconsistent classification has serious implications in public policy, specifically regarding who speaks for whom and how concepts of equitable distribution, recognition and

procedural justice will unfold in practice. Indigenous nations and communities are distinct in terms of treaty negotiations and their ability to manage the lands and natural resources over which they preside (Zaferatos, 2006). Thus, while Indigenous nations in Canada continue to strive for sovereignty, as an ever-evolving situation, most communities are at least somewhat uncertain about how self-government or environmental regulation within the boundaries of their jurisdiction function (Ranco, 2008; Vickery & Hunter, 2014; Walker et al., 2012).

2.5. Considerations of Metis Environmental Justice

Métis environmental justice remains largely undefined in research or literature; however, it could be conceptualised as the pursuit of equity in the realm of environmental issues impacting Métis people. Because the Métis are a people with mixed Indigenous and European ancestry and have a distinct history and culture shaped by the intersection of Indigenous and colonial cultures (Gaudry, 2014), Métis environmental justice is grounded in the experiences and perspectives of the Métis and their unique position within the Indigenous landscape of Canada. Consequently, Métis EJ work may entail working with government agencies, industries, academics, and non-governmental organisations to ensure that Métis voices are respected in decision-making processes that involve lands, resources, and sacred sites. The work might also involve community-based initiatives that help revitalise cultural practices and assert Métis sovereignty.

While an increasing number of Métis scholars advance notions of identity and equity in Canada, most do so through a 'west-of-Ontario' lens. Several are outspoken about Métis identity, which they narrowly describe as ancestry tied to traceable origins of the western

Canadian plains (Forsythe, 2023). Though the Métis Nation of Ontario has been enormously successful in promoting Métis culture, language, and self-determination – including the notable Powley case (which granted legal rights to Métis across Canada) – the organisation has faced criticism about its leadership, governance and representation. While a dissection of dissenting opinions regarding Métis ethnogenesis and contemporary identity in Canada is beyond the scope of this thesis, acknowledging the discord and the negation of the Métis Nation of Ontario is important in establishing context for this research. Without recognition of Métis identity in areas surrounding the Upper Great Lakes (see Chapter 4), Métis living in Sudbury have little hope for engagement in meaningful conversation concerning environmental restoration.

2.5.1. Distributional Issues in Métis EJ

Kermoal (2016), a Métis scholar of history and culture, describes Métis justice as the protection of rights to land and self-determination in the face of environmental degradation. Speaking from a Western Canadian perspective, Kermoal argues that Métis justice is rooted in the dispossession of lands and resources through colonial practices and policies. Further, she adds that resource development and industrial extraction have adversely impacted the Métis way of life. She argues that when Métis connections to land are severed, communities and ways-of-being suffer (Kermoal & Altaminrano-Jiménez, 2016).

Whether environmental challenges exist in the Canadian prairies or the Upper Great Lakes, the Métis have deep place-based ties, particularly to ancestral hunting and fishing grounds and historic Métis settlements (Métis Nation of Ontario, 2024b). Consequently,

environmental issues such as the loss of access to traditional resources or contamination of sacred sites can have acute impacts on Métis culture and identity. In this regard, healthy lands and waters in which to practice traditional ways of life can be viewed as environmental gifts (environmental goods in Western ways of knowing) which are, at times, unevenly distributed.

In terms of the sulphuric acid plant example discussed in 2.4.2, while long considered a SRFN environmental issue, the Métis Nation of Ontario's Great Lakes Advisory Group was provided funding in 2022 to perform a fish consumption survey, recognising that Métis harvesters and fishers in the north shore of Lake Huron were likely consuming disproportionately high numbers of contaminated fish and game in this (and other) 'areas of concern'. This example highlights how access to healthy ecosystems emerges as distributional EJ issues. However, it also affirms that environmental justice issues are rarely only distributional in nature. It would be nonsensical to advocate for a 'fair' distribution of contaminated fish in a situation such as this; thus, the need to expand justice beyond distribution. Though a seemingly small gesture towards achieving environmental justice, even small initial steps such as acknowledgement of way of life and cultural practices can become foundational for subsequent engagement, representation and participation in eventual decisions and policy.

2.5.2. Recognition Issues in Métis EJ

Though the concept of recognition is arguably under-theorised in environmental justice literature, it is of paramount importance to those who have not historically had their

cultural identities, perspectives and experiences understood by dominant societies – those such as the Upper Great Lakes Métis. The lack of understanding or accommodation of culture and knowledge summons the importance of Fraser's work on cultural recognition. Fraser (1990, 1995, 2007, 2009) establishes that the ability to participate in decision-making meaningfully requires a recognition of cultural differences. Indeed, some scholars see recognition as a necessary precondition of procedural justice (Barnhill-Dilling et al., 2020). Procedural justice discourse is often positioned as participation and, therefore, participatory justice (Shrader-Frechette, 2002; Walker & Day, 2012); however, it is difficult for people to participate if their capacity to do so is compromised or if they live incongruously from the dominant social or cultural group, as the Métis in this project tended to do.

A lack of recognition or misrecognition can transpire in a number of ways and extend well beyond a straightforward acceptance or affirmation of cultural differences. Suppose that a government does not identify an environmental harm within an Indigenous territory; in such a case, it is unlikely that steps will be taken to reduce the risk or impact on vulnerable people. In the same way, if governments cannot distinguish vulnerable groups, assistance or resources directed to those groups become unlikely. Thus, when governments address environmental issues using pan-Indigenous approaches, needs of individual groups or nations tend to be overlooked. For example, the Government of Canada (the Crown) and many First Nations across the country are recognised as Treaty partners, and though there are contentions and tribulations of this partnership, there is, at minimum, an identification of a relationship. Métis, on the other hand, were largely overlooked in the

Treaties, and even their acknowledgement as an Indigenous people has been a long and arduous legislative process.[22]

Beyond social justice, the concept of recognition becomes a critical component of environmental justice when it acknowledges that different cultures may assign different meanings to the environments in which they live (Coolsaet & Néron, 2020). Misrecognition of Métis around the Upper Great Lakes might include misunderstandings of relationships and connections with certain places. Misrecognition can also occur when there is contrasting local knowledge between two Indigenous nations' understanding of a traditional place-based practice, medicine, plant or animal species. In some cases, it might be that Indigenous communities have entirely different approaches to speaking about an ecosystem. Indigenous words, for example, sometimes have traditional knowledge embedded within them. A name of a stream may divulge the water's flow pattern or clues about when the fish spawn.

Owing to the ontological and epistemological differences between Western and Indigenous worldviews, Winter (2019a, 2022, 2023) argues for more Indigenous inclusion in environmental discussions. She claims that recognition-from-above[23] models of environmental justice fit the needs of current governance structures but not necessarily Indigenous peoples themselves. The Métis' challenging experience of asserting their

[22] The Halfbreed Adhesion to Treaty No. 3 (Northwestern Ontario) in 1875 is the only instance of a Métis community adhering to one of the treaties negotiated with First Nations in Canada (Métis Nation of Ontario, 2022b). Though there is a history of Canada bringing Métis individuals into treaty, the Treaty No. 3 Métis adhesion is incomparable in its inclusion of a community.

[23] 'Recognition from above' is Jakeet Singh's term for the state's determination of what is just and unjust for a subordinate group (2014, p. 47).

identity highlights a need for more local consideration. Indigenous Elder and scholar Doug Williams observes that when Indigenous people become local agents for recognition, they create and shape their own social orders without approval from anyone but themselves (Daigle, 2017). Coulthard (2007 p. 456) terms this process ‘recognition from below' whereby Indigenous peoples employ strategies of self-recognition, which ultimately reconstructs culture and tradition. In this process, Indigenous people become their own political agents.

2.5.3. Procedural Justice in Métis EJ

Past discussions surrounding public participation in environmental management decisions often centred around Arnstein's *Ladder of Citizen Participation*. Arnstein (1969) breaks this ladder into eight steps, which are grouped into three categories:

- Non-participation – no or very little public participation
- Degrees of Tokenism – some public participation
- Degrees of Citizen Power – a significant amount of public participation and decision-making ability.

Arnstein (1969) contends that participation is the cornerstone of democracy. However, as previously articulated, for groups such as the Métis to participate in this democracy and actually wield decision-making power, a redistribution of that power must precede participation.

In Canada, the Métis are often included in consultations but not involved in environmental management decisions. This reflects Coulthard's (2007) observations that recognition-

based conceptualisations of justice today can reproduce past iterations of attempts at justice. Coultard (2014) perceptively notes that despite provincially and federally legislative gains, the courts maintain that the state has the right to make decisions about waterways and landscapes. Consequently, most government projects, from construction to forestry to mining, are accepted and rationalised as 'consistent with the special fiduciary relationship between the Canadian government and the Indigenous peoples' (Coulthard, 2007, p. 451). This observation is reflective of the scholarship that Arnstein put forth, arguing that government attempts at public participation are often superficial, particularly in consideration of barriers and constraints that certain groups face (Arnstein, 1969; Tritter & McCallum, 2006).

Beyond the constraints of group participation, Indigenous scholars have also emphasised limitations of procedural justice in practice. Most notably, Tuck (2009) argues that procedural justice frameworks, which tend to prioritise procedures governing legal processes, fail to acknowledge histories of colonisation and the lived experience of Indigenous people. This corresponds with Parsons et al. (2021), who note that public forums and opportunities to engage Indigenous peoples are often aligned with traditions of the dominant social group. This observation is significant for the Métis, who are not only a marginalised group in society but also a comparatively small segment of Canada's Indigenous population.[24] While the idea of power transfer or shift from the dominant

[24] In the 2021 Canadian Census, 224,650 individuals (of the 624,220 who identified as Métis) were registered members of a Métis organization or settlement. This same year, the Census counted 1,048,405 First Nations people. Canada's overall population in 2021 was approximately 38,250,000 (Statistics Canada, 2023). See https://www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-X/2021006/98-200-X2021006-eng.cfm

societal structure is easy to comprehend theoretically, Pulido (2017a,b) notes that it requires willingness and cooperation on behalf of those in power. As such, Pulido (2017a,b) advocates for systemic solutions rather than improvements in legal processes.

2.5.4. Capabilities Approach in the Métis Nation

Schlosberg (2004) notes that authors Young, Fraser, and Honneth all advocate for understanding the *why* of inequality before addressing solutions to the problems. It is widely accepted throughout Canada that colonialism, including land dispossession, suppression, and the effects of residential schooling, have negatively impacted the nation's Indigenous populations. According to Government of Canada statistics, Indigenous Canadians – First Nations, Métis, Inuit – are twice as likely to commit suicide than non-Indigenous; three times as likely to be victims of violence than non-Indigenous; six times more likely to be murdered than non-Indigenous; and far more likely to live in communities without access to clean water, habitable schools, and prospects for employment (Statistics Canada, 2023). Because issues such as these are often discussed at a broad community level, Schlosberg and Carruthers (2010) argue for a community-based capabilities approach in dealing with Indigenous struggles. This community-level approach, however, is a departure from the capabilities approach that Sen and Nussbaum advocate for in terms of individual indicators. This departure becomes theoretically problematic in consideration of Métis experiences with land dispossession and residential school experiences – injustices which can be intensely personal.

Sen and Nussbaum recognise that everyone deserves respect and the opportunity to choose a life path they value. Both scholars employ quality-of-life indicators as an alternative approach to measure fulfilment (Nussbaum 2000, 2011; Nussbaum & Sen 1993; Sen, 1992). Promoting Métis health, wellness, spiritual, and political capabilities can all potentially lead to functionings of an individual's choosing, which may or may not differ from functionings valued in more contemporary Western society or even in a different Indigenous nation or community. Injustices can differ from nation to nation and even within a nation. For example, Métis Nation capabilities and functionings may differ from First Nations; Cree First Nations may differ from Ojibwe First Nations; Ojibwe Bear Clans will differ from Ojibwe Crane Clans; and so on. Thus, it is worth repeating that individual experiences are important. Even among one particular Ojibwe community, a Bear Clan member will not necessarily have the same perspective as a Crane Clan member. Likewise, the Métis in the Canadian prairies do not necessarily have the same perceptions or experiences as the Métis around the Upper Great Lakes. With this in mind, it is important to make space for personal capabilities in the group or collective capabilities approach that Schlosberg and Carruthers (2010) endorse.

The Capabilities Approach – because of its distributional leanings – allows for the understanding of the relationship between land use, land access, industrial impacts, and harvesting practices (all of which connect to Métis well-being). This understanding, in turn, provides useful information about how ecological restoration could proceed in Sudbury. While environmental justice is not generally obvious in ecological restoration literature, it can be argued that addressing way-of-life impacts is an important step toward Métis environmental justice. Additionally, calling attention to the differential needs of Indigenous

harvesters – Métis and First Nations – an explicit assessment of distributional impacts, recognition concerns, and procedural limitations ensues.

2.6. Ecological Restoration as EJ for Indigenous Peoples

While environmental justice scholarship often focuses on equality in terms of environmental and public health, ecological restoration and the benefits arising from it have been largely absent in scholarship. Ecological restoration is defined as 'the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed' (Society for Ecological Restoration, 2004). Situating ecological restoration within an environmental justice framework addresses the complex interactions and relationships within an industrially damaged environment. Drawing from observations at Giant Mine in Yellowknife, NWT, Beckett (2019) writes that using EJ as a framework for mine remediation helps address the layered context of local political and power structures, instances of inequality and disenfranchisement, and a basis for calls to action. Baetan (2017) and Beckett (2019) both note that remediation projects tend to centre on toxicity and containment, while narratives of heritage and healing are often overlooked. If, however, ecological restoration could be implemented more equitably and holistically, it has the potential to advance environmental justice in Indigenous communities by restoring ecological integrity, providing ecosystem services, embracing Indigenous knowledge, and healing relational connections to lands and waters.

Western science has a long history in mining, and this centring of Western knowledge in the field has continued into discourses of mine closure and restoration. As governments

increasingly regulate environmental issues and corporations embrace 'sustainable' mining practices, efforts to mitigate impacts and clean-up toxic legacies have gained momentum (Bainton & Holcombe, 2018; Dance. 2015; Hilson & Murck, 2000; Whitmore, 2005; Worrall et al., 2009**)**. Though the recent efforts to enhance environmental management and engineering at mine sites is substantial and commendable (Lottermoser, 2010; Moodley et al., 2018; Rasafi et al., 2017), more attention has been given to the scientific technicalities of the processes than the social licenses to do so (for example, through public participation and in accordance with community values) (Banfield & Jardine, 2013; Beckett & Keeling, 2019; Rixan & Blangy, 2016). These scientific approaches to ecological restoration are inclined to reinforce inequitable power structures via a maintenance of expert scientific knowledge and control (Krupar, 2013; Ottinger, 2013). When restoration policies and targets are designed by 'geographically distant' experts, the risk of perpetuating inequalities exists (Elias et al., 2021). In other words, ecological restoration can actually have the unfortunate effect of alienating and displacing the very people it aims to assist.

Mining impacts can be observable for decades and, in some cases, longer, particularly in northern regions where revegetation is a naturally slow occurrence even in optimal conditions (Bridge, 2004; Deshaies et al., 2009; Harper & Kershaw, 1996; Hilson, 2002). For Indigenous communities whose sustenance, medicinal, and cultural practices may be tied to their local environment, degraded landscapes and ecosystems may be particularly devastating (Ballard & Banks, 2003; Howitt, 2002; Keeling & Sandlos, 2009), and economic livelihoods may be substantially compromised (Berkes, et al., 1995; Natcher,

2009). Thus, prioritising Indigenous engagement in ecological restoration allows opportunities for redressing past damages. While mining developments and closures have historically overlooked and undermined Indigenous sovereignty (McGregor, 2018a), prioritising Indigenous engagement and knowledge in ecological restoration offers insight into the social dynamics of ecosystem recovery. Pape (2022) notes that how restoration projects affect locally disadvantaged communities should always be a primary consideration. Moreover, it is established in literature that the success of land use interventions, including equitable and effective outcomes, hinges upon understanding socioeconomic contexts, such as power structures and values (Chhatre & Agrawal, 2009; Elias et al., 2021; Erbaugh et al., 2020; Löfqvist, et al., 2023; Ostrom & Nagendra 2006; Possingham et al., 2015; Wells et al., 2021).

Castillo et al. (2021) state that what qualifies as restoration depends upon what outcomes are valued. A forest landscape may be considered degraded by a Métis harvester and a conservation biologist, whereas the same landscape may be considered desirable by a Métis horse rancher and a cattle farmer. Depending upon ontology and relationships, community members can potentially have different experiences and understandings of the same place (Leech, 2018). Consequently, the subjectivity of classifying restoration requires careful and thoughtful consideration (Löfqvist, et al., 2023). Applying Beckett & Keeling's (2019) efforts in mine remediation, identifying restoration goals should entail a justification of values, including questions of morality, redemption, restoration of cultural, social, and economic value, and recognition of conflicting experiences and ontologies. According to Pape (2022), diverse restoration goals are more likely to be achieved when

transparency, the articulation of values, and the integration of public health concerns are all considered into restoration techniques. Ultimately, a main goal of Indigenous engagement in restoration efforts would be to foster culturally and economically viable post-industrial connections between original land users and their lands.

2.7. Re-positioning Indigenous Knowledge on the Land

British academics Howes and Chambers (1979) were among the first to adopt the term 'Indigenous knowledge' in Western scholarly literature and described it as the intellectual process of attaining order from disorder. By the 1980s, the terms' traditional knowledge', 'local knowledge', and 'Indigenous knowledge' had seen a run through anthropological and natural science circles (Linden, 1991). Well-meaning academics and agencies seemed keen to re-establish the long-standing 'Native American' notion that humans were one mere part of the natural environment. By the mid-90s, Chambers (1995) and Grenier (1998) largely saw Indigenous knowledge as the widely regarded concept it is today: knowledge derived and shared from generations in a particular geographic area. This was in keeping with the revolutionary work of Lévi-Strauss (1966), who specifically commented on 'the wealth and accuracy of northeastern United States and Canadian Indian zoological and botanical knowledge' (p. 5)

Fikret Berkes is arguably Canada's earliest and most prolific non-Indigenous ecologist to fully embrace traditional ecological knowledge. Berkes' (2012, p.7) definition of traditional ecological knowledge (TEK) is: '*the cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural*

transmission, about the relationship of living beings (including humans) with one another and with their environment.' It is believed that traditional ecological knowledge began with the identification of species and then morphed into a study of ecological processes and relationships – stated otherwise, 'ethnobiology' became 'ethnoecology' (Berkes, 2012). Collectively, the identification and study of this 'ethnoscience' was a mid to late 20th-century development. While Berkes was an early non-Indigenous adopter of IK in Canada, there was, however, nothing particularly novel or new about its relevance; the understanding that knowledge is transferred from one generation to the next has ancient roots in folk biology (Castellano, 2000) and its importance is well-understood by Indigenous Elders.

Traditional ecological knowledge, local knowledge, ecological literacy, experiential knowledge, folk biology – it is easy to find oneself caught up in a tangle of terms. Some Indigenous people feel traditional ecological knowledge (TEK) – indeed, any reference to 'traditional' – translates into a romantic, antiquated notion of a people looking to the past instead of to the future. As such, TEK has become a term often rejected in favour of Indigenous Knowledge (IK). McGregor (2004a,b) argues that the problem with all of these terms is that they attempt to define a body of knowledge (a noun) when Indigenous Canadians tend to see IK as a verb (a way of life). Consequently, recent conceptualisations of Indigenous knowledge recognise it as a practice within a worldview – one which is inseparable from its place-based relations. Kyle Whyte (2020a) describes Indigenous Knowledge as having a pivotal role in re-establishing protocols, governance, and land-based practices important to Indigenous peoples.

While IK does not always tidily fit into Western scientific frameworks (Sillitoe et al., 2002; Simpson, 2014), embracing it as a qualitative knowledge system based solely on spirituality or tradition is also a problematic approach. Whether through Berke's well-intentioned book, *Sacred Ecology* (1999) or Hunn's (1993) assertion that it is impossible to separate traditional ecology from spirituality, these romantic or inflated claims of 'sacred wisdom' can actually harm the practice of meaningful Indigenous engagement and divide collaborating parties. This approach has the potential to ignore vast differences in knowledge between disparate Indigenous nations and Indigenous knowledge keepers themselves (Castellano et al., 2000; Giesbrecht & Crooks, 2016; Lavallée, 2009). Knowledge systems, histories, cultural customs, and identities vary between Indigenous nations and peoples, and because of this diversity, there is no pan-Indigenous approach to practising Indigenous knowledge. Rather, there are multiple Indigenous methodologies and methods based on shared histories of colonisation and contemporary realities (Paradies, 2016).

2.7.1. Indigenous Knowledge in Practice

Berkes (2012) argues that there are seven key areas in Canadian culture and ecosystem science in need of an IK bolster. Though not purely distinct or all-encompassing, these critical aspects include biological and ecological information; resource management; conservation and biodiversity; environmental assessment and monitoring; sustainability and development; disaster and crises; and environmental ethics. Berkes's writing is full of verifiable examples of how Indigenous knowledge – not just in Canada but around the

world – supports Western science in everything from taxonomic classification to climate change mitigation. Berkes (2009) writes that the complementarity of Indigenous local knowledge and scientific knowledge is an increasingly important principle in natural resource management (NRM). With this in mind, the acknowledgement of IK alongside the predominantly Western science style of NRM in Canada has tremendous potential for Indigenous communities who wish to gain control of their land. It is, however, not without challenges. Problems can vary depending on the application, but language translation issues, cultural context barriers, and knowledge system misunderstandings can all potentially arise (Casimirri, 2003; Stevenson, 2004).

While Indigenous knowledge can be considered intellectual property in academic literature, the term 'property' is a Western construct and largely incompatible with Indigenous ways-of-knowing (Smallacombe, 2005). Indigenous people consider such knowledge collectively held in their community (Casimirri, 2003). Moreover, as IK becomes championed by governments and non-Indigenous (no matter how well-intentioned), it risks becoming reduced to an intellectualised concept (Brosius 1997; Cruikshank 2000). Some Indigenous circles dislike that oral TEK and IK can be written and integrated into Western science and contemporary paradigms (Brubacher & McGregor, 1998; McGregor, 2004a,b; Simpson, 1999). Berkes (2009) acknowledges this incongruity and asserts that Indigenous control of community land-use information is essential. For example, an Indigenous community may not wish to reveal species' population data in prime hunting locations or participate in an assessment/monitoring project that they believe to be harmful to their environment. Expectations, limitations, and

ownership of knowledge will require careful management and balance lest acrimonious disputes regarding the propriety of this knowledge ensue.

2.7.2. Two-Eyed Seeing

Agrawal (1995) once claimed that trying to find associations between 'science' and 'non-science' is pointless, given that knowledge systems fail to find an appropriate boundary between the two. This assertion, however, defies the principle of Two-Eyed Seeing (*Etuaptmumk*), which Mi'kmaq Elder Dr Albert Marshall refers to when immersed in fields requiring both the scientific arena and Indigenous knowledge (Iwama et al., 2009). Two-Eyed Seeing refers to recognising the strengths of Indigenous knowledge with one eye and the strengths of Western knowledge with the other (Bartlett et al., 2012). This is, however, not implying that there is a binary approach to research (Indigenous Knowledge versus Western Science); rather, it is the acknowledgement that different methodologies can be complementary and used in tandem (Simonds & Christopher, 2013). As one Métis Elder stated during the course of this research, 'the land is always talking.' Indigenous Elders on Turtle Island (now known as North America) have been saying for centuries that the forests talk; in fact, trees are referred to as 'standing people' in some Indigenous cultures. And yet, only recently has Western science confirmed this fact – mycorrhizal networks indeed allow trees to 'talk' (Martin et al., 2001). Similarly, scientific research suggests that the smell of soil and humus has a physiological effect on humans – quite literally, the smell of soil (Mother Earth to Indigenous peoples) stimulates the release of oxytocin, the same chemical that induces bonding between a mother and child (Morisawa, et al., 2017). Remarkably, Western science is seemingly catching up to Indigenous

knowledge in many of its claims. In fact, the guiding principle of Etuaptmumk is to use both eyes together for the benefit of all.

Certainly, the study of environmental systems and ecological justice from a Western science perspective can help us understand the complexities of the natural world. Indigenous botanist Robin Kimmerer (2013) maintains that science can be a method of forming intimacy and respect with other species. Likewise, McGregor (2018b) holds science in great esteem and recognises its methods as important components of environmental justice. Western scientific approaches, together with Indigenous knowledge systems, can help us understand the interconnectedness of the natural world. While researchers in the past have felt compelled to interpret Indigenous knowledge systems through Western science lenses, there is growing interest and momentum instead to build a research culture of knowledge coexistence and complementarity (Simonds & Christopher, 2013). Additionally, a key component of Two-Eyed Seeing is that knowledge gleaned from its application will transform the holder and that new knowledge keepers will then bear responsibility to act on their knowledge.

Though Two-Eyed Seeing was conceived as a Mi'kmaq principle from eastern Canada, it is a familiar and comfortable coupling to the Métis, who, at their core, are a people derived from a plural coexistence. Like Métis culture, where new ways of being and knowing emerged from two distinct systems, Etuaptmumk has great potential to generate a new ecological restoration system where IK and Western scientific insights are complementarily paired, but neither is subsumed by the other. Healing of the land and

ecological restoration in Sudbury can potentially be transformed by this pairing of insights, particularly when Western science is paired with IK from *all* Indigenous people who call Sudbury home.

2.8. Decolonising Practices

Veracini (2017) describes decolonisation as the process of 'undoing settler colonialism as a mode of domination and its legacies' (p. 7). Additionally, Henri et al. (2021) recognise that decolonisation must prioritise the acknowledgement of multiple knowledge systems and different ways of knowing and being. Society and scholars generally recognise that settler colonialism is a present and enduring reality and that the force of it bears down disproportionately on Indigenous peoples (Laing, 2021). Previous sections of this chapter identified the relationship between colonialism and some environmental injustices experienced by Indigenous peoples (Coombes et al., 2014; McGregor, 2018a; Schlosberg & Carruthers, 2010; Winter, 2019b). Disregarding the notion of an actual physical decolonisation, decolonisation can instead be met with efforts by scholars to understand the conversations around decolonising practices (de Leeuw & Hunt, 2018; Tuck & Yang, 2012). To this end, this thesis highlights decolonising practices in terms of Indigenous participatory approaches, attention to community distinctions, and Two-Eyed Seeing.

Recent water justice work by Parsons et al. (2021) identifies two major themes in decolonisation: repatriation of Indigenous land and a centring of Indigenous ways of being and knowing. The first theme aligns with the arguments in Frantz Fanon's work, *The Wretched of the Earth* (1963), where he contends that decolonisation must be a

revolutionary process of replacing colonial powers with Indigenous peoples. Tuck and Yang (2012) support Fanon's work by stating that 'decolonisation requires the repatriation of Indigenous land and life' (p. 20). Contrary to some perceptions, however, repatriation does not refer to the removal of non-Indigenous people from Canada. Instead, it is the return of jurisdictional control to Indigenous nations.[25] Jurisdictional rights are recognised in treaties, but as mentioned, with a few rare exceptions, Métis do not have treaties. And unlike the First Nations and Inuit, the Métis do not have a designated or exclusive land base recognised by the federal government. Métis artist and scholar, David Garneau (2013) agrees that land should be returned to Indigenous people; however, identifying a land base for the Métis is complicated and politically-charged, particularly in Ontario, where issues of identity and recognition remain unresolved.

The second theme aligns with de Leeuw and Hunt's description of decolonisation as a 'more cerebral and reflective effort, a more introspective call to re-think geographic knowledge, to ask what space is open (or not) in our discipline for Indigenous voices and ways of knowing' (2018, p. 6). From this vantage, they acknowledge that decolonisation is largely in the hands of non-Indigenous scholars. Esson et al. (2017) note that as we open the geographic discipline in an effort toward decolonisation, we actually risk speaking for those equipped to speak for themselves. Thus, Todd (2017) stresses the need for researchers to ask themselves questions about whose voice is being privileged – and, conversely, silenced – during decolonising research projects. She argues that researchers have a responsibility to actively engage in decolonisation efforts by critically

[25] Jurisdictional rights are separate and distinct from section 35 rights, which emerge from Indigenous nations' political sovereignty.

examining their own positionality and the power dynamics within their research relationships. Further, Todd, a Métis scholar, emphasises the importance of engaging in Métis-led research that is collaborative and participatory and that respects Métis protocols and ethical guidelines. This involves building relationships of trust and reciprocity with Métis communities, and working to co-create knowledge that is relevant and meaningful to Métis.

In a departure from this more propitious thinking, Tuck and Yang (2012) consider that the recent proliferation of decolonial language by non-Indigenous scholars can actually reproduce coloniality. The authors argue that decolonisation is not simply a matter of integrating Indigenous perspectives into existing structures; rather, it requires a rethinking and restructuring of power relations in society. They suggest that non-Indigenous people who use decolonial language without engaging in the work of decolonisation (they define the work of decolonisation as challenging the colonial structures) may actually be perpetuating colonial hierarchies. Likewise, Esson et al. (2017) suggest that the perpetuation of colonial legacies within the discipline of geography remains a pressing concern. Nevertheless, it is incumbent upon scholars to engage in meaningful dialogue regarding Indigenous worldviews. Towards this end, the 2017 RGS-IBG chair's theme has suggested that a robust discussion concerning decoloniality may serve as an effective entry point to the overarching goal of decolonisation (Esson et al., 2017).

Ideas of decolonisation are complicated, nuanced, and disputed among both academics and Indigenous peoples (Holmes et al., 2015; Tuck & Yang, 2012). *Where* knowledge is

produced and *by whom* are typically key questions asked of decolonising approaches. De Leeuw and Hunt (2018) profess that decolonisation is not a fixed concept with clearly prescribed practices. They also point out that decolonisation cannot even be understood as pertaining *specifically* to Indigenous peoples and places. Rather, decolonisation has become a way of interrogating methods that marginalise or discount specific people and places.

De Leeuw and Hunt (2018) observe that decolonising practices have seen significant growth in recent years and that geographers concerned with such practices are rightfully working more at changing the ways geographic knowledge is produced and less at theorising about colonial power dynamics. While decolonisation itself is somewhat of a theoretical undertaking, the work of decolonisation requires a critical examination of *how* information is produced. Decolonising tools and practices in human geography can include community-based participatory action research (CBPAR) (Giles & Castleden, 2008; IPSG-AAG, 2010; Louis & Grossman, 2009), ethnography, storytelling (Castleden, 2016; Morgan, 2016), and engagement with Indigenous maps and place names (Johnson et al., 2005; Johnson et al., 2016; Wainwright & Bryan, 2009). While qualitative methods tend to be perceived as more 'Indigenous' in nature, Walter and Suina (2019) challenge this view by stating that Indigenous peoples have always been numerate in their ways of understanding their environments. Roy (2014) suggests that it is possible to deconstruct and decolonise quantitative methods to meet the needs of Indigenous peoples. Likewise, there are opportunities to incorporate Indigenous worldviews into quantitative research (Walter & Andersen, 2013; Wilson et al., 2018). Hayward et al.

(2021) address the need for both quantitative and qualitative Indigenous research by prioritising community-based participatory research and Indigenous data sovereignty. Crucially, these practices aspire to challenge the sublimation of Indigenous people and to prioritise Indigenous ways of knowing and being (Godlewska et al., 2010).

2.9. Conclusion

A person's perspective of justice is influenced by the perceived fairness of decision-making processes (Sen, 2008). Ecological restoration in Sudbury – one which improves environmental and social outcomes for the Upper Great Lakes Métis – requires a process that values their distinct identity, knowledge, and traditions. It also requires an understanding of the historical context that has built barriers and undermined the Métis living in Sudbury, Ontario. To understand and begin to address colonial barriers of inequality, a theoretical approach of Two-Eyed Seeing has been proposed. This integration of Western discourses of environmental justice and Indigenous environmental justice provides a framework to understand conceptions of Métis environmental justice outside of a pan-Indigenous (First Nations, Inuit and Métis) approach. This chapter, while reviewing social and environmental concepts of distributive justice, recognition, procedural justice, and the capabilities approach, has emphasised that these theoretical paradigms do not operate independent of each other in practice. Rather, they are intricately and complexly woven as social and environmental theorists (see Fraser, Honneth, Schlosberg) articulate in the literature examined in this chapter.

Though there is agreement in scholarly literature that Indigenous environmental justice requires a broad and inclusive decolonising approach (see Coulthard, McGregor, Todd,

Whyte), there is some divergence about how this can be achieved. This thesis argues that while pan-Indigenous approaches work conceptually, some voices – in this case, the Métis – become lost in broad approaches. Thus, steering away from a pan-Indigenous approach toward environmental justice, this thesis outlines a theoretically inclusive framework to formulate a conception of justice unique and relevant to the Métis in the Sudbury region. I suggest that the Métis, as a sovereign people of mixed and distinct ancestry, ought to be free to produce and practice their own knowledge in an ecologically restored environment without compromise to their health or heritage. By focusing the research's overarching goal on improving social and environmental justice for Métis people, the thesis contributes to the literature bridging Indigenous environmental justice and ecological restoration.

3. RESEARCH METHODOLOGY

3.1. Introduction

In Linda Tuhiwai-Smith's *Decolonising Methodologies* (1999), she begins by saying that 'research is probably one of the dirtiest words in the Indigenous world's vocabulary' (p. 1). The contemporary research that Tuhiwai-Smith refers to is the academic processes, principles, and procedures whereby a researcher approaches a problem and seeks answers (Bogdan & Taylor, 1975). Some Indigenous peoples have grown to resent the role of research subject as it conjures notions of exploitation at the hands of researchers (Goodman et al., 2018; Tuhiwai-Smith, 1999). Unethical research practices such as the biomedical and nutrition experiments performed on residential school First Nations and Métis children in the 40s and 50s fuel the suspicion that Elders and knowledge keepers have about participating in Canadian research (Mosby, 2013). Further, there is a perception in many Indigenous communities that researchers arrive into the community, extract information, and leave with the knowledge never to return. Naturally, as a researcher, a Sudbury resident, and a Métis citizen, extracting knowledge and leaving the community has never been my intent in this project. My intention has always been to research alongside the Sudbury Métis community and seek solutions to deliver long-term social and environmental benefits.

Considering the context of this research, the methodology had to strike the right note of Indigenous principles, human geography, and ecological science research. Consequently, as an Indigenous researcher with an educational background in the natural and social sciences, I chose the concept of Two-Eyed Seeing as scaffolding for my methodological

approach. Early in my project development phase, a local Métis Elder said, '*You are Métis; you are not First Nations and you are not a settler. You honour all your relations by respecting the different strands of your heritage.*' This statement resonated with me profoundly and I have held onto it throughout this project. Until she imparted this wisdom, I carried a degree of guilt and shame regarding my many years pursuing Western education. Her wisdom helped me shed this guilt and embrace all parts of me. What I did not realise at the time was that this sentiment was almost universally shared among my Métis participants. Where I expected trepidation from Métis participants, I received encouragement; there was a broad acknowledgement that having Métis citizens willing to act and advocate for our community – from both Indigenous and Western scientific perspectives – was of benefit to everyone. Similarly, the restoration practitioner participants were generally receptive to learning about and considering the Métis experience in Sudbury's ongoing regreening efforts. Thus, to achieve my research objectives, I adopted a dual-lens approach through which I could respect my Métis heritage while suitably implementing the 'restoration as environmental justice' framework outlined in Chapter 2.

This chapter begins by situating myself within my community and, thus, in the research. Within this framework, I briefly summarise the human geographical context of the research and my positionality as both a scientist and an Indigenous researcher. The chapter then proceeds with an examination of the research design and the methods employed to achieve the research objectives. Lastly, the chapter concludes with a discussion of the data analysis and a few concluding remarks about the challenges encountered throughout the research process.

3.2. Positionality and Reflexivity

Throughout this project, I was mindful of Valentine's (1997) case against the existence of objectivity and absolute truths in social science research. According to the author, research is frequently influenced by the researcher's experiences, goals, and interpretations, whether intentionally or unintentionally. This position challenges traditional notions of objectivity in research and emphasises the need for researchers to be aware of their own biases and perspectives when conducting social science research. Meanwhile, Tuhiwai-Smith (1999) contends that Indigenous researchers must acknowledge and consider their culture. Together, these statements and stances embolden me to state my background and personal interest in this project at the outset of this chapter. I entered this research with substantive personal experiences in the lands and waters of northern Ontario. In my opinion, the research paradigm that has dominated the field of ecological restoration in the Sudbury region to date has been inadequate in catering to the requirements of Métis land users. The prevailing Western ways of knowing and the categorisation of nature seemed at odds with the Indigenous ways where, as Maurial (1999) notes, knowledge lives in practice. I felt it was a reasonable assumption that social indicators could improve within the Métis community if their knowledge was somehow 'decolonised' and allowed to 'live in practice'.

3.2.1. Reflections as a Citizen of the Métis Nation

Why do I care about the Métis experience on the land? Why Sudbury? The answers can be simply stated: I am Métis, and I live in Sudbury. I have not, however, always lived in Sudbury. Further, I have not always been comfortable identifying as Métis. Having grown

up on Mnidoo Mnis (translated from Ojibwe as Spirit Island, commonly known as Manitoulin Island, approximately 120 kilometres south of Sudbury), I experienced an elementary and secondary school education unlike the majority of Canadian children. As school children, we read Anishinabek legends in literature class, studied Ojibwe in language class, and experienced a diverse array of Indigenous food, art, music, and storytelling on a regular basis. Canada's shameful history of dispossession and assimilation was not just discussed in history class, as was the case in most schools; it was daily life. Many of us had ancestors who had experienced residential schooling, and all of us were living with the repercussions of dispossessed land.

Nevertheless, Mnidoo Mnis was, and is, a community where, in the absence of belonging to a First Nation band, people are often labelled as 'settlers'. Consequently, despite having Indigenous ancestry, I grew up under the guise of being a settler. At the time, it was exceedingly rare to identify as Métis on Manitoulin Island, and in retrospect, I presume that identifying as Métis would not have ingratiated oneself to either of the two predominant populations on the island – settlers or First Nations. As one Métis participant lightheartedly voiced during this project, *'First Nations don't always like us because we're too white; whites don't always like us because we're too red. Nobody really likes us.'*

I did not experience living among other Métis or accepting my identity as a Métis citizen until moving to Sudbury in my 30s. Thus, it is important to note that this research occurred within an ongoing personal process of accepting and asserting my citizenship within the Métis Nation. Today, I accept my Métis heritage without shame. Nevertheless, the advice of well-meaning community and family members to 'pass as white if you can' still

resonates with me. Certainly, there have been instances in my life where I have benefited from my decidedly 'white' appearance. This privilege of appearing white did not entirely extend to my time as a youth attending secondary school on a First Nation reservation. At its worst, school involved threats of physical violence that escalated to the point of police intervention. Passing as white throughout life has also made me privy to discriminatory remarks and jokes that I may not have been subjected to had the speaker known my heritage.

Initially, I worried that my objective of improving environmental and social outcomes would somehow be misconstrued or misapplied in the Sudbury Métis community. I suppose one could say that history has taught us to be a cautious and perhaps somewhat suspicious people. I knew that some would question my angle, so embarking on this research initially felt like a risk. In retrospect, my fears were unfounded, and I was well-received, welcomed, and able to find my voice within the Sudbury Métis community and the Métis Nation of Ontario.

At the onset of this project, my work was naively simple: was there something I could do to help repair Métis relationships with the local land? As a Métis citizen of mixed English, Irish, French, Swampy Cree, and Ojibwe descent, I entered this research with my own experiences and perceptions of the past and present. Moreover, as a middle-aged woman and the mother of two daughters, reflection of experiences inspired me to turn the lens back on a community of which I was a part. It is worth noting, however, that though I now live in Sudbury (on the northern shores of Lake Huron), my Métis ancestry and section 35 rights belong to Penetanguishene (on the eastern shores of Lake Huron).

Consequently, in some ways, I have a one-foot-in and one-foot-out approach to this community research. While some of the teachings are familiar to me, the players are different. Further, insights from positions I held within the Métis Nation of Ontario (positions I began during the course of my research, but not *for* my research) have uniquely guided and informed the context of this dissertation.[26] Considering my positionality, I do not try to present an 'objective' perspective; instead, I present a scholarly perspective drawn from my understanding of contemporary histories, Métis epistemology, and the science informing ecological restoration.

3.2.2. Reflections as a Scientist

Although Robin Kimmerer's book, *Braiding Sweetgrass* (2013), became an international success during the beginning of the COVID-19 pandemic, I devoured it as a new release five years prior. Her artful style of 'braiding' botany, environmental science, and Indigenous stories was irresistible and affirming to me. As an Indigenous scientist committed to exploring reciprocal relationships between humans and the land, Kimmerer's work was vastly appealing to me (also an Indigenous researcher with a background in environmental science). Having grown up on a rural island with the Great Lakes at my doorstep, I was drawn to the natural sciences at an early age and loved learning about processes behind everything from how the aurora danced in the night sky to how an ice age formed the inland seas at my door. It was this curiosity that spurred me to study science as an undergraduate and specialise in ecosystems as a master's student.

[26] Positions include Regional Education Advisor (2017-2020), Regional Great Lakes Advisory Group Member (2021-present), and community event volunteer (ongoing).

Additionally, I served as a director and vice-chair on two local Sudbury boards with environmentally sensitive mandates.

Upon completion of my master's degree, I stayed on as an ecology and environmental systems teaching fellow at Harvard University's Extension School. As a PhD candidate, I began teaching in the School of Environment at Sudbury's Laurentian University (before the School of Environment folded in 2021). Though I was already familiar with the work of Laurentian University's restoration biologists from my analysis of the Sudbury Soils Study, I became personally acquainted with seven of them in this latter role. It was this acquaintance and position as a fellow faculty member which allowed me to identify restoration practitioner participants willing to offer insight and perspective about this research. From the outset, it was important for me to acknowledge that though I am critical of some processes of the soils study and the re-greening of Sudbury, I have the utmost respect and admiration for the handful of individuals initiating and performing the work. Without their courage to tackle a restoration project unprecedented in size and scope, it is unfathomable to think about what Sudbury might look like today. Moreover, I believe that noted absences of Indigenous knowledge and participation were not deliberate on the part of these practitioners; rather, I am under the firm impression that they function within an imperfect colonial system that has not historically acknowledged or involved Indigenous peoples, particularly the Métis. Thus, this research is not a critique of individual or collective effort; it is simply advocacy for additional levels of effort moving forward.

3.3. Research Design

Selecting a suitable research design is crucial in human geography to ensure both a meaningful and fastidious investigation (Cloke et al., 2004; Hay, 2000; Lindsay, 2006). To this end, a robust research design necessitates the development of a conceptual framework that will underpin the project and provide guidance for data collection, analysis, and interpretation (Hay, 2000). In this project, integrating Indigenous principles within the environmental justice framework was essential to ensure the unique knowledge systems, perspectives, and experiences were incorporated collaboratively and respectfully. After speaking with Métis Elders, consulting with my academic supervisors, and reviewing many research designs in the humanities, social sciences, and geography, I decided to proceed with a design that best facilitated the overarching goal of improving social and environmental outcomes (see Figure 4-1). The remainder of this section proceeds to outline the principles, approach, and strategy of this project, while the tools and analysis are discussed in subsequent sections.



Figure 3-1: Components of the research design (*source: author*)

3.3.1. Indigenous Research Methodology and Principles

Ethnobiologists and human geographers have been calling for social transformation as it applies to Indigenous peoples in Canada; however, in my literature review, I found few tools to guide me through this transformation with regard to Métis peoples. Thus, I made learning more about Indigenous methodologies a priority early in the research process and have continued to research decolonising principles throughout the project. While ethnobiology methods commonly found in the literature tend to be rooted in Western research traditions, there is a growing trend among Indigenous scholars in Canada to delve into Indigenous ontology and epistemology and their applications in research. Inspired by works of Coulthard, McGregor, Simpson, Todd, and Taylor, I have been able to reflect on how I can incorporate decolonising principles into my methodology.

Scholars who use Indigenous Research Methodology (IRM) in community-based research describe it as a lifelong iterative process of Elder consultation, spirituality, and ceremonial process (Wilson, 2008). Naturally, the process and progression of each scholar using IRM will depend upon the researcher's own worldview. In fact, Wilson (2008) argues that certain methods are useful from an Indigenous perspective and that these methods are those that are congruent with the Indigenous worldview. As such, it is not necessarily the method of IRM that makes an Indigenous methodology; rather, it is the relationship of the method to the Indigenous worldview. Drawson et al. (2017, p. 15) report three common components to Indigenous Research Methods:

1. Researchers must reflect on the context of their research and situate themselves, and the Indigenous Peoples with whom they are collaborating, into this context,
2. Researchers must include the Indigenous Peoples in the process in a manner that is respectful, reciprocal, and preserving of self-determination, and
3. Researchers must prioritise Indigenous ways of knowing.

In keeping with relational aspects, Wilson (2008) argues that researchers ought to move beyond an Indigenous perspective in research to researching from an Indigenous paradigm. But what does this mean in practice? Wilson (2001) believes that ontology, epistemology, methodology and axiology make a research paradigm: your beliefs, your ways of thinking, your ways of thinking to gain knowledge, and your set of ethics. He argues that a complete Indigenous research paradigm is more than just an Indigenous perspective; knowledge in Wilson's Indigenous paradigm is also the interpersonal relationships with your research subjects, the plants, the animals, the earth, and the

cosmos. Thus, knowledge cannot be 'discovered' in Indigenous paradigms because knowledge, like people, cannot be objectified.

As I progressed through the research, I was attentive to Wilson's writings and his perspective that the duty of an Indigenous researcher in an Indigenous paradigm is to be accountable and respectful to all your relations – your subjects, your ancestors, and Shkagamik-Kwe (Mother Earth). I was also mindful of Leanne Simpson's *Dancing on our Turtle's Back* (2011), which instructs one to 'look back' at traditional ways while bringing them forward into contemporary research' (p. 49). This echoes Smith's call for Indigenous scholars to 'research back' to understand historic roots when performing contemporary decolonial research (1999, p. 7). Tuhiwai-Smith (1999) adds that decolonial research is not a rejection of Western knowledge or research methodology; rather, it is action that centres Indigenous ontologies, epistemologies, and axiologies. For example, storytelling circles can be as meaningful and informational as focus groups; traditional workshops can be considered action research; axiological beliefs can coincide with participatory research; ceremonies can be categorised as conversational methods, and so on. Being cognizant that decolonial research seeks Indigenous perspectives for Indigenous purposes (Tuhiwai-Smith, 1999), Wilson (2001) invites Indigenous researchers to ask themselves these questions:

What are my obligations in my role and to my people?

Does my research help to build a relationship between myself and my topic?

Does it build respectful relationships with my participants?

What considerations do I need to make with my surroundings?

In consideration of these questions, this research incorporates Indigenous ways of knowing and principles of IRM, including respect, responsibility, reciprocity, and reverence. Though Métis-specific research principles do not exist at this time of writing, I remain open to the idea of diverse Métis knowledge systems and lived-experiences.[27] Further, I approached the project with humility, respect, and a willingness to learn from my community. I credit the relational aspect of being a local Métis with much of the success of this project. At every Métis community event and during each Métis interview, the opening question of participants was often, *Where are you from?* To a community outsider, this is a simple question requiring a simple answer such as, *I'm from Sudbury*. To a community insider, and in keeping with Indigenous culture, this is a layered question to gauge kinship, historic community affiliation, and ultimately, worldview. My answer, *I'm of Drummond Island descendent[28] with Region 7 rights; I grew up on the North Channel,[29] but have lived in Region 5 for fifteen yea*rs, was a reassuring ice-breaker that typically stimulated conversation, and in one instance, even unveiled common relations!

My intentions were to understand more about land use, perceived risk, and environmental restoration goals in Sudbury whilst also trying to envision a future encompassing Metis ecological knowledge. At the conclusion of this project, I wanted there to be value in it for

[27] While the Upper Great Lakes Métis way-of-life is steeped in voyageur culture, Métis individuals themselves can be anglophone, francophone, bilingual or speak variations of Ojibwe, Cree, and Michif. This diversity in ancestry and language had the potential to offer multiple knowledge systems, which I remained open to throughout the research.
[28] Descendants of Métis voyageurs who followed the British garrison and migrated from Drummond Island (Michigan) to Penetanguishene (Ontario) in 1822 have strong ancestral and community ties to one of Ontario's first Métis settlements on the shores of Lake Huron (Métis Nation of Ontario, n.d.).
[29] The North Channel of Lake Huron overlaps MNO Regions 5 and 7.

my Métis community – relational accountability. Nevertheless, good intentions can often drift into an ideology. Ideology can, in turn, provide more for its fellow believers than it does to evoke change. I tried to remain keenly aware of this as a researcher and a citizen of the Métis Nation. I was forced to ponder how, as a researcher, my project could address issues now and into the future without getting stuck in events that took place in the distant past. Certainly, I had to learn and understand about root causes, but how relevant were these root causes to issues today and how much root-cause dogma required full airing? These were questions that plagued my research. I wanted history to play an honest role, but given the egregious history, I did not want the future or even the present to be bound to constraints of the past.

There is no doubt that history and politics have impeded Métis participation in decision-making and thereby community involvement. Though I was interested in learning more about Métis-specific barriers, I admit that I hoped that defeat and despair would not be the overarching themes. As a mother, I try to teach my kids to be proud of their Métis heritage while also being sensitive to the challenges of the past, and those that linger today. I quickly realised, however, that the presence of cultural pride did not negate defeat and despair and vice versa. Reality is sometimes messy and convoluted. So, while my role as a researcher was to note participation barriers, identity politics, and harvesting difficulties, it was not my role to proselytize or lecture about them. Consequently, this research does not assume a simple 'rewriting and re-righting' of colonised people as described by Tuhiwai-Smith (1999). The topics in this research are complex and, in some cases, contentious. It will take time and hard work to right some of the wrongs uncovered in this dissertation.

Though I interviewed both Métis individuals and restoration practitioners, the desires of the Métis were primarily centred in this project. Their desires for clean water and land free of contaminants were positioned as primary motivators for ecological restoration. While many research frameworks position people as the objects of study, I opted to use peoples' experiences and narrations as means to understand identity and ways alongside industrial impacts (see Figure 3-2 for the methodological framework in which this is achieved). Though I did ask participants questions about extractive damage, I did not want to pathologise a place that participants call home. As Gómez-Barrris (2017) notes, thinking and referring to a place as 'damaged' can often be inaccurate to those who live alongside extraction. Likewise, Tuck (2009) observes that defining a community by oppression is a technique that can be often be limiting and ineffective. In contrast to damage-based frameworks, Michelle Murphy considers how desire-based frameworks can be utilised in environmental justice research. Murphy (2017, p. 498) offers the concept of 'alterlife' to imagine different futures for damaged water and land. While I found it impossible to research Métis desires of restoration without acknowledging historical damages to the Métis as a people, and to Sudbury as a place, I did employ methods of participant collaboration in a hopeful quest toward a more prosperous social and ecological future.

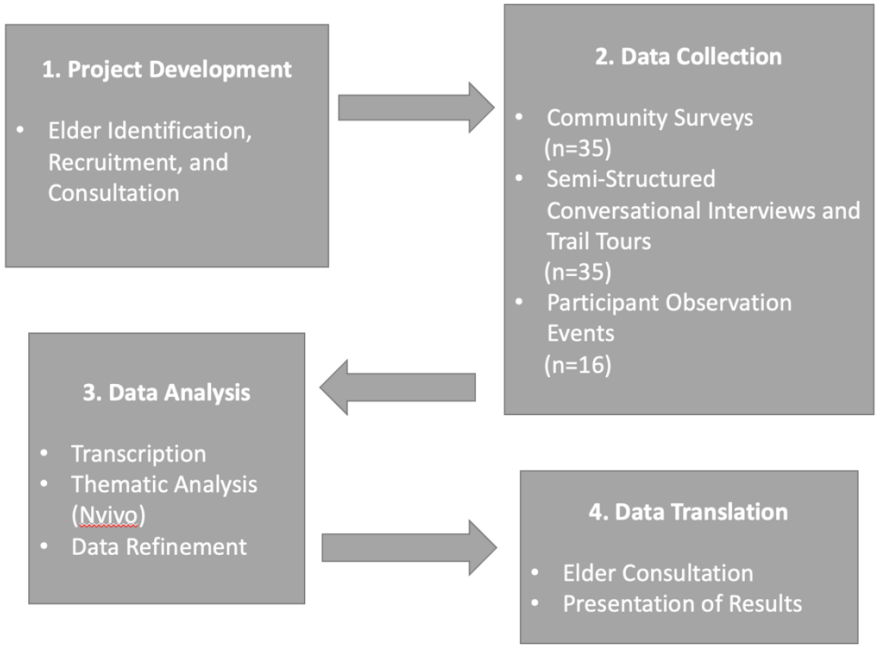


Figure 3-2: Methodological Framework (*source: author*)

3.3.2. Sudbury, Ontario: A Case Study

Case studies are valuable in social science research because they allow researchers to understand important social processes and their related phenomena (Yin, 2003). By examining the circumstances surrounding a case, researchers can develop a nuanced conception of the dynamics and variables at work (Cloke et al., 2004; Hay, 2000; Lindsay, 2006; Yin, 2003). The case study method is appropriate for this project as it attempts to offer insight into how theories and concepts inform the development of evidence-based environmental policies and interventions. While case study context was previously discussed in Chapter 1, the human geography elements of the research are highlighted in this section.

Sudbury, Ontario: The Place

Though introduced in previous chapters, the City of Greater Sudbury (Sudbury, for short) is comprised of 3,627 square kilometres, making it the geographically largest municipality in Ontario and the second largest in Canada (City of Greater Sudbury, 2024a). The city sits at the transitional boreal zone with a latitude of 46° north (McMillan & Vasseur, 2010). While not far north by maritime climatic standards, under the Koppen climate classification, Sudbury has a humid continental climate characterised by long, severe winters and short, hot, humid summers (McMillan & Vasseur, 2010). The city has garnered a global reputation as a mining centre and is widely known for both its ecological devastation and subsequent regreening efforts related to its industrial past. Recent estimates suggest that mining companies and associated mining service sector businesses employ approximately 16,000 people (City of Greater Sudbury, 2024a), making mining and mining supply a significant contributor to the local economy.

Killarney (or Shebahonaning, meaning safe canoe passage in Ojibwe), with a population of 397 in 2021, is the only municipality in the Sudbury District to be considered a historic Métis community.[30] Because Sudbury is the nearest city to Killarney, many individuals choose to live in Sudbury for employment, while maintaining recreational properties, boats, or ancestral homes near their hometown of Killarney. Indeed, several participants in this project could trace their Métis lineage back to Killarney. (See Figure 3-3 for the

[30] In order for a contemporary Métis community to possess section 35 rights and be considered a historic Métis community, it must establish its Métis roots to a time prior to European control in the area (MNO, 2024b).
See https://www.metisnation.org/wp-content/uploads/2017/08/joint-fact-sheet-killarney-18-august-2017-final.pdf

location of Killarney in relation to Sudbury to the north, Manitoulin Island to the south, Sault Ste Marie and Drummond Island to the west.)

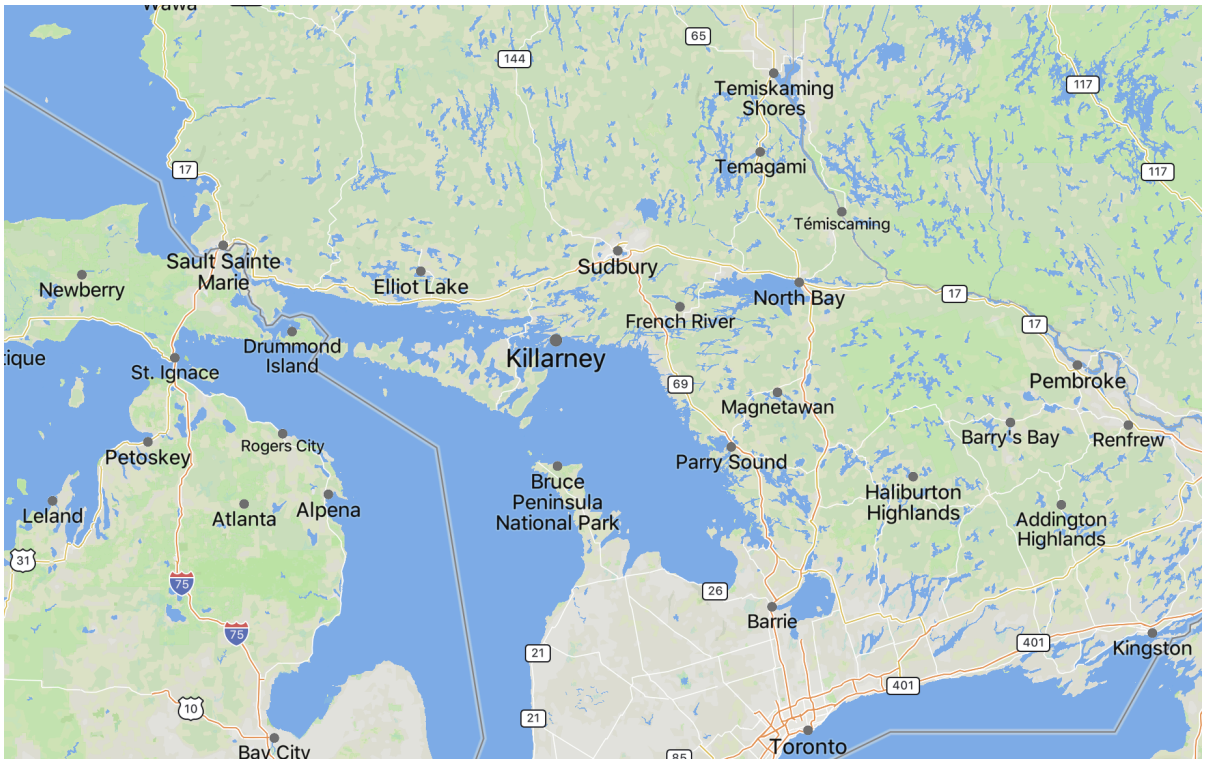


Figure 3-3: The historic Métis community of Killarney in proximity to Sudbury
(*source: mapcarta, author)*

Sudbury, Ontario: The People

Demographic data from the 2021 census indicate that the population of the City of Greater Sudbury is approximately 166,000 people (City of Greater Sudbury, 2023) Of those, 9245 individuals self-identify as Métis and 7680 individuals self-identify as First Nations (City of Greater Sudbury, 2023). These self-identification numbers, however, are much higher than official numbers. Of the 7680 self-identified First Nations, 5595 are Registered or

Treaty Indians (City of Greater Sudbury, 2023). And though not Sudbury-specific data, the Métis Nation of Ontario (2023) reports that 8,332 of their 17,014 citizens connect to the entire Upper Great Lakes region (see figure 3-4 for the scope of this area, which includes the Métis historic communities of Fort William/Thunder Bay, Michipicoten, Sault Ste Marie, Killarney, and Georgian Bay/Penetanguishene). One can surmise, therefore, that despite the relatively high number of self-identified Métis in the Sudbury census, the number of MNO citizens living in the Sudbury region is quite small (given the relatively low number of MNO-reported citizens in the vast Upper Great Lakes area). While a local Sudbury Métis Citizens' Facebook page has approximately 1300 members at the time of writing, I have noted over the years that it tends to be the same 50-100 individuals who participate in Métis events and workshops around the city.



Figure 3-4: Upper Great Lakes region (circled in red) (*source: Métis Nation of Ontario, n.d.*)

3.4.3. Two-Eyed Seeing Approach

As previously mentioned, the concept of unity and Two-Eyed Seeing was first discussed in the literature in 2004 by Mik'maq Elder Albert Marshall, whose life-long mission was to understand both Western and Indigenous culture in his quest toward healing after spending his formative years in residential schools (Bartlett et al., 2008). The notion of bridging Western and Indigenous knowledge may, initially, run counter to sensibility; after all, if they can be so readily aligned, why maintain both perspectives? Diverse perspectives, however, emerge from different ways of knowing and respond to the needs of different people (Bartlett et al., 2007). In this regard, Indigenous knowledge and

Western scientific knowledge are distinct because of the populations they serve, not necessarily because they differ in content or origin. Eijick (2007) acknowledges that the very foundation of science originated from an amalgamation of empires, including countries such as Persia, Anatolia, Syria, Phoenicia, Judea, Gaza, Egypt, Bactria, Mesopotamia, and Punjab. As such, what we reference as Western science is not purely Western or European; segments of global Indigenous knowledge have long been appropriated for scientific use in almost every scientific discipline from ecology to health (Posey, 2004). In many cases, however, the cultural context of the knowledge has been lost to meet the margins of the positivist approach.[31] Thus, thinking about *how* knowledge is created can often be just as important as what knowledge is generated.

Espousing Indigenous ways of knowing as knowledge does not diminish the contributions of Western science in identifying and solving complex environmental issues. Rather, upholding an alternate lens through which research can be conceived and interpreted provides perspective and an opportunity for learning under a diverse worldview (Kovach, 2009; Tuhiwai-Smith, 2009). In the face of environmental injustices, the means by which issues are identified, defined, and addressed should also reflect this worldview. For these reasons, I was transparent about my position as both a Métis citizen and a PhD candidate with scientific training to all my participants. To my surprise, I never encountered any hints of negativity or suspicion. Rather, Métis participants saw my position as uniquely helpful

[31] This positivist approach originated from an effort to replace the authority of the Church and Crown in Britain in the 15th century; the term 'science' (derived from the Greek word scientia), began its circulation as an alternative system of knowledge (Aikenhead & Ogawa, 2007). The derivation of 'truth' was claimed to arise through scientific procedure (Iaccarino, 2003).

for negotiations with industry and government and restoration practitioners viewed me as someone who could advocate for positive change.

3.5. Project Development

Research informally began in the spring of 2018 when word started to spread that I was undertaking Métis-specific research in the Sudbury area. People would approach me at Métis community events and ask for information and clarification. Often, individuals would share their anxieties surrounding the impacts of industry and natural resource development in the region. These discussions typically centred on the limited access to land and the decreasing capacity to participate in harvesting activities such as hunting, trapping, fishing, and berry collecting. My topic and geographical boundaries were broad enough at this point to allow for some refinement. After speaking informally to people at community events and in consultation with Métis Elders, I defined my boundary as the same geographic region as the Sudbury Soils Study (as seen in Figure 1-1). I also learned what topics were of utmost importance to the Métis, which allowed me to tailor my survey questions accordingly.

3.5.1. Snowball Sampling

In my case, because I am physically immersed in the case study as both a Métis citizen and a scientist, I was able to identify key participants and employ a snowball approach. Sometimes, the line between 'friendly acquaintance' and ‘researcher' was blurred since the formality required among complete strangers was disregarded (Snow et al., 1986). This presence as a friendly researcher allowed for respondent-driven sampling, which is

similar to snowball sampling, where existing participants would recruit others or spread the word about my research. Of the approximately 9200 self-identified Métis in Sudbury, I am familiar with approximately 200-250. Naturally, I am much closer to some than others. In contrast, because there are a relatively small number of restoration biologists in Sudbury, I am familiar with most of them, at least by name or reputation; a few, however, I consider mentors and friends. Though I have no way to affirmatively state that my participants are a representative sample, Gomm et al. (2009) argue that ethnographic case studies can, indeed, allow for a generalisation of findings with a commitment of disciplined sampling.

3.5.2. Ethnography and Participant Action Research

Bernard (2006) contends that immersing oneself in a cultural context is essential to gaining a deeper understanding of a people and their ways. Naturally, my varied experiences as a university lecturer, environmental board member, MNO committee member, and Métis citizen gave me unique access and perspective in this research. In keeping with Bernard's suggestion, I made the informed decision to include ethnography and participatory action research (PAR) as key research tools. Participant action research involves extensive collaboration and values empowerment through knowledge, which is generally congruent with Indigenous research principles (Kovach, 2009). In this approach to research, 'real participation requires a 'co-generative dialogue' where researcher knowledge, drawing and abstracting from multiple contexts, is combined with insider knowledge rich in experience and detailed understanding of a specific setting' (Stoecker 1999, p. 842). Though this project lacks some of the 'action' of true participatory action

research, it does utilise collaborative and reflective aspects of it.

While IRM should not be conceptualised as a thematic area within Participatory Action Research or Community-Based Research, it does share commonalities with other epistemologies that incorporate these methods – namely, minority group and feminist research. In each of these, the research methods employed aim to help address inequalities and injustices. The distinction, however, is in the ontological differences. IRM is rooted in Indigenous epistemologies and ontologies. Archibald (2008) states that IRM adheres to the four principles essential in Indigenous research: respect, responsibility, reciprocity, and reverence. These four principles provide the foundation for relational accountability. The methodological framework of IRM based on these principles has seen an increase of acceptance primarily due to key books and authors such as Tuhiwai-Smith, who have significantly increased the profile of decolonising approaches in academia (Kovach, 2009; Walter & Andersen, 2013; Wilson, 2008).

While CBR and PAR are not inherently 'Indigenous', they can be understood as a means of doing research sympathetic to many of the principles and goals of IRMs (Laveaux & Christopher, 2009). A number of resources exist for researchers seeking to apply a community-based research methodology in an Indigenous context (see Dickson-Swift et al., 2007; Fisher & Ball 2003; Laveaux & Christopher 2009; McHugh & Kowalski 2009; Poudrier & Kennedy 2007). Though these resources do not necessarily come from within an Indigenous epistemology and do not identify as IRM, they are relevant and useful to this research.

3.6. Data Collection

Data collection proceeded in steps: to begin, I collected textual data about Sudbury and the Upper Great Lakes Métis from websites, online sources, books, journals, library archives, and the MNO Sudbury office. This collection has continued throughout my phases of research and includes nation-to-nation agreements, legal decisions, terms of reference, impact assessments, government statistics, presentations, reports, scientific articles, ecological data, newsletters, news stories, press releases, timelines, meeting agendas and minutes, maps, films, radio interviews, email correspondence and social media conversations. Though I decided early on that this would not be an MNO project (to avoid some of the contention and division over identity), MNO staff helped direct me to Elders and various community events. Subsequent steps were more collaborative and involved more engagement with both Métis community members and restoration practitioners as participants of the project. Because the Métis community was a much larger pool than that of the restoration practitioners, more effort was required to reach data saturation in the Métis sample.

3.6.1. Métis Data Collection

An important emerging element of Indigenous research is that Indigenous people themselves are determining what they wish to be studied and how it ought to be done (Barlo et al., 2021). My position within the Métis community of Sudbury allowed me to design data collection in such a way that an understanding of identity, land use practices, perceptions of industrial impacts, perceived threats to the Métis way-of-life, and views on ecological restoration could be achieved. To this end, data collection was conducted using a survey, semi-structured interviews, and participant observation.

During the initial stages of the project, I made it a priority to establish robust relationships with the community. To achieve this, I actively engaged with Elders, MNO staff, and self-identified Métis through a variety of formal and informal interactions. By doing so, I aimed to build trust and foster a sense of collaboration that would ultimately help drive the success of the project. I initially spoke to Métis Elders about my proposed research topic and the resiliency of local socio-ecological systems. Because I consulted Elders for project refinement in the early stages, they served as both key contacts and gatekeepers, providing names of several potential participants who they thought would provide rich data. An additional effort was made at various Métis gatherings and community events to identify participants who fell outside of these contacts.

Métis Survey

While quantitative approaches have some limitations in Indigenous research, after consultation with Métis community members, a survey was deemed as an appropriate first step to gauge general perceptions of Sudbury's mining impacts and environmental health. The questionnaire entitled 'Métis Land Use & Perceptions of Industrial Impacts in Sudbury, Ontario' was launched during the fall of 2018 (see Appendix II). The 25-question survey was available to Métis community members to complete in-person and in paper form at the 2018 community Fall Harvest and the community Christmas breakfast. The survey was also available online on the SurveyMonkey platform, which was distributed in three different ways: via email by the Region 5 Captain of the Hunt to approximately 350 Métis harvesters, to the Sudbury Métis Council Facebook page by a Region 5 councillor; and to the Sudbury Métis Citizens Facebook page by the site's administrator. Interestingly,

29 of the 35 total responses were completed in-person at either the fall harvest or Christmas breakfast, which I believe speaks to the importance of personal relationships in IRM.

In addition to asking respondents about their practices as Métis land users in the Sudbury area, the survey also asked respondents to rate their awareness and concern regarding environmental threats and environmental restoration in the region. Thus, the survey served a dual purpose by helping identify social and environmental impacts (see Chapter 5) and by informing interview questions, which delved deeper into the issues and concerns identified. The survey closed in January 2019, at which time I manually entered all of the in-person responses to the online platform for ease of analysis.

Métis Semi-Structured Interviews and Trail Tours

My initial goal was to perform semi-structured face-to-face interviews with key individuals who have been active on the land for generations. I created my first spreadsheet of potential Métis interview participants based on:

- Survey participants stated willingness to participate in an interview on an optional survey question;
- locally-held positions within the Regional Métis Council and the Sudbury MNO office;
- status as a community Elder.[32]

[32] It is noteworthy that in Indigenous tradition, it is recognised that an Elder is not someone who has simply reached a certain age; distinctly, an Elder is an individual who possess traditional knowledge and

It is important to highlight the difficulty in securing interviews with Métis participants during a time when the Métis Nation of Ontario was performing a registry review of its citizen files in the province.[33] Though I made it clear that I was not conducting research on behalf of the MNO, there was a degree of skepticism about why I was involved in this research and with whom it would be shared. This uncertainty undoubtedly stemmed from the fact that many MNO citizens were conflicted about the intention and the terms of registry review. Within months of the review initiation, questions about whether I was a 'verified' citizen became ubiquitous. While I was honest and transparent about my MNO status, I tried to assure potential interviewees that MNO citizen verification was not a requirement for participation. Nevertheless, the dampened spirits under the review and the identity politics it generated seemed to stifle some of the initial eagerness to participate. In addition to the intrinsic identity barriers, several extrinsic barriers were encountered as well. Harvesting seasons made participant availability seasonally difficult, as did winter storms and driving conditions. Two interviews were cancelled due to winter driving conditions, and unfortunately, schedules prevented a rebooking.

Once interviews commenced in March of 2019, I employed the snowball sampling technique by asking each participant to recommend one or more potential participants. Considering the plethora of participation and language barriers facing some Elders,

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has earned the respect of their community. In our Métis community, it is recognised that sometimes the aged are elderly, but not Elders.

[33] The Provisional Council of the Métis Nation of Ontario (PCMNO) initiated an independent citizen registry review in 2017 as a milestone towards self-government. The registry review involved determining whether the file of each MNO citizen met the requirements for MNO citizenship as set by the MNO Bylaws and Registry Policy. The review took over three years, with final results publicly released in June 2021 (MNO, 2022a).
See https://www.metisnation.org/wp-content/uploads/2022/02/FAQ-RSRP.pdf

interviewing a broader audience seemed more prudent. A coded Excel spreadsheet of interview participants was maintained to ensure purposive sampling across a range of approximate ages, genders, and occupations. In this spreadsheet, Métis Participants are identified as 'MP' and their chronological number of recruitment. For example, MP01 identifies the first Métis Participant interviewed. (Similarly, Restoration Practitioners are identified as RP and their associated recruitment number in a separate workbook of the same Excel spreadsheet.)

Early in the data collection process, some potential participants mentioned that they would be more comfortable sharing knowledge in group settings such as craft workshops and community events. Though ethics approval had been granted in 2018 (for questionnaires and tours of significant sites), and 2019 (for interviews), once I received approval for additional forms of participant observation, I began attending workshops and community events. During this time of participant observation, I continued semi-structured interviews until no new themes emerged and the data saturation point was reached (see Table 3.1 for Métis interview numbers, locations, and identifiers). Thankfully, all but one interview had been conducted before the imposition of COVID-19 restrictions and social distancing.

Table 3-1: Métis Participant Interview Locations and Participant Numbers (Mar 2019-Apr 2020)

Métis Participant Interview Locations	Métis Participant Identifiers
Conference Rooms (n=5)	MP03 (Harvester), MP04 (Harvester), MP05 (Harvester), MP12 (MNO staff), MP19 (MNO staff)
Coffee Shop Interviews (n=4)	MP06 (Harvester), MP14 (Citizen), MP16 (Citizen), MP20 (Citizen)
Home Interviews (n=4)	MP09 (Citizen), MP10 (Citizen), MP11 (Citizen), MP15 (Métis Youth)
Trail Interviews (n=4)	MP02 (Elder), MP17 (Harvester), MP18 (Harvester), MP21 (Harvester)
Library Interviews (n=3)	MP01(Elder), MP07 (Métis Council Member), MP13 (Métis Historian)
Phone Interview (n=1)	MP08 (Harvester)

Early in the research relationship, I began documenting observed sites of environmental disturbance related to the mining industry and ecological restoration corresponding to the regreening programme. Historical and present-day traditional land use was also explored. By means of the semi-structured interviews listed in Table 3-1, I engaged MP02, MP05, MP06, MP07, MP18, and MP21 in mapping exercises and discussions pertaining to traditional land use and perceptions of the local environment. These participants all demonstrated an eagerness during the interview to share their knowledge on

geographical maps. As such, Google maps and Google Earth were used to help facilitate these discussions.

In other interviews, Métis participants were keen to walk the land where they spend time trapping, harvesting, and practising ceremony. This was the case for MP02, who wished to show me his collection of traditional harvesting artifacts and the quiet place where he enjoys practising ceremony on the land. MP17 and MP18, on the other hand, were interested in showing me what they believed was leaching from nearby mines on their trapline. MP21 simply preferred a walk in the woods to talk over sitting in a room. These trail tours were an early and important method of data collection which yielded rich and meaningful data. As fellow Métis, there was mutual recognition that any time spent on the land was preferable to time elsewhere (although weather, health, and contextual situations do not always allow for it). As a lone female, I ventured on trail tours only when I felt absolute certainty about my personal safety. I declined two offers of participation because participants lived alone in remote locations without access to technology.

Consistent with Métis epistemology, relational accountability, and respect for local protocol, I offered a small gift of dried plants,[34] deerhide, or food to acknowledge respect for shared knowledge and appreciation of the relationship. Small traditional gifts are important in IRM and signify that the researcher has committed to using the research purposefully (Kovach, 2009). I also found that engaging in conversation about a local

[34] Dried packets of sweetgrass, sage, cedar, and tobacco are often offered to First Nation and Métis knowledge keepers before making a request or an exchange of knowledge. This protocol is particularly important to perform before engaging Elders.

event or shared acquaintance enhanced the relational factor and served as a useful icebreaker before the interview.

Before commencing interviews with Métis participants, I asked if I could audio record our conversations for later transcription. All but two participants agreed. In these cases, I asked if I could make some notes for context, which they agreed to. In one case, the coffee shop was too noisy so I had to make detailed notes from recall the next day. Some participants believed they sounded 'stupid' on record because they had prior experience with land use studies and transcription. In these cases, I assured them that it would be for my use only and that others would not be privy to our conversation. I did, however, give them the option of a printed transcript. In two cases, participants requested to speak 'off the record' for context purposes only.

Considering that I knew many of my participants – and they knew me or knew of me – was also significant in terms of establishing rapport and engaging in conversation. Margaret Kovach (2010, p. 40) refers to this type of participant engagement as 'the conversational method' and states that it is an important method in IRM. Kovach (2009) notes that the primary difference between the conversational method and the semi-structured interview is the oral story component. The conversational method involves sharing stories as a means to uncover knowledge and uses open-ended, semi-structured interview questions to initiate conversation where both participant and researcher contribute information. It is a more symbiotic and informal dialogue approach than a standard interview while adhering to Indigenous relational tradition (Kovach, 2009). Indeed, because interviews would, at times, veer into subjects outside the scope of this

research, it was sometimes difficult to establish boundaries of what to code in NVivo and what to consider as context. Other times, participants had very strong ideas and opinions on issues but did not feel comfortable openly sharing them 'on the record'; once the recorder was switched off, conversations sometimes lasted for several hours. Again, these conversations were not transcribed or coded, but did grant me deeper insight into the Métis' lived-experiences in Sudbury's industrially-contaminated environment.

In retrospect, it occurred to me that the semi-structured interviews I conducted with Métis participants somewhat resembled the increasingly popular 'Yarning' method used among Aboriginal and Torres Strait Islander research teams (Kennedy et al., 2022). Yarning involves the researcher allowing the participant to tell their story from their lived experience, and as the participant shares their story, the role of the researcher is to listen for cues related to the research topic (Bessarab, 2010; Geia, 2013; Kennedy, et al., 2022; Walker, 2014). Like other forms of IRM, Yarning involves two-way knowledge sharing using narratives and storytelling. Indigenous health research has shown that Yarning tends to be a favoured method among older participants for fostering environments that support rapport, open discussion, and a privileging of Indigenous voices (Bryce et al., 2019; Gibson et al., 2018).

There have been many guidelines developed to ensure ethical conduct involving Indigenous communities; some examples include the Canadian Institute of Health Research (CIHR) Guideline for Health Research Involving Aboriginal Peoples (Canadian Institute of Health Research, 2007); Ownership, Control, Access, and Possession (OCAP) principles applied to research in Aboriginal communities; and the Tri-Council Policy

Statement Revised Draft Statement (Chapter 9) (Tri-Council Policy Statement, 2009). All of these guidelines, however, offer a pan-Indigenous approach; they do not consider the distinctiveness of the Métis Nation or any other specific group or community. As such, the guidance of Métis Elders and the rapport with community members was critical to the success of data collection in this project. Receiving the gift of story or knowledge is an honour, and as I reflected on transcripts and post-interview notes, I remained mindful of the privilege and responsibility bestowed upon me. Mutually beneficial and respectful relationships in the Métis community are non-exploitive and non-extractive; respect of community is paramount.

Métis Participant Observation

Trail tours and semi-structured interviews were supplemented with participant observation and hundreds of informal conversations. During participant observation events, I took notes on the characteristics of physical spaces selected, observations of rituals and routines, informal conversations with participants, and topics of interest arising during the event. If I became engaged in conversation or was participating in a workshop myself, I would write out fieldnotes in my car before heading home or once I returned home. During the course of research, observation events included a diverse range of meeting opportunities, where some events appealed to harvesters, and others to crafters, historians, and those with young children (see Table 3-2 for a list of events, locations, and approximate number of participants). In all situations, before striking up conversation, I would identify myself as both a Métis citizen and a doctoral researcher studying the Métis experience in Sudbury. In some cases, such as the fish fry, the Annual General Meeting,

the moccasin workshop, and the breakfast, organisers would introduce me in their introductory remarks and encourage citizens to speak to me about their lived experiences as harvesters or land users in the Sudbury region. In addition to the participation observation events listed in Table 3-2, I attended and continue to attend (by nature of my citizenship) Métis workshops and community events. These additional events, however, were and are outside of the research window and therefore not included in the analysis.

Lastly, but importantly, I have been volunteering and advising the MNO in multiple capacities since 2017, and sit as a Métis representative on a local Indigenous Circle. These roles comprise anywhere from 30 minutes up to 10 hours per week. While not 'research' in the academic sense, these roles have given me insight into Métis identity and way-of-life far beyond what I imagined possible. Similarly, being a member of local Métis citizen email lists and social media groups have granted me access to community debates, discourses, and musings that I would not otherwise be privy to as a researcher. Together, these roles offer a unique and enviable look at the Métis experience in Sudbury.

Table 3-2: Participant Observation Events (Fall 2018 to Spring 2020)

Event Number and Description	Event Location	Approximate Number of Participants; Demographics of Participants
1. Nuclear Waste Management Organization (NWMO) Consultation with Region 5 Métis	Holiday Inn Sudbury	50; industry presenters and a mixed demographic of Métis participants
2. Sudbury Métis Fish Fry	Sudbury Game and Fish Association Club	40-50; primarily Métis harvesters
3. TEK Lecture	Laurentian University Indigenous Sharing and Learning Centre	20; primarily academics, students, and interested Indigenous citizens
4. Louis Riel Day	Laurentian University Indigenous Sharing and Learning Centre	40-50; interested students and faculty with several Métis presenters
5. Louis Riel Day	MNO Sudbury Office	10-15; MNO staff and Elders
6. Métis Beading Workshop	MNO Sudbury Office	10-12; MNO staff and Métis women
7. Sudbury Métis Council Christmas Party	United Steelworkers' Hall	100; a mixed Métis demographic with Elders, families, and Métis Council
8. Traditional Métis Dinner and Community Research Discussion	Northbury Hotel, Sudbury	20-25; Métis Knowledge Keepers
9. 10. 11. Métis Research Group Meetings (3 Meetings in Total)	Laurentian University	8-10; locally-interested Métis Elders, knowledge keepers, and academics
12. Sudbury Métis Council Harvest Dinner	Valley Community Centre	30-40; primarily Métis harvesters
13. Sudbury Métis Council Annual General Meeting (AGM)	Valley Community Centre	30-40; primarily Métis harvesters
14. Sudbury Métis Council Breakfast with Santa	Northbury Hotel, Sudbury	100; primarily families with young children
15. Moccasin Crafting Workshop	MNO Sudbury Office	10-12; MNO staff and Métis women
16. Maamwizing Conference	Laurentian University	Several 100s of Indigenous and non-Indigenous scholars

In total, I collected 35 survey responses, 21 interviews/trail tours, and 16 participant observation events with Métis participants to reach ‘thematic saturation’ (Small 2009). Most interviews were semi-structured conversational interviews lasting approximately 1-2 hours. The longest was 4 hours and the shortest was 45 minutes. Interviews touched upon many environmental justice themes but also often transcended in stories and life experiences. In some ways, my methodology was a process of collecting stories of experiences; those shared with me felt very rooted in our Métis tradition of oral storytelling. Storytelling as a methodology allows for previously unheard voices to counter predominant narratives and as Baskin (2005) writes, 'sit comfortably within the academic and research centre with all the other worldviews, including the Eurocentric one' (p.1).

3.6.2. Restoration Practitioner Data Collection

Restoration Practitioner Recruitment

Identifying and selecting restoration practitioners to participate in interviews was a less intensive process, given the relatively small but publicly visible group of scientists, city staff, and industry professionals who work in ecological restoration. While seeking out busy professionals to interview, I was able to leverage my many years of committee and volunteer work on local environmental boards, and eventually, my position as a sessional lecturer at the local university's School of Environment. Those who refused to participate were never explicit about their unwillingness. Rather, the refusal was more of a delay and postpone tactic; in contemporary terms, this would be considered 'ghosting'. In these

cases, I followed media and social media coverage of their scientific work, and, in some cases, relied on journalistic coverage for additional information.

While identifying and selecting restoration practitioners for the project was not difficult, securing and scheduling times that accommodated their busy schedules proved challenging. COVID-19 social distancing restrictions did, however, create some opportunities in this regard. Key scientists who had been unreachable and unavailable earlier in my project became available during lockdown via Zoom. It had been difficult to arrange scholarly interviews until this point in the research due to academics' teaching, researching, and travel constraints. In total, I interviewed 14 participants associated with restoration work in the Sudbury region. With the exception of one guided trail tour of restoration sites in the fall of 2018, these interviews occurred between the spring of 2019 and the spring of 2020.

Table 3-3: Restoration Practitioner Interview Locations and Participant Numbers

Restoration Practitioner Interview Locations (March 2019 to April 2020)	**Restoration Practitioner Identifiers**
Tour of Restoration Field Sites (n=3)	RP06 (Biologist), RP07 (City Staff), RP08 (Biologist)
Coffee Shop (n=3)	RP01 (Retired Biologist); RP03 (Mining Union); RP13 (Mining Representative)
Zoom (n=3)	RP05 (Biologist); RP10 (City Staff): RP12 (Biologist)
Phone (n=3)	RP04 (SSS Reviewer); RP09 (SSS Reviewer); RP11 (SSS Reviewer)
Public Lecture, including post-lecture chats (n=2)	RP02 (Biologist); RP14 (Biologist)

Restoration Practitioner Sems-structured interviews

Interviews with restoration practitioners were generally more formal and typically concluded within an hour's time. The locations of these interviews varied and included local coffee shops, community centres, universities, and over zoom. As with the Métis participants, the interviews were audio- recorded, transcribed and coded. In a few cases (particularly the phone interviews) where background noise impeded transcription, I had to make additional field notes from memory. The one exception to interviews with restoration practitioners was the public trail tour of restoration sites. This tour involved two restoration biologists and one city staff (RP06, RP07, RP08), leading ten interested

individuals through restoration field sites at variable stages of ecological recovery. After introducing myself and my research, all three restoration practitioners were very open to answering questions I had throughout the informative three-hour tour. Though their answers were not audio-recorded, I did take many pictures and detailed field notes. While I did not offer a small gift to the restoration practitioners as I did with Métis participants, I made a point to follow up with an email of appreciation and gratitude for their time and wisdom.

Though the question prompts for the semi-structured interviews with the restoration practitioners obviously differed from those used with Métis participants (see Appendices III, IV, and V), the data collected was equally informative. While conversations with the Métis often veered to mining impacts, conversations with the biologists focused more on mining recovery. Participants in this group were also rather curious about the Métis presence in Sudbury while admitting that they were more familiar with the First Nations in the region. Consequently, there was often an initial teaching component required on my behalf, which I began lightheartedly prefacing as *Métis 101*.

One important observation of the interviews with restoration practitioners was that 11 of the 14 participants were men, suggesting restoration work in region is still largely dominated by a patriarchal system. This is in contrast with Indigenous societies where Mother Earth is inherently feminine and women, as community matriarchs, enjoy deep connections to the lands, animals, and water. Nevertheless, without exception, the male and female restoration practitioners were all receptive to discussing alternative ways of knowing and doing in Sudbury's restoration future. Some, however, were more

enthusiastic than others and all believed that there would be obstacles and challenges in the process.

3.7 Quantitative and Qualitative Analysis

Quantitative methodologies in geography have had a convoluted history; from the 50s and 60s when quantitative approaches were seen to stand up to scientific scrutiny, to the 80s and 90s when scholars began pushing back that value-free positivist research was not possible in social research (Cloke et al., 1991; Peet, 1998, Unwin, 1992). Harvey (1969), however, recognised that if quantitative tools were to be appropriately applied in geography, researchers must understand the philosophical and methodological assumptions behind them. In other words, the ontological assumptions that researchers apply using quantitative methodologies in social research must differ from those in the natural sciences. Aware of these assumptions, I recognised that the survey disseminated to the Métis in Sudbury was not a research tool from which to draw conclusions. Rather, the survey helped inform overarching impressions and guided the development of the interview questions. Because this research project primarily focused on understanding experiences on the land, and qualitative research is grounded in the lived experiences of people (Marshall & Rossman, 2014), qualitative methods were deemed the most fitting and revealing research tools.

In an effort to explore perceptions about Sudbury's environment, I adopted a modified 'grounded approach' in the research. Brewer (2000) summarises grounded theory as the use of inductive analysis to build from the ground up rather than impose one from above.

From the beginning of the project, I tried to ensure that my participants informed my research and guided the data. In this regard, the analytical categories were able to emerge from the data and peoples' voices organically in an inductive and iterative process similar to grounded theory. I did not, however, use a purely grounded theory approach because, as a Métis citizen living in Sudbury, my research field was already familiar to me, which allowed me to venture into this project with objectives and a specific set of research questions. Additionally, I performed a literature review before embarking on empirical research, which would be incompatible with a purely grounded approach.[35]

The triangulation of data gleaned from multiple methods is often seen as an important way to enhance the validity of findings (Duneier, 1999). To this end, I attempted to triangulate my data to ensure that survey responses, trail tours, interviews, and participant observation could be confirmed elsewhere (Hammersley & Atkinson, 1983). For example, Facebook pages, the MNO Youtube channel, news reports, Chiefs of Ontario statements, City of Sudbury sites, the Sudbury Soils Study, and more were frequently consulted to ensure confirmation of content.

3.7.1. Quantitative Data Analysis

Documented reports released by the Métis Nation of Ontario indicate that response rates to citizen surveys tend to be notoriously low. Unfortunately, my survey was not an exception to this longstanding issue. Of the estimated 1600 Métis participants who had access to my survey, I received 35 responses. Most of these responses, as mentioned, were obtained at in-person events. Bernard (2013) notes that is impossible to draw

[35] A central tenet in grounded theory is that the literature review should come after empirical research, so as not to bias or contaminate the emergence of theories (Glaser & Strauss, 1967).

conclusions on population sets when data received is unacceptably low. As such, I did not perform complex statistical analyses on the data collected; rather, I condensed responses in Survey Monkey's analytic features, which provided me with percentage summaries, not conclusions, about responses. Some of these response summaries are featured in the empirical chapters of this thesis.

3.7.2. Qualitative Data Analysis

Like other ethnographers, I adopted an inductive approach to allow themes to emerge (Duneier, 1999; Glaser & Strauss, 1967). In consultation with Elders and my research supervisors, it was established that I would collect, code and analyse data on my own. It is important to note that the same codes and themes were used for both Métis and Restoration Practitioner participants. While some codes were exclusive to one group or the other, there was considerable overlap in codes such as environmental change, environmental concerns, health concerns, pollution, responsibility, tailings/waste, environmental priorities, and Indigenous consultation.

Wilson (2008) adds that Indigenous research must strive to improve the reality of the research participants. Since that was always the goal of this research project, it was easy to keep this notion at the forefront of my mind. Thus, as the research progressed, Elders helped shape the final research themes, which eventually formed the outline of this dissertation:

- Métis identity and recognition
- Industrial impacts on the Métis way-of-life
- Métis Participation in restoration efforts.

Nevertheless, before these final themes were identified, an iterative process of thematic analysis was employed. Thematic Analysis is a commonly used method for categorising data into themes (Fereday & Muir-Cochrane, 2006). Thematic Analysis reveals 'themes' using their consistency across participants (Miles & Hubberman, 1994). Before commencing analysis, each recorded interview and participant observation notes were manually transcribed. Manual transcription was necessary because many participants had francophone accents that transcription software could not identify. I subsequently uploaded each transcript using QSR NVivo 11. Critics of computer-assisted qualitative data analysis (CAQDA) contend that depending upon the size and scope of the project, the use of software can increase reliance on technology to find patterns (Basit, 2003). Because I transcribed the interviews myself, and read the narratives several times to familiarise myself with the information, I did not find this to be the case. I was already very familiar with the data before coding began. Another criticism of CAQDA is that it may distance the researcher from the data, thereby creating methodological dogma (Welsh, 2002). Again, because I was so familiar with my data, I did not find this to be a limiting factor in this project. In my personal experience, I found NVivo useful for managing data, although admittedly, coding felt somewhat reductive and incongruent with IRM. IRM emphasises relational ways of knowing, which do not necessarily align with coding structures provided by NVivo software or capture the complexity and interconnectedness of knowledge. Some researchers argue that the reduction of knowledge into nodes, codes, or categories runs the risk of oversimplifying and overlooking important cultural or contextual nuances (see Ough et al., 2021; Tuhiwai Smith, 2012; Wan, 2018).

'Categorising strategies', as defined by Maxwell (2005, p. 96), are methods of reducing and grouping data into meaningful components, or 'categories'. Because I did not enter this project with predefined theories, I developed nodes (the NVivo 11 term for codes) from my transcriptions and fieldnotes – a process known as 'open-coding' (Strauss, 1990). In cases where I made field notes, I coded them similarly to the method I used in NVivo 11; however, instead of digitally highlighting sections of transcriptions with coloured codes, I highlighted my notes with pre-assigned coloured sticky notes and highlighting pens. This inductive process of open coding was used to identify ideas, themes, and concerns. Each interview was initially coded quite generally and descriptively without organising nodes into identifying themes. During this preliminary stage, a participant's answer to just one interview question could have multiple nodes associated with it. The emergence of new nodes generally appeared within the first few transcripts. Nevertheless, because I did not want to miss nodes that appeared later in the process, these early transcripts were re-coded upon completion to ensure descriptive content had not initially been overlooked.

Second, I identified general categories from the descriptive terms in initial coding. For example, the category 'Gratitude' initially included offers of thanks to the land, prayers to Grandfather Sun and Grandmother Moon, prayers of thanks to the Creator, and appreciation to Mother Earth. In keeping with Hammersley and Atkinson's (1998) ethnographic vision of 'capturing the nature of the social world' (1998, p. 252), the categories were then re-arranged several times during a third and final stage of coding to reveal five thematic nodes (Table 3-4).

Table 3-4: Five Themes and their Associated Nodes after Final Coding

Identity Politics	Industrial Impacts on Métis way of Life	Harvesting and Life on the Land	Traditional Ecological Knowledge	Decolonising Regreening
Discrimination	Environmental Change	Gratitude	Gratitude	Concerns about Future
First Nation Admiration	Environmental Concerns	Harvesting	Healing	Environmental Concerns
First Nation Resentment	Health Concerns	Land Access	Land/Water Respect	Environmental Priorities
Francophone Identity	Land Access	Land/Water Respect	Participation Barriers	Healing
Healing	Pollution	Overharvesting	Regreening	Indigenous Consultation
Identity Issues	Pollution Point Sources	Responsibility	Research Focus	Land Access
Indigenous Consultation	Responsibility	Roots	Responsibility	Participation Barriers
Métis Denial	Sudbury Soils	Tradition	Roots	Regreening
Métis Pride	Tailings/Waste	Waste	TEK	Responsibility
Overharvesting			TEK/Epistemology	Self-Government
Responsibility			Tradition	

Black print: node/thematic overlap
Blue print: unique nodes to particular theme

In the third stage of analysis, I performed a series of matrix queries. For example, when I wanted to compare responses of a Métis Elder and a Restoration Biologist to the node 'Re-greening', I dragged the participants to the matrix row, the node to the matrix column, and selected 'Run Query'. This visual allowed me to see similarities and differences in the responses given by Métis participants and restoration practitioners that I may not have

observed otherwise and were particularly useful for comparing and contrasting how different participants responded to specific nodes and topics.

The final step of the comprehensive analysis was examining the extent to which the five themes contributed to an understanding of the data. According to Braun and Clarke (2006), a theme captures something important about the data. For each of the five themes identified, quotations were extracted to highlight the main ideas. In collaboration with a Métis Elder, it was decided that aspects of harvesting and TEK/IK would actually be present and persistent in any theme. Because harvesting and IK are inherently linked and entrenched into the Métis way-of-life, they would be foundational themes informing all others. Thus, the five themes were ultimately pared to the three, which became the final themes of this dissertation: Chapter 5 (Identity), Chapter 6 (Impacts), and Chapter 7 (Restoration).

3.8. Additional Research Challenges

Beyond the barriers and obstacles discussed in previous sections, there were two additional challenges worthy of mention: language and the COVID-19 pandemic. Despite the many decolonising approaches that inform this project, most of the research and all of the writing was performed in English without any Michif, the language of the Métis. As a youth, I learned basic levels of Ojibwe and French but never became fluent in either. Michif, a hybrid language of mainly Cree and French has only recently seen a revival of interest. Though none of my participants spoke fluent Michif, the majority of them identified French as their first language. While I spoke French whenever I could, I tended

to speak it only in small talk before more in-depth conversations took place in English. I believe that conversing fluently in French would have enhanced my Métis participants' ability to share their teachings accurately.

Though I was, thankfully, near the end of data collection when COVID-19 restrictions commenced, I cannot say that the pandemic did not impose challenges. Once the data was analysed, my plan to present my findings to the Métis community faced several postponements. Adamant about wanting to deliver the data in-person, I delayed the delivery for almost two years. Ultimately, I composed a Visme presentation with a link for the Regional Consultation Committee (Region 5) to disseminate.

3.9. Conclusion

In summary, this chapter examined the research methodology from research design to dissemination. Drawing upon Indigenous research principles, the Métis experience on the lands and waters of Sudbury, Ontario was examined under a two-eyed seeing approach. While quantitative methods were employed in an initial participant survey, community-based participatory action research and ethnographic methods were utilized during trail tours, qualitative interviews, and participant observation. Results obtained from the Métis land use and impact survey served to facilitate discussion in the Métis interviews and participant observation, while perspectives of Sudbury's regreening process were explored in the restoration practitioner interviews and observation. Subsequently, field notes and interviews were transcribed and analyzed into themes. The results obtained during this research were not without challenges, but overall, the information gleaned was rich in describing Métis perceptions of Upper Great Lakes identity, industrial impacts on

traditional ways of life, and environmental restoration as a means of improving environmental and social outcomes. Moreover, the data collected from Sudbury's restoration practitioners can help inform how Indigenous knowledge and ecological restoration can be situated within an environmental justice framework.

4. MÉTIS INDIGENEITY AND IDENTITY

4.1. Introduction

As prefaced in Chapter 1, each chapter of empirical evidence in this thesis unravels the colourful threads of the Métis sash. By way of the first empirical chapter, I begin by introducing red and black. It is said that red, the most prominent colour in the sash, represents the blood of the Métis shed in battles fighting for territory and rights.[36] Though red represents lives lost and blood that has flowed, to some, it also represents strength. Despite the battles and the ongoing assertion for acknowledgement, the Métis are still here today; thus, the blood was not shed in vain and in it, there is strength. While red is the prominent sash colour, black appears only as tiny threads. These tiny black threads represent the dark period after the battles, the time when Métis language, culture, and ways of life were suppressed and hidden. In children's sashes, black threads are often absent – a gesture to inspire hope among future generations. Though the Upper Great Lakes Métis are no longer hidden, recognition of their identity and rights remains an ongoing struggle. Importantly, this chapter explores the Métis strain with concepts of identity and addresses the complexity and the nuance of these struggles alongside the desire to be acknowledged, accepted, and understood.

[36] Before Canada was considered a nation, the Métis had a distinct group consciousness and fought against American invasion during the War of 1812 (Métis Nation of Ontario, 2023a). Later, the Métis continued the fight for acknowledgement of rights and collective identity at the Battle of Seven Oaks (1816), the Battle of Grand Couteau (1859), the Red River Resistance (1869-1870), and the Battle of Batoche (1885) (Métis Nations of Ontario, n.d.).

While Chapter 2 addressed the theoretical frameworks of environmental justice, specifically the struggle for recognition as envisioned by justice theorists, this chapter reveals how the lack of recognition has impeded Métis empowerment in the Sudbury region. The literature review also revealed that recognition tends to be undertheorized as a component of environmental justice and is almost absent in the context of Métis justice. The concept of recognition, however, is fundamental to this project and, indeed, to Indigenous peoples. Coolsaet and Néron (2020) note that recognition and the right to be different (as outlined by the 2007 UN Declaration on the Rights of Indigenous Peoples) is essential in environmental justice dialogue because values ascribed to nature are so often culturally defined.

As I untangle the threads of identity issues, I begin by addressing gaps in regional Métis identity, specifically, how Métis in the Sudbury region perceive their identity relative to those around them. The chapter then probes deeper into Indigenous identity issues concerning the Métis and First Nations in the area, with particular attention to harvesting, historic communities, and indigeneity issues. The chapter then probes deeper into identity by addressing contentious identity politics within the Métis Nation itself. Many label the identity politics debate as a form of 'lateral oppression'.[37] A vocal handful of scholars go as far as stating that hard-won Constitutional Métis rights should not apply in Ontario or anywhere beyond the Red River in Manitoba. I challenge this contentious view by

[37] Lateral oppression or lateral violence are the terms employed when Indigenous peoples direct their hostility, anger, or frustration towards members of their own group rather than their oppressors (Whyman et al., 2021).

discussing information from historical accounts and ethnographic interviews.[38] I draw upon literature and research to reason that, despite a few scholars' assertions to the contrary, the Upper Great Lakes Métis have survived with their Indigenous identity intact and wish to not only survive but thrive in the future.

4.2. 'I Know I'm Métis!'

In the beginning phases of research, with only one ethnographic interview under my belt, I entered the second interview with few expectations and a lot of uncertainty. After a brief introduction, the Métis participant, a well-known Elder in the community, asked very candidly, '*Are you Western, Red River, Great Lakes or Eastern – big M or little m?*'[39] Anybody following Canadian Métis identity politics would understand the insinuation behind the questioning. Had I identified as 'Red River', there could be some distrust or concern that I was trying to delegitimise the Upper Great Lakes Métis. Had I identified as Eastern or 'little m', there may have been concern that I was bluffing my indigeneity. Though I passed the introductory quiz, I was cognizant of the elephant in the room – identity and indigeneity. Just as my ethnographic participant interviews began with questions about who I was and where I was from, the results of this thesis must begin with the same – who are the Métis? More specifically, who are the Métis living in Sudbury?

[38] This chapter contains ethnographic context about how participants perceived their self-identities and legal status. Various identifications are discussed, including Indian status (First Nations), non-status Indians, Métis with a citizenship and section 35 rights, Métis without citizenship and rights, Métis with lost citizenship and rights, and those without any Indigenous identity at all.

[39] Big 'M' Métis is generally used as a socio-political definition of a Métis individual who has Métis citizenship and is therefore considered Aboriginal under the Constitution. Little 'm' Métis is more of a racial category where individuals are mixed blood, though usually without Aboriginal status. Note that 'Indian status' is the legal standing of an individual registered under the Indian Act (Government of Canada, 2023a). Métis, though Aboriginal, are distinct from status Indians under the Act.

Without an understanding of national and regional Métis cultural identity, the struggle for recognition will continue, and the gulf between cooperation and interaction with our First Nations cousins and governments will widen. Moreover, without an understanding of how Sudbury's Métis perceive their Indigenous identity, it is difficult to discuss what role they ought to play in Sudbury's environmental future. A small group at Participant Observation Event #3 agreed that almost every Métis in Ontario has had the following conversation:

'So, you're Métis? Is it your mom or your dad who is First Nations?'

While wanting to explain the history of Métis, one might reply a little challengingly, *'Neither; they are Métis.'*

Sensing a potential Indigenous imposter, they might ask, *'So, what percentage [First Nations blood quantum] are you?'*

The problem lies in how individuals outside of established 'Powley Criteria' self-indigenize as Métis.[40] Loose definitions of Métis as 'mixed' – definitions which ignore the ethnogenesis of a distinct Métis people over time – are categorically rejected by the Métis

[40] Métis individuals must become citizens of their representative provincial Métis organizations – Métis Nation British Columbia, Métis Nation of Alberta, Métis Nation of Saskatchewan, Métis Nation of Ontario – to be represented by the Métis National Council (the Manitoba Métis Federation operates independently from the council). Métis living in Ontario are encouraged to become citizens of the Métis Nation by applying to the Métis Nation of Ontario (MNO). To become registered as a citizen of the MNO, the provincial body screens applicants using the Powley criteria (MNO, 2024a):

i. Individuals must prove their ancestral connection to a historic Métis community, and a genealogical chart must be prepared and verified to illustrate Métis ancestry dating back to the 1800s;
ii. There must be evidence (scrip, baptism, marriage, petition records) listing ancestors as Métis, and they must have lived in a community that the MNO has deemed a historic community;
iii. The individual must certify that they are a part of a contemporary Métis community and sign an oath that they agree to be a citizen of the Métis Nation and will identify only as Métis. In other words, though it is acceptable for an individual to have a mixed heritage, an individual must choose to honour their Métis heritage and cannot also identify as First Nations or Inuit.

The requirements are remarkable since they demonstrate the various dimensions required to provide guaranteed proof of identity claims (Nash, 2002; Hamilton, 2012).

Nation of Ontario and by other Métis governments within the Métis National Council, where Métis nationhood is defined by relationality, not blood quantum (Vowel, 2016). In this regard, scholars astutely note that the Métis are at the forefront and leading the way through the muddy waters of Indigenous identity in Canada (Adese et al., 2017).

In the past century, Métis have been, at different stages in history, reviled, rejected, dismissed, and today, half-heartedly assimilated into a pan-Indigenous identity. Some authors (see Tom Flanagan, John Ralston Saul, and Jennifer Reid) have gone as far as to reconceptualize Canada as an entire country of mixed métis civilization. They argue that what separates Canada from Europe and the United States is its early embrace of Indigenous roots and intermarriage. Gaudry and Hancock (2012) refute this re-envisioning of a quasi-Indigenous, mixed national identity and label it a new version of colonialism – one that ignores the historical context of the Métis lived experience. This muddying of history and the false claim that Métis were the forerunners to a multicultural Canada is arguably a new form of misrecognition and one that the Métis Nation adamantly rejects. The term 'métissage' – an increasingly popular term in Eastern Canada (Quebec and the Maritimes) – constructs Canada as a generalized Indigenous nation with problematic claims to Métis identity (Anderson, 2014; Gaundry & Leroux, 2017; Macdougall, 2011; O'Toole, 2010; Podruchny & St-Onge, 2012; St.-Onge et al., 2015).

Independent of the debates and the various perspectives of what constitutes identity and citizenship, Métis participants in this project had distinct lived realities which were shared with other Métis citizens in the Sudbury region. It seemed that identity boiled down to shared experiences and how they perceived these events, regardless of citizenship status.

In other words, identity and citizenship were not synonymous. While I was sometimes offered proof of citizenship in the form of a Métis card or genealogy chart, the most common refrain, one that was heard multiple times, was, *'I know I'm Métis!'* This strong self-identifier was based on history, heritage, an understanding of how to live on the land, and a desire to pass on traditions and ways of life to subsequent generations. And though the phrase sometimes clashed with an individual's legal identity, participants were no less resolute about it.

As a Métis citizen and a volunteer with the MNO Education committee, I often made informal stops at the MNO office prior to the pandemic. Though a place of business where MNO staff could carry out their services, coffee was always on, and Elders often lingered in common areas over a tray of goodies and a story. During one of these visits, an Elder emphasised the distinction between First Nations and Métis stories and legends. Though the two groups share aspects of culture and identity, the Métis sometimes highlight different qualities in their stories. A local Métis story may blend elements of Ojibwe and French-Canadian traditions. For example, a Métis trickster, perhaps one with a malevolent spirit (which is common in Indigenous lore), may transgress against the Creator and have consequences requiring confession in more of a French-Canadian Catholic tradition than of a First Nations tradition.

During another visit, a citizen dropped off doughnuts, and eight of us began a conversation about our favourite sweets and pastries. Naturally, one cannot converse about sweets in Canada without mentioning maple syrup. Indigenous people in Canada were tapping trees long before colonisation, and everybody in our small circle agreed that

maple sugar pie was the finest sweet of all. The group told stories of shared memories in maple bushes and mothers and grandmothers shaping leftover pie crust into handheld pockets of syrup and sugar for the kids. Some Elders reminisced that the pastries were similar to the French pastry, dubbed 'pet de nonne' (translation: nun's farts). The context, however, was uniquely Métis in that there was a blur of boundaries between their distant First Nations and francophone relations – a simultaneous disdain for the damage inflicted on Indigenous children by Catholic residential schools and regard for the sanctity of the Catholic Church in which their francophone relations were raised. Elders contend with a high degree of certainty and conviction that shared histories (including those told in stories) will continue to bind the Métis together.

While attending a moccasin workshop with nine other Métis women, the language naturally began to flow from English conversation to French conversation. One of the facilitators reminded the group that she was raised primarily in England, so did not speak French or Michif. Though some participants were aware of this fact and simply had forgotten, others were curious about why she was raised in England. She told the story about how her father decided to stay in England after serving in WWII. She shared that he felt less discriminated against as a Métis in England than at home in Canada (though it was uncertain whether he based his decision on this observation or if it was a happy consequence because of it). Regardless, this claim speaks to the discrimination that Métis faced in early and mid-20th century Canada. Peterson and Brown (1985) described Métis as those who were 'neither White nor Indian'. Because Métis were not racially pure (unlike the First Nations and Inuit), the Métis were considered biologically and morally inferior by the British and French on Canadian soil (Willinsky, 1998). With a blend of European and

Indigenous features, it is easy to imagine a Métis individual, such as my participant's father, simply blending in on foreign soil and away from Métis communities.

Unfortunately, it is not difficult to find enduring Métis discrimination in Canada. Some of my Métis research participants directed me to social media pages where anti-Métis sentiments are still commonly shared. Another participant shared equally derogatory comments from a 2022 social media account discussing Métis historic communities in Ontario:

Metis are derived from inbreds of 2 nations of peoples, which have no culture, and only raped, murdered, and stole from all indigenous [sic] peoples. Furthermore, nothing distinct about them.

Metis [sic], a term for mixed blood (like french [sic] and native blend); not a distinct nation of people... It makes absolutely no sense to identify as metis [sic].

Metis [sic]never had their own land mass and the language is not original.

If they [the Métis] were from Drummond Island (Fort Michilimackinac area), those metis [sic] men in colonial michigan [sic] would have most likely been enslavers of black children.

Those frauds are ruining everything for us real natives!

The drummond island [sic] fur traders were a gross crew of rich paedophiles who made concubines out of 9 year old indigenous slaves.

When I'm done exposing these frauds, all the metis [sic] will be back where they were.

They developed nothing. They just took from 2 other peoples. What pride is there in identifying as metis [sic]?

One particularly poignant comment (since deleted) on a YouTube video of Métis fiddling was, '*The Métis are just the worst of the worst – the worst parts of both cultures*.'

While MNO offices often morphed into places of informal gatherings, I also attended more formal events such as Louis Riel Days, Powley Days, Indigenous Peoples Days, and

Annual General Meetings. While normally in attendance as a citizen, I put on my researcher's cap to contemplate how and what the Métis choose to highlight as they celebrate their culture and history. I noticed that at events attended by the general public, there seemed to be more pressure to look and act distinctly Métis. So, while citizens would attend Métis offices and centres in everyday attire, perhaps with a nod to their culture in a beaded accessory (hair clip, purse, key chain), citizens would attend cultural events in more formal beadwork, sashes, moccasins and furs. Métis participants confessed to feeling that they must present themselves in particular ways that both cast them as Indigenous whilst distinguishing the boundaries between themselves and the First Nations. Stated otherwise, they must perform as Métis in a manner keeping with societal expectations. For some, this means styling themselves in Métis beadwork, while for others, it means documenting their traditional harvests on social media.

As introduced earlier in this chapter, and in what could be classified as a desire for recognition, almost every Métis participant in this project claimed that they have sought ways to legitimize their Métis indigeneity – through legal citizenship, presentation, or traditional practice. Métis music, dance, and traditional crafts were frequently on display at events as crucial cultural elements to enhance the distinction of the Métis community. For example, Métis fiddle music was often played at events in the background, with leanings toward French folk sounds. Likewise, participants sometimes would get up to do a Métis jig, which is visibly similar to a hybrid of Irish jigging and square dancing. And while Métis crafts on display would initially appear similar to Anishinaabe cousins in the region, a trained eye would notice subtle differences in patterns, styles, and colours.

Beadwork in trailing floral patterns is particularly indicative of Métis handicraft and can be found on everything from moccasins, belts, and mittens to tablecloths, frames, and religious items. This characteristic pattern of Métis emerged from the combination of First Nations beadwork and the floral embroidered patterns introduced by French-Canadian nuns working with missions in the eighteenth century. I attended a Métis beadwork workshop through the MNO as part of my research and to try my hand at it for the first time. I struggled with it immensely, and by the time the workshop was over, the facilitator concluded, '*Your ancestors weren't beaders; your muscle memory would have remembered if you were. Your people must have been firekeepers or hunters. What do you do that comes naturally to you?'* I remembered the first time my husband and I went hiking in the bush and cooked our food over fire. He was astounded by my ability to navigate the forest and start a fire effortlessly – I left the workshop believing that perhaps the facilitator was correct.

This conversation left me wondering which characteristics and skills are viewed as inherently 'Métis'. Must the ideal local Métis have inherited a set of skills, or is someone proud of their culture and heritage enough? Certainly, there seemed to be some expectation of community continuity. As such, I would argue that the more formal public Métis events were not mere spectacle and performance. The separation between First Nations and French Canadians is an important yet often blurred border for the Métis. Part of what makes a person Métis in this region is what they do: they bead, fiddle, dance, hunt, harvest, wear sashes to important events, and share stories within the community.

Compounding this issue of indigeneity in the Métis community is the Hegelian concept of otherness.[41] In my interviews with Métis participants, this concept presented as stress involved with projecting an air of authentic ethnicity. Several participants were cognizant and careful not to project an image of being either 'too European' or 'too Indigenous' in an effort to avoid contempt from either culture. Egregious misrecognition by either of the two more dominant cultures was deeply distressing to Métis participants. MP03 spoke about the narrow constraints of living and projecting an acceptable and verifiable Métis identity: '*People think that if you look white, but do Indigenous things, then you're appropriating First Nations*.' In today's political climate of cancel culture, there is a palpable sense of fear among Métis of having to perform just right – neither too white to have their indigeneity questioned or too Indigenous to be accused of cultural appropriation. MP08 tearfully shared, '*So many of us feel we are not real; that we don't belong. It's our curse [as Métis], and it saddens me greatly*.'

Coolsaet and Néron (2020) channel Hegel's philosophy when they discuss the human need for respect, recognition and reciprocity. A lack of reciprocal recognition, they argue, makes it impossible to have high self-esteem. True to this thought, and in keeping with Indigenous regard for reciprocity, MP02 reluctantly confessed that he often tries to remain quiet during government and industry land consultation meetings because, '*everyone assumes that a First Nations person in the room knows more (traditional knowledge) than me, a Métis*.' He shared that he is guilty of this assumption at times, too, though quickly pointed out that he knows it not to be true. While this Elder, in particular, is extremely

[41] According to Hegel, the concept of 'Self' requires the existence of 'Other' as the counterpart for self-definition (Hegel & Miller, 1977).

knowledgeable about the land and Métis tradition, he contends that his knowledge and voice can feel drowned when in meetings with First Nations.

Applying Honneth's (2007) sphere of interaction, where social esteem is connected to solidarity and shared values, I observed that Métis participants spoke at length about their heritage and childhoods. As they did so, stereotypical Indigenous stories tended to emerge without any prompting. Fond memories and happy stories of foraging in the woods with grandparents, hunting and trapping with relations, tapping trees in the spring, and fashioning snowshoes in the fall were all the norm. Even when families hid or avoided discussing their indigeneity, participants claimed there was still an undercurrent of traditional knowledge and an understanding that they were practising Indigenous ways of life. Indeed, many participants asserted that they believed their Indigenous ancestors were still with them, guiding them back to old ways. For example, MP20 shared:

We didn't have a reserve, so wherever we grew up, wherever our ancestors lived, is special…My dad worked in the mines but he taught me all about the land. So, I hunt, fish, harvest berries, collect medicine, especially sweetgrass. I use tobacco as an offering in fires and on rocks. I burn cedar and sage twice weekly. Smudge with it. I can wild blueberries and blackberries…. Dad and I would make nets for whitefish, hunt moose, drag it back on pallets. Dad was diabetic and really into medicines, so he'd make spruce gum balls and burdock tea. And we'd always drink the first maple water of the season. Dad lost his hearing in those mines, but yeah, anywhere our ancestors have lived is special.

Several participants, however, claimed that their Indigenous identity was hidden in the family at some point in their history. While some of their relatives happily reclaimed it, others were too ashamed, embarrassed, or emotionally distant from wanting to apply for citizenship. MP04 stated that while three of his four children were proud to be Métis, the

other chose not to identify; he simply felt detached from what he believed he should feel as an Indigenous man. MP04 confessed:

I don't think like a First Nation person; I guess I think more like a white man or whatever, like, I don't believe every rock has a spirit, that kind of thing, you know? I guess some of us Métis get lost, but some of us will continue [Métis ways], right?

Although MP04 admitted that he did not always think how he thought an Indigenous man ought to, he still articulated that what was in him [regarding Indigenous identity] was '*still powerful, though silent.*' The confession about not thinking or acting like an Indigenous man was also discussed by MP03:

Sometimes when I hunt, I think I should (and I want to!) lay tobacco, but I don't because I wonder what the people with me will think. And governments make it hard too. They say, 'Oh, you want to be distinct from First Nations, so why are you smudging, why are you making sacred fires, why are you growing sweetgrass?' But, you know, a lot of Métis do these things too. It's hard to know what to do now.

4.3. Inter-Indigenous Identity Disputes

Cantzler (2020) notes that justice as recognition for Indigenous peoples involves the rejection of discriminatory beliefs about their cultures and validates their values, knowledges, and expertise. While this concept is applaudable in theory, it is simply not this tidy or achievable in practice. This section examines the complex dynamics when one Indigenous nation attempts to invalidate or dismiss another Indigenous nation, as is the case with the Chiefs of Ontario and the Métis Nation of Ontario (as introduced in Chapter 1).

4.3.1. Harvesting Territory

While participants did not necessarily feel obtaining Métis citizenship (and thus, a Métis citizenship card) had a bearing on their identity as an Indigenous person, not having citizenship was certainly recognised to limit the opportunity to practice a traditional way of life, particularly harvesting. Possession of a Métis harvester's card and the hunting rights granted with it are certainly associated with demonstrable Indigenous identity. The lived experiences of identity surfaced frequently when participants spoke about harvesting, particularly hunting and fishing. Sixteen of thirty-five survey respondents were hunters, twenty-five were fishers, and twenty-six were berry harvesters. However, the number of respondents who consumed locally caught game, fish, and berries were twenty-one, nineteen, and thirty-four, respectively. These results indicate that some harvesters are likely sharing their wild game and berries. Conversely, some anglers are likely fishing for recreation but not ingesting or sharing their catch.

As it presently stands, as MP05 explained, MNO citizens can apply for harvesting cards to hunt for subsistence in their home regions without a license. For example, an individual such as myself, whose Métis ancestry is from Region 7, must harvest in Region 7 (even though I live in Region 5). A Captain of the Hunt oversees harvesting in each MNO region; each captain's role is to monitor who is bringing what out of the bush. MP05 emphasized that Captains ensure everything is done ethically, sustainably, and in keeping with the law. Indeed, there was consensus among harvesters that any traditional activity needed to be performed within the boundaries of the law. Métis rights were still seemingly perceived as tenuous, and there was little will to test the boundaries and potentially lose them.

Yet, as Indigenous people, Métis rights to hunting and fishing were not historically bound to such limited geographical boundaries. While the Crown did not historically negotiate with the Métis, First Nations often made accommodations for their Métis relations. As MP21 offered:

We fought alongside the First Nations in the War of 1812 to protect our homelands. We all lived together and fought together. And then we made homesteads together on the north shore [of Lake Huron]. This was all before the 1850 Robinson-Huron Treaty, of course. The [First Nation] Chiefs knew the British wouldn't make treaties with us–we were, after all 'French breeds', and the English hated the French back then. So, the Chiefs took us under their wing; they made [harvesting] agreements with us so that we could withstand colonial treaties.

This statement was backed by Isaac Murdoch (Bomgiizhik), an Ojibwe artist, storyteller, culture camp coordinator, and social media influencer of the Fish Clan from Serpent River First Nation, west of Sudbury. In a lengthy 2022 Facebook post viewed by tens of thousands, Bomgiizhik said of the Métis on the north shore of Lake Huron:

The term Métis is a contemporary term. Our chiefs saw the Aabitaawizininiwag [the Métis] as family. The remnants of these families still exist. The British didn't recognize them, Canada didn't recognize them, but our Chiefs made agreements with the 'French breeds', the 'halfbreeds', our relatives… The 'breeds' spoke Anishinaabemowin, they were immersed in Indigenous customs and lived off the land… They had deep ecological knowledge... If I was going hunting in their territory, I would ask permission and offer them tobacco or meat. I didn't hunt in Aabitaawizininiwag territory because that is how they fed their kids. My grandfather would say, 'we don't hunt in their territory because we would be taking food out of somebody's mouth'…So, we recognised them. The governments didn't… The British never recognized them, so it was easy to erase them. But I'm telling you, along the north shore (Lake Huron), they were there. They are there.

Supporting these assertions, historical records indicate that Chief Shinguacouse of Sault Ste. Marie refused to negotiate the 1850 Treaty "unless 'halfbreeds' living at the Sault were also given benefits, specifically free grants of land" (Jones, 2001). Shinguacouse was refused this request and ultimately agreed to sign the Treaty, followed by other Lake

Huron chiefs. Although the government at the time refused to deal with 'halfbreeds', they left the door open for 'Indian' signatories to share Treaty benefits with the halfbreeds (Jones, 2001). However, by 1888, the Métis along the Upper Great Lakes, and in Killarney specifically, were feeling the losses of furs and fish and made an appeal for arrears of annuity, arguing that they 'are very poor now that the white people are devouring the fish and rendering useless to them the fisheries on which they used to depend' (Jones, 2001).

The imposition of Métis boundaries then and now contrasts with the situation for First Nations, who are able to exercise much broader harvesting rights. Though Métis landholdings are not recognised similarly to First Nations, the legal recognition as one of Canada's three Indigenous people suggests that Métis land regimes ought to merit recognition through a somewhat wider lens. On the one hand, the exclusion of Métis in land regimes has been justified by arguing that they were not signatories to historical treaties. However, a counterargument could be made that the Métis did not sign treaties and, therefore, did not surrender to Treaty. The very fact that Métis are recognised under section 91 (24) of the Constitution establishes Métis ethnogenesis before Canadian control. Thus, land occupied by Métis before effective Canadian control is arguably still Métis land – it was never conceded to the Crown.

4.3.2. Historic Métis Communities

Killarney (approximately 37 kilometres from Sudbury) is one of seven[42] identified historic Métis settlements in Ontario. Identifying a historic Métis community in Ontario requires historical evidence that a distinct population of Métis with shared customs, practices, and

[42] Six historic Métis communities have been identified in Ontario, in addition to the community recognised in *R. v. Powley* [2003].

traditions was established in the area prior to European effective political and legal control (see Killarney timeline in Appendix VI). With few exceptions, most Métis participants in this research project have Métis roots in Killarney or French River but have relocated to Sudbury for gainful employment. As a provincially recognised historic Métis community, Killarney is where many of Sudbury's Métis citizens have ancestral connections and, therefore, choose to practice their traditional ways of life.

In the mid-1980s, Wiikwemkoong First Nation filed a claim for Crown land and 41 islands between Killarney Provincial Park and the French River Provincial Park; negotiations did not formally begin for the Specific Claim[43] until 2006. The Municipality of Killarney responded to Wiikwemkoong First Nation's claim with the aim of forming a partnership to address mutually beneficial projects and initiatives (Municipality of Killarney, 2022). In 2022, during a virtual citizen meeting (which I attended), local Métis citizens concerned about a loss of access to Crown land were informed by the Ontario Ministry of Aboriginal Affairs (arguably without any meaningful consultation and in a condescending manner) that the proposed land claim was all but certain, with likely more to come. Figure 4-1 shows the proposed land claims in purple, provincial parks in green, and First Nation reserve lands in brown.

MP12, a participant with deep Métis roots and connections to Killarney shared her emotional sentiments, '*All my family is still there [Killarney], but there is a group who just want to shut us [the Métis] down. We don't hear about goings on. It's like they [the Crown and Wiikwemkoong] want to make Killarney a reservation*.' MP07 declared her frustration

[43] "The term 'Specific Claim' refers to monetary damage claims made by a First Nation against the Crown regarding the administration of land and other First Nation assets" (Specific Claims Tribunal Act, 2008).

about the process by saying, '*Métis don't have enough voices; we need more voices, but the right voices. Not every Tom, Dick, or Harry. We're [the MNO] still in our infancy, and we need the right voices to be loud.*' In her words, '*Wiky [Wiikwemkoong] isn't recognizing that there were and are Métis in Killarney. But that town [Killarney] was all Métis for the longest time! Wiky has put a land claim on it, so that's big, very big! Land reclamation has to include land reclaimed, you know what I mean?*'

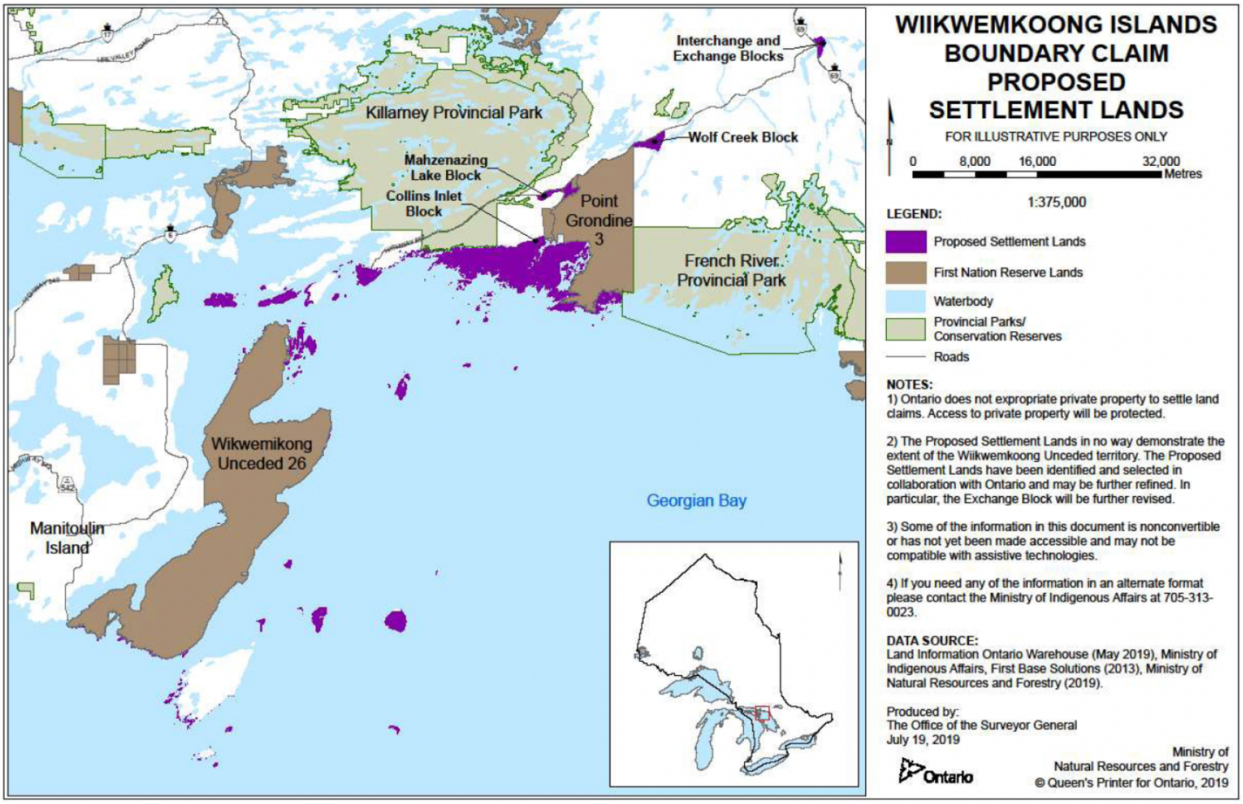


Figure 4-1: Proposed Settlement Lands (purple) near the Historic Métis Community of Killarney
(source: Government of Ontario, Ministry of Natural Resources and Forestry, 2019)

Though government officials emphasize that there is not an Indigenous hierarchy of rights and that First Nation claims do not trump Métis claims, this particular case seems to suggest otherwise. Figures 4-2 and 4-3 depict Killarney in relation to the City of Greater

Sudbury. Grey layers are private land, including those owned by mining companies; purple layers are First Nation lands; light green layers are provincial parks; and dark green layers encompass proposed changes. Crown land is the remainder, though orange areas in Figure 4-5 are considered enhanced management areas (EMA), which may be subject to special conditions. Legal recognition of Métis as Indigenous may infer political and moral obligation on behalf of the government, but defining and implementing that obligation is murky (Eisenberg, 2009; Roitman, 2008). A legitimate and poignant question raised by a concerned citizen at the Region 5 Métis meeting with the government was, '*I'm not opposed to First Nations land claims, but if you're going to give away Métis land, land that we as Métis have been harvesting for generations, then what are you going to do for us? Where are we supposed to go? What will we have left?'*

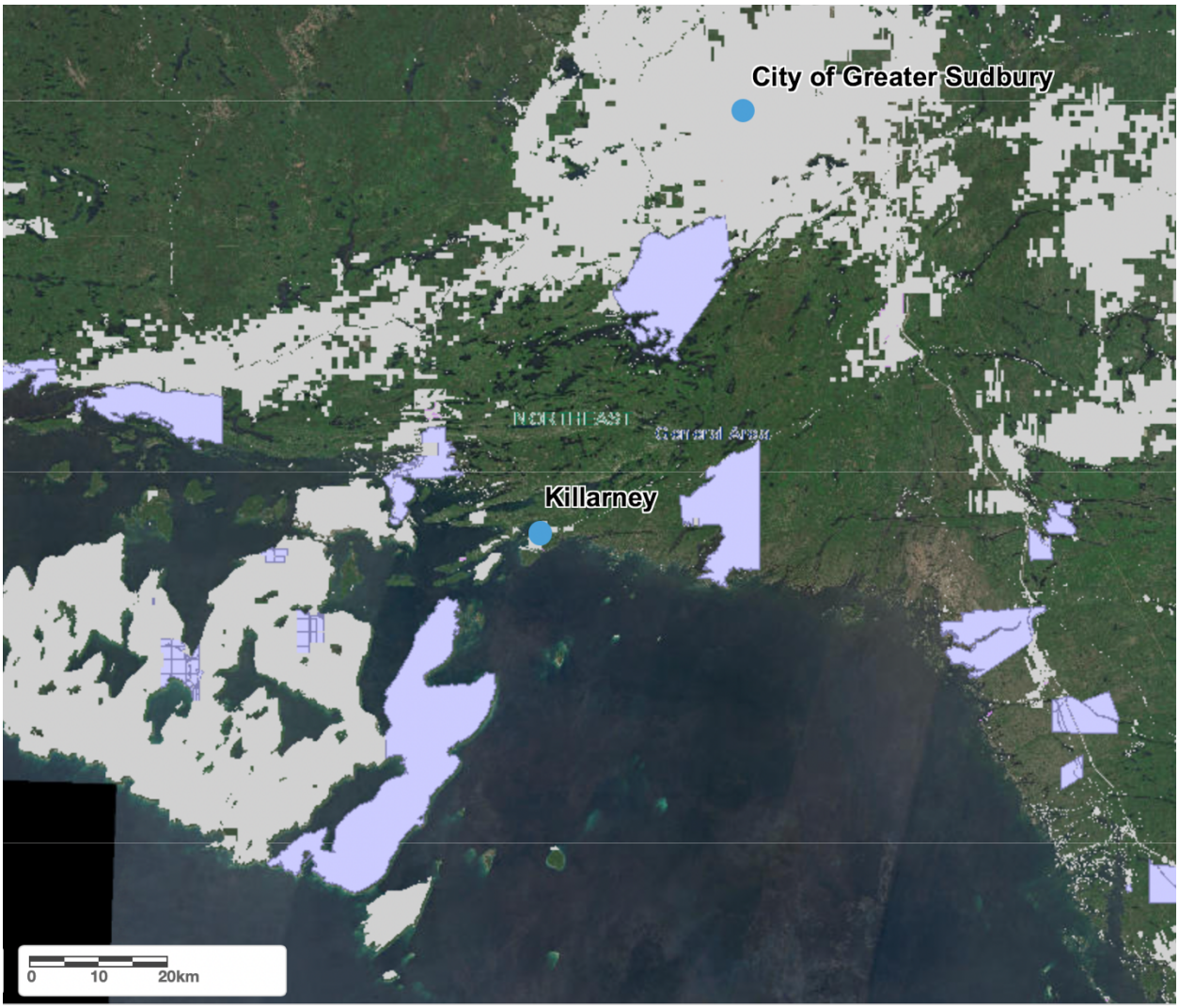


Figure 4-2: Private land (grey) and First Nations land (purple) between the City of Greater Sudbury and Killarney (excluding current land claims) (*source: Adapted from 'Crown Atlas' by author, 2022)*

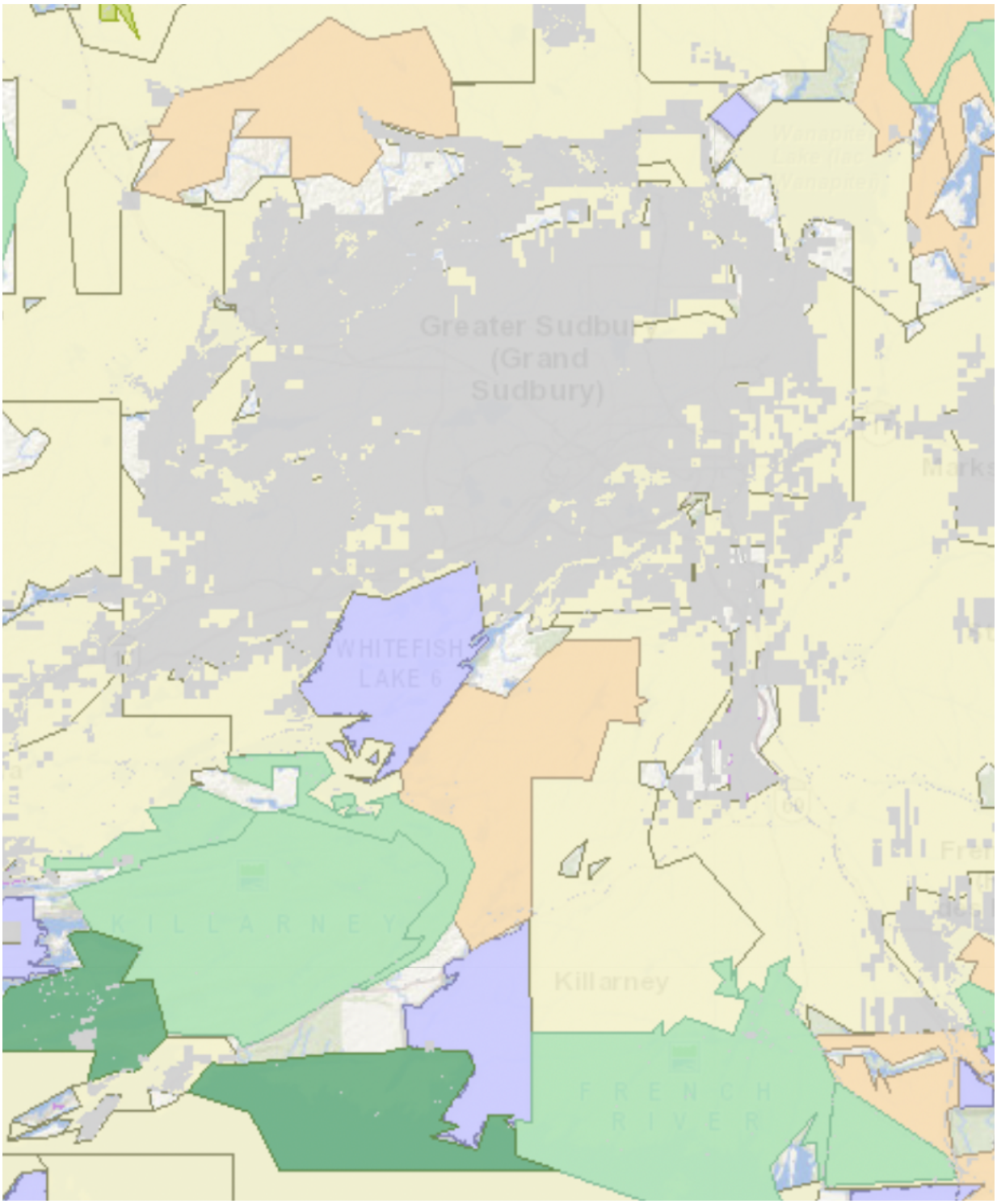


Figure 4-3: Crown land (yellow) available to Indigenous harvesters in an approximately 20-kilometre radius from the edge of the City of Greater Sudbury *(source: Adapted from 'Crown Atlas' by author, 2022)*

The concerns expressed by the Métis were based on the fact that when they are deprived of access to Crown land, they lose their ability to uphold their cultural practices. In the absence of ecologically diverse Crown land, the only option left is to rely on private land to maintain traditional ways of life. Unfortunately, private land in the Sudbury region is often impacted by industrial pollution, ecological degradation, and abandoned mine sites, making it unsuitable for activities such as hunting large game (for example, deer and moose), which require vast and uninterrupted tracts of land. (Refer to Chapters 5 and 6 for further coverage on these issues.)

4.3.3. Great Lakes Métis Indigeneity

When land and ways of life are at stake, there begins a re-emergence of questions such as, '*How can a 'new' people claim indigeneity*? *How can they claim Indigenous rights?*' During the last four centuries, the Métis have endured discrimination and doubts about their identity from all angles – the government, mainstream Canadian society, other Indigenous peoples, and even from within the Métis Nation itself. The Robinson Huron Waawiidamaagewin[44] categorically rejects that Killarney (and indeed all MNO historic communities in Robinson-Huron territory) are historically Métis; as mentioned in the introductory chapter, their denial is supported by the Chiefs of Ontario (Chiefs of Ontario, 2023). Though Métis are familiar with historical acts of erasure, the act in recent years by First Nations relations is particularly hurtful. In May 2023, a national news organisation

[44] Robinson Huron Waawiindamaagewin (2024) is a body that includes 21 First Nations of the Robinson Huron Treaty that addresses governance issues within treaty territory. See https://waawiindamaagewin.com

quoted Ogimaa Kwe Linda Debassige of M'Chigeeng First Nation (near my hometown on Manitoulin Island) saying, '*The Anishinabek have not given the Métis any rights. We do not recognize any MNO communities or any rights that the Crown may give them*' (White, 2023).

Mitch Case, MNO Regional Councillor, Huron-Superior, publically countered:

It is disappointing that some media are writing articles giving voice to those that deny the very existence of Métis people and our communities without facts or balance… Would you print that another minority group's very existence was denied? I don't think so. Yet, Métis are now fair game? Let me be clear: we are not Anishinaabe. Nor are we anyone's leftovers or subordinates. We are also no one's poor cousins, beholden or subservient to anyone else's recognition or acceptance. I reject any suggestion that we need anyone else's permission to be a people, community, or to be proud of who we are. Our existence is rooted in our own culture, identity, collective consciousness, assertions, resilience, and inherent rights. My heart goes out to my Métis relatives as well as our First Nation relations (many who do not agree with the public attacks being made by some Chiefs). These attacks are ill-informed, ugly, misguided, hurtful, and distasteful. To my Métis family, friends, and community: be proud, hold your head high, and know that our Métis communities are <u>not</u> going anywhere.

Before the Chiefs of Ontario and the Assembly of First Nations began their vocal opposition to Métis rights in Ontario (Chiefs of Ontario, 2023), the Métis participants in this project felt the animosity. MP02 noted that, '*Every time you say you're Métis to a First Nation in this area [Sudbury], they just say, 'No, you're non-status First Nation because your grandmothers or whatever were.' So, right there, they just block yo*u.' MP21 stated, '*Way back, the term Métis didn't exist. We were 'breeds', and we lived in communities beside the reserves (probably because we weren't allowed to live on the reserves; Indian Agents would kick us out). So, we lived beside our First Nation cousins. But now, now it's just the land, the water, and the animals who suffer when we all fight. We need to go back to the old ways.*'

In June 2022, the First Nations Chiefs of Ontario passed a resolution calling on governments to protect First Nation territorial rights from Métis encroachment. The resolution called upon both the provincial and federal governments to cease entering agreements with the Métis Nation of Ontario (MNO) without input or consent of First Nations (Hale, 2022). In a live social media post, Bomgiizhik responded to this resolution:

I stand for the Aabitaawizininiwag They had territory… The Aabitaawizininiwag had a home, a territory, place. Those were our agreements… These were Indigenous people with Indigenous connections that were displaced due to politics… Now some Anishinaabe say the Halfbreeds don't have anything. This is wrong because it goes against our history and we're no better than the governments if we're saying this.

This resolution, however, is obfuscated by the fact that Métis communities in Ontario have been legally recognised by the Supreme Court of Canada (Canada's highest court). A Métis citizen at the 2022 Christmas party noted, '*Why do we care [what people say]? We won Powley!*' As MNO President Froh stated to Hale (2022), a journalist covering the Ontario Legislature, '*The rights of Métis citizens are not subordinate or derivative to First Nation rights, and they don't take away from, in any shape or form, First Nations rights. We respect First Nations and their assertion, and their work with other governments to seek reconciliation. It's vital that our rights be respected alongside theirs. Our rights can, and do, co-exist.'*

Bomgiizhik agreed stating, '*As nations, we have the responsibility to come together, we need to come together like we always did with politics aside. We need to come together for the lands and waters, to support and build each other up and not let rights-based agendas divide us. How do we do this? In ceremony; we need to be dignified and work together. Today, the Aabitaawizininiwag are under the MNO, because they want to feed*

their families, and that is a good thing. The MNO was created to help people, give opportunities. Organisations were created by breeds and status Indians in good faith, not to separate us. Over time, relations have failed, but moving forward, we have to make space for all our relatives, whichever side [Métis or First Nations] you're on.'

4.4. Intra-Indigenous Disputes within the Métis Nation

The fact that it has been so contentious to define the Métis makes it somewhat understandable why courts have delayed dealing with claims (Saunders, 2013). In 2016, the Supreme Court of Canada declared that Métis and non-status Indians were 'Indians' under section 91(24) of the Constitution of Canada. This landmark ruling in *Daniels v. Canada* [2016] inferred that there would be some responsibility on the government's behalf to provide for Métis and non-status Indians as they did for status Indians (First Nations). A comparative case in 1939 had a similar outcome for the Inuit. These legal cases, however, were never about expanding the cultural category of 'Indian'; rather, they were about including Inuit and Métis under the legal term 'Indian' to achieve a similar meaning to 'Aboriginal' in the 1982 Constitution. While 'Indian' individuals are based on previous iterations of the Indian Act, definitions of 'Inuit' and 'Métis' are open to interpretation. Notably, no definitions of *who* are Indian, Inuit or Métis are given. Further, the usage of the plural 'peoples' in section 35 (2) is also intriguing. 'Métis peoples' is unclear and could imply that there are more than one Métis people in Canada. This ambiguity then stirs division not only outside the Métis Nation, but inside it as well. This section explores some of this intra-Indigenous discord.

4.4.1. Ontario Métis: Distinction or Divisiveness

Considering that the Daniels ruling – and being declared 'Indian' under the Constitution – was deemed a victory of recognition, the Métis claim of distinction (i.e. the 'we are Métis, not Indian') could be perceived as somewhat of a contradiction. The fact that the court decided Métis were 'Indians' under the Constitution and that this was deemed a 'win' for the Métis seemed somewhat incongruous next to claims of Indigenous distinction. It may, at least initially, even seem at odds with this research, which has the explicit aim to recognise and empower the Métis as a distinct Indigenous voice at decision-making tables. But it is important to remember that Indigenous peoples in Canada have little choice but to navigate the legal ambiguities that exist under a colonial legal system. And without many avenues to address Nancy Fraser's version of recognition and redistribution, legal redress has become a path to gaining long-denied Métis rights and recognition.

Nevertheless, little has changed in pragmatic terms in the six years since the ruling. Many Métis participants exclaimed that the victory they celebrated during the ruling had not amounted to much in practice. In the words of MP10, '*I remember my family celebrating this victory, but what has changed because of it?*' It is uncertain if the courts were intentionally ambiguous. It could mean it is unsettled whether there truly is only one Métis Nation or whether the Métis differ across the country. In the latter, we can envisage the Red River Métis community in Manitoba as distinct from the Great Lakes Métis in Ontario and possibly an even wider interpretation of mixed backgrounds stemming from the fur trade across many parts of Canada. In the words of MP03, '*Do First Nations separate and define themselves provincially the way Métis do? The Algonquin of Ontario, the Cree of Alberta? No. I mean, it doesn't matter, right? There were no borders back in the fur*

trading days… They know who they are.' Certainly, the participants in this project had no difficulty differentiating themselves from their 'Red River cousins'. MP06 recalled a time when a visitor from the Red River attended a local Métis event and proclaimed how similar the music and language were but with a unique regional influence. A participant at an observation event said, '*There were some Metis from the west visiting the [Sudbury] area, and they stopped into the [Sudbury MNO] office, so we said, 'join us at our event this weekend' (I forget if it was a fall harvest but something in the late summer or early fall). Well, they came and said, 'Holy gee – you guys play the same fiddle music as we do!' We laughed and said, 'of course we do, we're the ones who took it out there [west].' You know, like, our ancestors and relations. They were all here first and took a lot of the same traditions out there [west] with them.'*

While there is no dispute in mainstream Canada regarding the validity of Métis ethnogenesis, the dispute today is about who the Métis are, where they live, and whether there is more than one Métis people? MP08 shared, '*We are actually pretty easy to define – we are the sons and daughters of the early fur trade*.' But considering the term 'Métis' was not formally defined in the Constitution, much debate has been about its constitutional meaning. While some insist that only 19th-century Red River descendants should be recognised, others contend that self-identification ought to be enough. The courts, however, have settled on something in between by recognising Powley criteria – those who self-identify as Métis, are connected to a contemporary Métis community, and have ancestral connections to a historic Métis community (see *R. v. Powley* [2003]).

The Royal Commission on Aboriginal Peoples (RCAP) – an inquiry established by the Government of Canada – align with those who share the belief that there are possibly, and even probably, more than one 'people' who can claim to be Métis. The Commission's 1996 report indicates that the historic Red River Métis Nation is politically capable of establishing nation-to-nation dealings with the Canadian government in a similar fashion to First Nations. They also suggest that other Métis communities may develop this capability or become nations in their own right (Royal Commission on Aboriginal Peoples, 1996). This suggestion, now more than 25 years in the making, opened the door for Métis recognition and participation. Just because the door was opened, however, does not mean that there are no individuals and groups advocating for it to be slammed shut.

Chris Andersen, a Métis scholar at the University of Alberta, is the most vocal of a few academics at odds with the courts, RCAP, and historians. Andersen (2008, 2014) vehemently contends that only those with a historical attachment to the Red River (though not necessarily from the Red River) should have citizenship within the Métis Nation. He argues that opening up Métis identity to anyone outside of the Red River undermines the history of the Red River Rebellion. Though the Powley Case (which established rights for all Métis across the nation) was fought and won by the Métis Nation of Ontario, Andersen (2014, p. 54), an academic who knows how to pack punches, states that some claims of Métis-ness outside of Red River seem like, 'evidence of post-hoc., racialized pilfering of Métis Nation rhetoric.' Hele (2008), however, (as quoted in Andersen 2014) contends that 'mixed-race' communities outside of the Red River are justified in identifying as Métis since being Métis is grounded in mixedness and historical distinction from tribal

communities. Because these forces were at play in communities outside of the Red River, it is sensible that those descendants should also self-identify as Métis.

While a few participants in this research project noted a genealogical connection to the Red River, the majority did not. Most Métis participants had spent their entire lives in northern Ontario. Several participants highlighted the differences between Red River Métis and Great Lakes Métis through 'carts and canoes; bison and beaver.'[45] Moreover, the Métis I spoke to were so much more than simply descendants of rebels. While some were proud of a heritage that fought, and still fights, for Métis recognition and rights, others have suffered from fear and shame in their identity. By restricting 'Métis-ness' to the Red River, it seems Andersen is conflating ethnogenesis with civil unrest. It is, however, short-sighted and narrow-minded to view Métis across the country through only the lens of conflict. It is also unfortunate, in light of historical misrecognition, that Andersen and others would categorically reject the identity of the Upper Great Lakes Métis. Murdock (2018) acknowledges that there is profound psychological harm in being told that you, either as a group or individually, do not exist. Though Esme Murdock makes this claim in reference to Australia's Indigenous people, ethnographic interview responses in this research suggest that her assertions apply to the lived Métis experience. Moreover, data from this project indicate that the hurt and harm are just as profound, and in some cases,

[45] Red River carts were frequently used as a mode of travel for Métis in the western plains during the 19th century. During this same period, and earlier, Voyageur canoes were used for travel and trade by Métis around the Great Lakes. While western Métis were hunting and trading bison, Great Lakes Métis were trapping and trading beaver.

more profound, when misrecognition is derived and fostered from within your own extended community.

Notably, while inclusion criteria for Métis citizenship were often cited as a source of contention, exclusion criteria were not. One resounding theme throughout the interviews was that having a distant Indigenous ancestor in the family tree does not make you Métis. The majority of participants – Indigenous and non-Indigenous – concede that it is unacceptable for individuals to find an Indigenous ancestor or two and then claim to be Métis. Conversely, participants recognised the right of individuals to connect with their heritage after being separated from it because of systemic injustices. The injustices mentioned most frequently included the Sixties Scoop,[46] residential schooling, access to employment, and systemic discrimination. One comment on the Sudbury Métis Citizen Facebook page in 2022 stated, '*My grandfather's public denial of his Indigenous heritage didn't save my dad from being called an Indian, but it did save him from enduring what my grandfather endured in residential school. That's not a choice. And it's not privilege. The political preoccupation with the odd 'pretendian'[47] is very misplaced energy as far as I'm concerned.*'

4.4.2. The Métis Homeland

In 2018, upon the urging of the Manitoba Métis Federation, the Métis National Council released a controversial map of the Métis homeland (Figure 4-4). Six of the seven historic

[46] The Sixties Scoop is a term coined for the period from the mid-1950s to the 1980s when policies allowed child welfare workers to take "scoop" Indigenous children from their families and be placed for adoption by White families.
[47] 'Pretendian' is a derogatory term used to describe a person who has falsely claimed Indigenous identity.

Ontario Métis communities were notably absent. Even Sault Ste Marie – home of the Powley's and the court-recognized 'Powley criteria' for national Métis rights – was missing from the map. One participant at Participant Observation Event #6 spoke about how Métis followers of Andersen's controversial rhetoric once snubbed her at a national meeting. She noted, '*They should be ashamed of themselves behaving like that! I suppose they think Métis just landed in Manitoba by spaceship*!' The overall consensus among participants was that some western Métis had forgotten their Great Lakes relations and that the derision reflected more poorly on those who ascribed to Andersen's beliefs than those being derided.



Figure 4-4: The contentious Métis Nation homeland map proposed by the Manitoba Métis Federation *(source: APTN, 2018)*

Métis Nation of Ontario, President Froh, responded to the map's release by saying, '*a few individuals are trying to ignore and rewrite history… We will not just stand by and let this*

happen' (MNO, 2020). Some of the history Froh is referring to involves Brown's work (1981), which demonstrates that second-generation Métis began to establish families in 1809 and that 87 per cent of the 84 households in Michilimackinac (Lake Michigan/Lake Huron) were Métis (also refer to Peterson & Brown; Dickason et al.). Dunn (1982) maintains that, because of the active fur trade, the entirety of the Upper Great Lakes was populated by Métis communities as early as the late 1600s. If there was any doubt regarding Métis and First Nations distinction surrounding the Great Lakes, the 1840 Penetanguishene Petition lays it to rest (refer to Appendix VII). The 'halfbreed' petitioners, including my own 5th great-grandfather, indicate that the Métis of Lake Huron felt they were treated unfairly compared to the area's First Nations (Indian Affairs Record). Most Métis participants in this project contend that while it was assumed their ancestors had headed west or assimilated in Ontario, they really just hid.

President Froh also emphasised that the MNO has a role in being the 'eastern wall' against groups claiming Métis rights in Quebec and the Maritimes (MNO, 2023). Interestingly, the MNO's Statement of Prime Purpose (adopted in 1993) confirms the Métis Nation Homeland does not include Quebec or the East Coast. Froh continues, '*We share these concerns about 'self-Indigenization' and frivolous 'Métis' claims being made in the traditional territories of other nations. However, denigrating the MNO and the Métis community recognized in Powley only emboldens these 'Métis' groups. We should be working—together—on these issues, not undermining the credibility of the MNC by taking positions that ignore our shared history*' (MNO, 2023). While all of my participants were adamant about the existence of historic Métis communities in Ontario, particularly around the fur trading routes of the Great Lakes, they were split about Ontario being the 'eastern

wall' of Métis rights (as President Froh stated in her response to the map). Some participants in this project believed that Métis east of Ontario were 'phonies', while others strongly believed they could find evidence to prove otherwise.

4.4.3. Citizenship Shifts in the Métis Nation of Ontario

As discussed, provincially and nationally recognised Métis organisations have clear citizenship inclusion criteria, which brings legal recognition to an individual. In practice, legal recognition grants constitutional Aboriginal rights. Obviously, it is much easier for a Métis individual to live a traditional Métis lifestyle of hunting, trapping, and fishing when they can exercise Aboriginal rights. But some Métis individuals dispute the criteria – some claim it is too broad, while others contend it is too narrow. At various points in history, the term 'Métis' stood as a catch-all phrase for anyone with mixed Indigenous and European blood. Nevertheless, national and provincial Métis organisations have pushed back hard against this concept, highlighting the distinctions between Métis and their departure from both their First Nations and European roots.

Both provincial and federal organisations now strictly police the distinction between Métis and non-status Indians by utilising the Powley criteria. Individuals who do not meet Powley criteria cannot obtain citizenship within their provincial association (under the federal umbrella association), so they cannot obtain a Métis card or harvester card, thereby prohibiting them from hunting. By policing citizenship so heavily, the provincial bodies (under the federal MNC umbrella) wish to establish firm boundaries for government recognition of section 35 rights. Thus, though Métis identity was somewhat

fluid in my conversations with interviewees, it is very rigid under provincial and federal Métis bodies.

Citizenship to all who claim to be Métis becomes contentious when provincial Métis Registry Criteria[48] is applied. Métis participants in this research project did not have to be citizens of the MNO (self-identification as Métis was the only requirement); nevertheless, all Métis participants, at some point during their interviews, referenced either their status, lack of status, or shifting status within the MNO. The reasons for wishing to attain Métis citizenship are as varied as the people themselves: MP10 mentioned that he applied and received a citizenship card because he wanted legitimisation of his Indigenous identity, not because he was much of a harvester. MP16 shared that he applied because it may be meaningful to his children someday.

During this project's literature and research phases, the Métis Nation of Ontario was placed on probation by the Métis National Council to review their registry files for each citizen.[49] Any citizen without documentation to verify their Métis genealogy was given a timeframe to submit evidence that would complete their file. While some Métis participants felt the registry review was a necessary and important step forward for MNO legitimacy, others felt it was demeaning and hurtful. One participant noted that the only piece of documentation missing from his citizenship file was his late mother's birth

[48] At the beginning of this project, the Métis National Council was the umbrella organization and the representative body for the Métis Nation of Ontario (MNO), the Manitoba Métis Federation (MMF), the Métis Nation Saskatchewan (MNS), Métis Nation of Alberta (MNA), and Métis Nation British Columbia (MNBC). The Manitoba Métis Federation (MMF) withdrew from the MNC in 2021 over disagreement about how the Powley Criteria was being applied.

[49] The MNO initiated a multi-year citizen Registry Review in 2017; as of September 2021, 80% of the 26,710 citizenship files reviewed were deemed complete (MNO, 2022a). The remaining 5,390 citizens with incomplete files lost their Métis cards and rights.

certificate, which would have established genealogical continuity from him to his Métis ancestors. He said that many in the local community would remember his mom and vouch for her ties. He thought it tedious and 'silly' that he would require a paper trail after so many years, particularly when Métis tradition is through story and sharing, not scribed text. As MP02 said, '*All of a sudden, you're not Métis! That's just so humiliating. It pulls your soul back. And all because you don't meet colonial criteria.*'

Losing MNO citizenship was viewed as a loss by a number of participants on multiple levels. Without MNO citizenship, an individual loses their link to the Métis National Council, the national Métis political organization, and all the associated rights that go along with it, including harvesting rights. As with any loss, feelings about the MNO's recent registry update and suspension of thousands of incomplete citizen files were met with a range of emotions. Some participants expressed feelings of shame, anger, and sadness, while some were ambivalent. Other participants, mainly those who had complete files and did not lose their citizenship or cards, expressed a feeling that the registry revamp was necessary for governments and mainstream Canada to take their claims of indigeneity seriously.

MP12 spoke at length of the days when '*Sudbury was the best*!' She spoke about the time before the registry review when '*Sudbury had a lot of Métis citizens*,' and thus, a lot of successful community events with large turnouts. However, with the registry review, she stated that many community members lost citizenship, and morale was low, even among those who retained it. She fondly recalled a time when Sudbury community events would attract 300 or more people and sadly confessed that comparable events today might

attract 30 to 50 people, adding, '*And it's always the same 30 to 50 people*.' MP01, a community Elder, shared similar sentiments, saying that she felt the Métis community in Sudbury needed '*time to heal*' before coming together again. MP01 had been stripped of her citizenship for having an incomplete file and was quite distressed about it. While she was sad and angry that her citizenship was revoked, she insisted the loss did not make her any less of a Métis. In an effort of contrition or simply of keen interest, she became heavily invested in her Métis genealogy and had walls of hand-written charts capturing her ancestry.

During the review, MP18 was visibly hurt and angry when talking about his lost citizenship. He recounted all the time and energy he had given to the Métis Nation of Ontario and felt his lost citizenship was '*a slap in the face.*' He stated that his lost citizenship was due to the fact that his genealogy did not connect to one of the seven historic communities. '*Did they forget that our ancestors were voyageurs? We weren't static; we didn't stay in one place. We travelled canoe routes!*' In a separate conversation with MP18 at a later date, he confided that he had applied for his Indian status card. Like MP07, he qualified for Indian status, though he would have preferred to 'stay Métis' had it been an option. But while MP07 had the ability to choose her Indigenous identity (First Nations or Métis), MP18's option to choose was rescinded by the MNO review.

Interestingly, the topics of identity, indigeneity, and inside politics were not acknowledged or referenced in my interviews with industry leaders and academics. Indeed, Métis identity was almost entirely an 'insider' issue in this project that garnered little attention outside of Indigenous participants. From a mainstream Canadian perspective, Métis identity is

downright confounding. RP01, a human geographer, upon a brief discussion of identity politics, likened the indigeneity issue here in Canada to his work in Nigeria, saying, '*There are hundreds of groups in Nigeria; Canada is a bigger territory, but it is just as complex linguistically and culturally. Sometimes, I am amazed that we all get along as well as we do, but it's a muddy situation*.' Most non-Indigenous participants, however, did not feel it was their place to weigh in on Indigenous identity politics.

Further, non-indigenous participants were often shocked and confused when they learned that Métis are not granted the tax exemptions, education, housing support, and other benefits afforded to First Nations under the Indian Act. A common refrain regarding Métis identity from non-Indigenous participants was, '*So, why bother identifying as Métis without the perks of being Indigenous*?' The thought behind the comment acknowledges that identifying as Métis sets an individual up for all the discrimination associated with being Indigenous without any of the social supports. It also highlights that more work needs to be done to show Métis culture and identity in a positive and productive light.

First Nations are the dominant Indigenous voice in Canada today and certainly were the dominant (the only) Indigenous voice in the Sudbury Soils Study. Dotson (2011) notes that dominant societies tend to silence communities suffering injustices. While First Nation communities have irrefutably been silenced by government, corporations and affluent settler communities in the past, and at times, today, the perceptions of some Métis participants were that either purposely or inadvertently, First Nations have shifted from the silenced to the silencers. While perhaps imperceptible to most Canadians, the plural-tiered indigeneity created by the government and perpetuated through lateral

oppression is deeply damaging to the identity of the less dominant community, in this case, the Métis.

This damage speaks to Canadian philosopher Charles Taylor's (1989, 1994) conceptualisation of recognition, whereby Hegelian logic is invoked to suggest that misrecognition can cause psychological harm and undermine a person's ability to develop authenticity. Taylor (1989, 1994) made considerable strides linking 'recognition' to identity in the 1980s and 1990s and described three forms of recognition: common dignity, uniqueness, and individualities. The entire Métis Nation has a deep history of advocating for equal representation and common dignity in society. It is the cultural uniqueness and the fostering of distinct relationships that communities within the Métis Nation still struggle against. Coolsaet and Néron (2020, p. 55) state that 'we do not define ourselves in a societal vacuum,' and indeed, there is evidence that there is a certain degree of societal pressure for Sudbury's Métis to perform and operate at just the right level of 'Métis-ness'. Life outside of the invisible yet narrow parameters can lead to a misrecognition of sorts with substantial social and political implications (discussed more thoroughly in terms of procedural justice in Chapter 6). Though Nancy Fraser (2001) rejects this conceptualisation of recognition and contends that it is akin to victim blaming, it was evident in this project that the subjective experiences of each participant were clearly influenced by the perceptions of those around them.

4.5. Discussion of Findings

Evidently, Métis identity remains somewhat unfixed and ambiguous despite a revised Constitution, criteria for citizenship inclusion, and extensive debate. Employing aspects of the Hegelian identity model, and in keeping with Taylor and Honneth's concepts of identity recognition, I have noted evidence of harm and distortion of self in Métis participants who feel misrecognised and devalued by dominant players. But contrary to available decolonial literature, 'dominant' players were not necessarily colonizers, settlers, government or industry. While it was obvious that past government dealings – or rather, lack thereof – with the Métis were rooted in forms of misrecognition stemming from 'unworthiness' (Honneth, 2003) or 'invisibility' (Fraser, 2000, 2001), oppression in the form of misrepresentation and misrecognition was also observed from within pan-Indigenous and Métis organisations. Indeed, this more recent form of misrecognition was more central to participants' concerns regarding recognition. This observation speaks to the need for a greater understanding of regional nuance between Métis peoples across Canada. Without this understanding, the black thread – the dark era of Métis suppression – is not a historical legacy, but an ongoing contemporary reality.

If we position perceptions of Métis identity on a spectrum, there is Chris Andersen on one end and the Royal Commission on Aboriginal Peoples (RCAP) on the other. Andersen (2008) maintains that a connection to the Red River is the basis of being Métis. The Royal Commission on Aboriginal Peoples (RCAP) takes the stance that there may be more than one Métis people, just as there is more than one First Nation (Royal Commission on Aboriginal Peoples, 1996). Decoloniality literature acknowledges that conformation to modernity can harm Indigenous peoples. However, while it may seem unorthodox for

Indigenous peoples to access Western courts to prove identity and rights, the Métis have been in positions where courts of law seem to be the only way to challenge the government and establish rights (Nichols, 2003). These legal endeavours, therefore, should be seen as fights for recognition and equality. Further, provincial governments generally do not recognise Métis harvesting rights until they have been established in the courts. Even then, Métis harvesting rights are tightly bound by locality and regional recognition.

The approach to Métis claims has primarily been through perseverance and key legal decisions. The Powley case, naturally, is the most successful Métis legal case utilizing section 35; moreover, Powley criteria have allowed the Métis to be seen as a legitimate and recognisable identity in the eyes of the government and the Canadian public (Devine, 2010). Nevertheless, even with Powley criteria established, debate regarding Métis identity ensues. The participants in this project preferred but did not require legal approval or validation to know that they were Métis. That said, when participants' legal identities clashed with public understanding of what that identity should entail, there seemed to be some hurt and cognitive dissonance, at least in the short term. While some grieved the loss of their legal recognition subsequent to the MNO registry review, it did not change their perception of themselves as Indigenous. Thus, legal recognition is a requirement when practising some rights, but it does not necessarily secure identity in people's minds. The categories of First Nations, Métis with citizenship rights, Métis without citizenship rights, and Métis with lost citizenship rights are therefore meaningful in a legal and political sense but also, in some cases, damaging at a personal level.

Being Métis in Sudbury, as demonstrated in this research, is more about a feeling of belonging. This belonging translates to simply doing normal things with people who do them, too. Often, these things include harvesting – fishing or hunting deer and moose to fill the freezer for winter. Other times, particularly among women, it might include beading, sewing, and crafting. The desire and ability to hunt, fish, and trap the way generations of their families always have is less about symbolic claim to an organisation or government and more about a practical claim to continue a traditional way of life.

Decolonising power and knowledge necessarily involves respecting different cultures, epistemologies and forms of knowledge. Decoloniality literature rightly addresses the material and cultural injustices of Indigenous peoples. It rarely, however, focuses on deconstructing levels of power from within a single racial, political or social category. Yet, the Métis participants of this project often had to reconcile with several such layers: Métis, not First Nations; Upper Great Lakes Métis, not Red River Métis; MNO citizens, lost citizenship. These 'sub-categories' of indigeneity can mean that one category is, intentionally or unintentionally, bestowing an injustice on another by failing to recognize their cultural identity. Though Fraser (2000) has not explicitly addressed environmental injustices, she identifies the need to stymie cultural misrecognition. Responding to the hierarchy of Indigenous rights requires a multi-faceted approach to dismantle identity politics and restore the depth of the Métis spirit.

5. MÉTIS ENVIRONMENTAL INJUSTICES ON THE LANDS AND WATERS

5.1. Introduction

The colour blue is commonly associated with the sky and water, and to some Métis, the blue threads in the sash represent their connection to both. As blue skies and blue waters meet green land (as represented by the green threads of the sash), the Métis are reminded of the interconnectedness of nature and the Métis relationship to their fertile environments. The Métis peoples' resolve to retain this connection is as strong today as at any point in history; if this connection is lost, their way of life is lost. This chapter argues that dispossession of lands and waters because of pollution and inaccessibility uniquely impacts the Métis and their ability to practice traditional ways of life.

Richmond and Ross (2009) refer to environmental dispossession as ‘the processes through which Indigenous peoples' access to their traditional environment is reduced’ (p. 403). The processes they refer to are broad, including matters from forced displacement and land disputes to environmental contamination. Because I argue that the Métis are distinctively and disproportionately impacted by industrial contamination in this project, environmental dispossession can be examined through a justice lens. Though mining has brought jobs and resources to Sudbury's local economy, the benefits and burdens have not been equally distributed. Many of the inequalities rest on the fact that the Métis rely on the land for nourishment and medicine, and when the land becomes inaccessible – whether from privatisation, roads, industrial extraction or pollution – the Métis can no

longer practice their traditional way of life. This lack of access to healthy harvesting grounds can arguably be considered a form of environmental injustice.

Though Region 5 Métis have the right to harvest and subsist on what is known as Crown land in the area,[50] when Crown land is encroached upon by development, returned to First Nations (as a justifiable form of reparation), or otherwise difficult to access, the Métis are forced to trap, hunt, fish, and harvest on private or Crown lands in closer proximity to Sudbury's smelter damage. This chapter documents how this position is unique to the Métis, who have Aboriginal, but not treaty rights. Unlike their First Nations kin, the Métis do not have treaty territory, and therefore harvesting mobility in some parts of the province.[51] Additionally, and in contrast to non-Indigenous Canadians, economic vulnerability makes it difficult for Métis to afford large tracts of private land sufficient for harvesting.[52] Thus, this chapter examines the nuances behind why so many Métis continue to harvest in ecologically-damaged lands and waters, and how this situation leaves them uniquely impacted by the legacy of mining in the region.

The chapter is organised by theme and contains four major sections: the first explores Métis participants' reported importance of area lands and waters as indicated in survey results. The second section discusses regional water issues (blue threads) in terms of

[50] Refer to the Métis Nation of Ontario (2023b) Harvesting Policy: https://www metisnation.org/wp-content/uploads/2017/03/commission-booklets-harvesting.pdf

[51] Refer to Government of Ontario (2024) Hunting regulations: https://www.ontario.ca/document/ontario-hunting-regulations-summary/hunting-licence-information#:~:text=Members%20of%20Indigenous%20communities%20hunting,v.

[52] The Métis are reduced to economically disadvantaged due to inequalities in the labour market, including higher rates of unemployment (Arriagada, 2016; Moyser, 2017). Refer to Employment characteristics of the Métis in Canada: https://www150.statcan.gc.ca/n1/en/pub/89-653-x/89-653-x2019002-eng.pdf?st=l35pXFn3

pollution from acidification and tailings contamination, along with the impacts both have had on drinking water and sustenance fishing. The third section examines land issues (green threads) in terms of accessibility issues surrounding physical safety, contamination, and disputed land claims.

5.2. Green and Blue Threads: Importance of Lands and Waters to the Metis

The maintenance of connection to traditional lands has been shown to increase self-esteem, cultural pride, and physical health among Indigenous peoples (Berkes, 2005; Berry et al., 2010; Parlee et al., 2005). Though data in the literature is gleaned primarily from First Nations, survey and ethnographic results from this project strongly indicate that protecting culturally important harvesting areas, including travel routes, traplines, hunting grounds, and fish-filled lakes are essential to the Métis way-of-life. Unsurprisingly, the places deemed most significant to land users are often the same places most important for wildlife and fish. Beatley (1994) notes that distributional outcomes are inherently related to land use policies. When land use policies (as discussed in Chapter 4) constrain Métis harvesting, one of the effects is a deprivation of the capabilities allowing Métis opportunities to 'flourish' (Sen, 1999b, p. 1). This concept of 'flourishing' was explored early in this project's research when Métis survey respondents were asked to what degree different aspects of traditional ways were valued (Table 5-1) and to what degree mining impacts their daily lives (Table 5-2).

Table 5-1: Results from the question: How important do you think the following items are in maintaining the Métis way of life in Sudbury?

	Very Important	*Important*	*Total/n**
Harvesting	28	6	34/34
Habitat Protection	30	2	32/34
Teaching	26	4	30/32
Medicine	25	4	29/33
Spirituality	24	4	28/32
Ceremony	23	5	28/32
Recreation	19	9	28/31
Language	16	10	26/31

**Total number of respondents to claim that the item was 'very important' or 'important' / n (total number of respondents who answered the question)*

Table 5-2: Results from the question: What is your perception of mining impacts on Sudbury's Métis way of life in terms of the following?

	Very Negative	*Somewhat Negative*	*Total**
Hunting / Harvesting	9	15	24/30
Fishing	10	12	22/30
Water Quality	10	15	25/31
Trapping	8	13	21/30
Berry Harvesting	7	13	20/30
Medicine Collecting	5	16	21/30
Firewood Gathering	2	14	16/30
Camping	2	15	17/30
Ceremony	3	11	14/30
Teaching	3	11	14/29
Recreation	4	10	14/29

**Total number of respondents to claim that the impact was 'very negative' or 'somewhat negative' / n (total number of respondents who answered the question)*

In this initial research questionnaire, thirty-one of the thirty-five respondents claimed to regularly use private or Crown land for harvesting or cultural purposes. While careful not to draw conclusions from such a small sample (Lenth, 2001), it is quite evident that respondents considered harvesting important to maintaining the Métis way-of-life. Importantly, harvesting was also deemed negatively impacted by mining by most respondents. Entries corresponding to harvesting, such as habitat protection and water

quality, also ranked highly as top concerns. In the words of MP05, '*We have more a more of a vested interest in the wildlife, in the forest being usable, in the fish population, and the moose population, and everything thriving*.'

Plants, fish, and wildlife, however, have not always thrived in Sudbury. During a public lecture, RP02 shared, '*My first job was with the Ministry of Natural Resources in 1978… I had never been to Sudbury, and we arrived on a Thursday night, everything was black, dark, and cold; as the evening went on, my new wife was giving me quite a rough going over that this was a bad decision. I promised and I promised several times over that it would only be for a couple years and then we could move somewhere nice. We had estimated that it would take over a thousand years for the natural processes to eliminate the stress of metals and acid in the lakes. Our real goal was to prove that a reduction of emissions through dealing with the source could clean up damaged ecosystems…We had 7000 damaged lakes…The scale of the work that was involved, it was enormous. We should have given up and said it was hopeless. We were looking up at the tallest smokestack then in the world spewing out the most sulphur of any place on Earth*.'

While the 2008 Sudbury Soils Study results were expected to assuage community apprehension, the conclusion that 'no harm is occurring' generated doubt and speculation among some community groups and Indigenous peoples:

When you affect one thing, you're going to affect everything above that species, so it's just, it's the whole food web. So, of course, as Métis, if we fish, if we eat anything from the land or the water, then we're impacted too. So, of course we should have a say in all this [impacts and restoration]! (MP15)

Some researchers look through this little pinhole at one little thing, and they're not looking at the big picture [meaning an ecosystem approach]. And I'm like, you guys [industry, government, academia] are wasting millions of dollars, probably billions of dollars, with all this patchwork of research not looking at the big picture. (MP08)

When mining companies go into the bush, they don't close these spots. Look around the old Murray mine site and see that nothing grows around there. To this day, nothing grows on that site. You would think that there would be some trees growing by now. Companies just rape our forests. (MP18)

Unsurprisingly, the suspicion among Métis participants that they are experiencing health impacts from a century of toxic emissions was a consistent thread throughout this research. There is obvious concern that the Métis way of life – a way of life dependent on healthy ecosystems and functional food webs – faces impacts from Sudbury's legacy of contamination.

5.3. The Blue Thread: Water

As examined throughout Chapter 4, the Métis of the Upper Great Lakes define themselves by the waters their ancestors once traversed as voyageurs. This heritage continues to resonate deeply with the Métis, and many participants spoke about the importance of water to their wellbeing:

The Anishinaabe say, 'water is life' and that is true. But to us [Métis], water is our history; it's what defined our ancestors as voyageurs. Water is everything to us. (Participation Observation Event #8)

So, we know hydrological cycles now and watersheds now. Everything that happens in a watershed affects that watershed, in terms of contamination and everything, through animals and plants and to us. So, that's why I am concerned. Water is a big concern. (MP16)

Similarly, restoration practitioners describe the importance of healthy lakes to Sudbury's national reputation. Sudbury, a city of more than 330 lakes, prides itself on its abundance of fresh water and the recreational pursuits that the lakes provide. Nevertheless, the lakes

continue to contend with legacies of acidification and contamination and Indigenous peoples, as those who spend vast amounts of time harvesting in the waters, are acutely aware of ongoing issues. This section examines Sudbury waterways from their early days of acidification to a frequently cited concern among the Métis – tailings and associated leaching. The section concludes with an assessment of how concerns regarding drinking water and fish consumption potentially impact ways of life.

5.3.1. Acidification of Sudbury lakes

While the damage to Sudbury's forested landscape during the latter half of the 20th century was widely reported (Winterhalder, 1995, 1996), Sudbury's lakes were also some of the most polluted in the world (Gunn, 2012). When Beamish and Harvey (1972) noticed that acidification (via atmospheric deposition) was causing widespread loss of fish species in the area, a monumental effort of investigation commenced in Sudbury's scientific community.

The devastation was just so widespread…In terms of size for you: that's the size of Hong Kong, reduced to just a blackened wasteland. And I'm an aquatic ecologist, so I have to count the dead lakes as well. Others would say, 'Well, you only killed 50 per cent of them.' 7000! Fifty per cent represented 7000 lakes in the region, 7000 lakes reduced in their acidity to the point that biological life was damaged... We started to see the [isotopic] signature of Sudbury in Greenland and in Mexico. We started to hit the heart of North America; we started to damage the recreational lands of Ontario and all of Canada – the Adirondack Park, Killarney. Muskoka fish started dying in the late 60s and early 70s. (RP02)

I remember Killarney. I went on a canoe trip there in the 70s and there was not even a bug on that lake. Your canoe could cast a shadow on the bottom of the lake. So acidic. So dead. (RP04)

The aim of Sudbury's scientific investigation was to research acidification, monitor lakes, and propose plausible solutions for aquatic recovery. With its unique geological features,

Sudbury is a diverse region where its ability to buffer against acidification is highly variable. As part of the Canadian Shield, Sudbury has large areas of granite that cannot effectively neutralize acidic fallout (Hutchinson & Whitby, 1977). Compounding this problem is the fact that Sudbury also has a history of logging, erosion, and wildfires (Saarinen, 2013). On what little soil is left, there are few adequately vegetated buffers[53] to guard lakes against runoff. Figures 5-1 and 5-2 display an unhealthy and healthy vegetative lake buffer, respectively.



Figure 5-1: New home development on St. Charles Lake ignoring the 40-foot vegetative buffer bylaw *(source: author, 2021)*

[53] Riparian and vegetative buffers are transitional areas between aquatic and terrestrial habitats which have become a major focus in environmental restoration because of their ability to protect water quality and host wildlife habitat (Fischer & Fischenich, 2000).

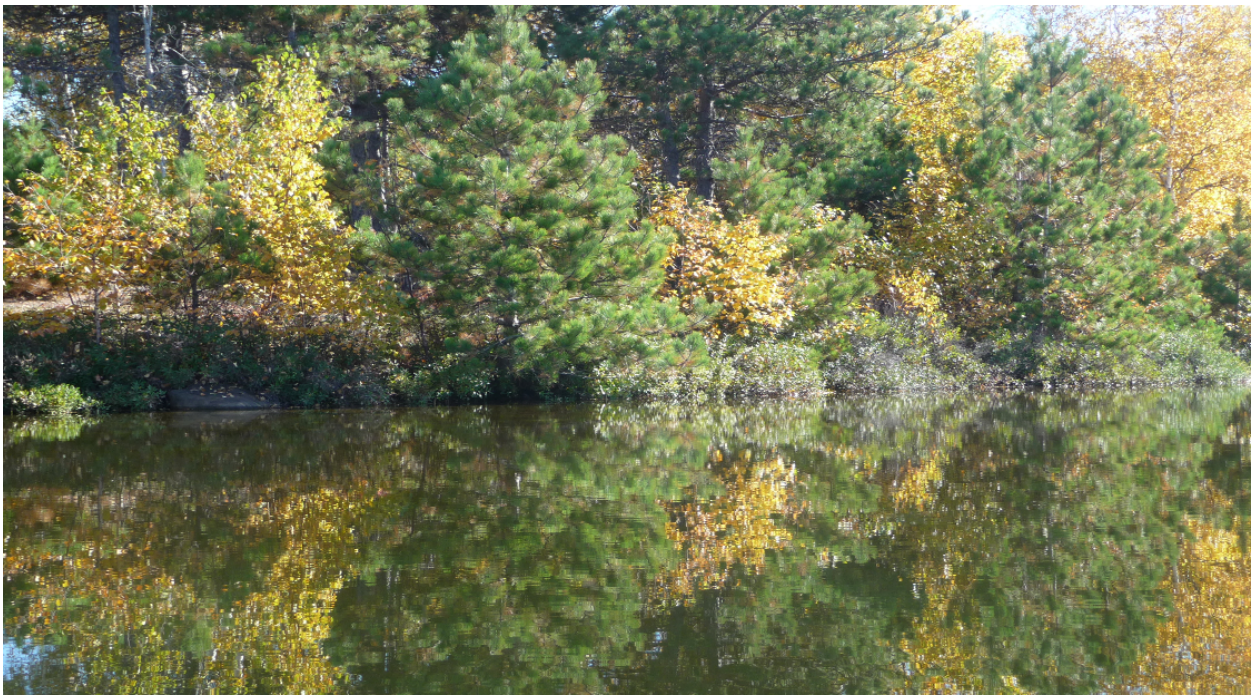


Figure 5-2: A healthy vegetative buffer on St. Charles Lake *(source: author, 2023)*

Predictably, the most acidic lakes (pH < 6.0) are near the smelters. Silver Lake and Lady Lake are prime examples of chemically damaged lakes in close proximity to smelting operations. Distance alone, however, is not the only mitigating factor; RP02 noted that some lakes most proximate to the smelters were never acidified, despite their heavy exposure to fallout and fumigation of watersheds. It seems larger lakes with longer flushing rates[54] (such as Ramsey Lake – Sudbury's main drinking water source) are more resilient to acidification (Pearson et al., 2002). Furthermore, complex watershed interactions and lake chemistry seem to play a role in lake recovery (Keller et al., 1998).

[54] A lake's flushing rate is a term used to describe the time to renew a lake's water volume and is calculated by dividing the lake volume by the outflow rate (US EPA, 1981).

Algae records of Sudbury lakes indicate acidification beginning around 1930 and intensifying until the 1970s when recovery began (Pearson et al., 2002). Since then, general trends indicate patterns of chemical improvement for area lakes. Biological changes have been accompanying chemical improvements in the region, albeit at much slower rates. These trends are primarily due to local emission reductions at smelters, but scientists are also noting that if you treat and remediate the land, you restore the water, too:

It was a surprise that there is such an association between land and water. Healthy land can mean healthy water. Liming showed us that. The last acidic lakes in the region are gone. Nellie and Grace [lakes] in Killarney are still a bit acidic, but not overly. Interestingly, the closer the lake is to Sudbury, the faster the lake recovers. Again, this is because microbes use the sulphur as fuel. We are the longest-running acid rain monitoring site in the world at Clearwater Lake. And this lake is far from any area that's been limed. This is natural recovery. It hasn't been treated. No treatment around it. And development around it has been limited. What we found is that microbes did the cleanup for us. It was an air lake (no liming). Still, microbes used sulphur as their energy source and became the fuel for the cleanup. Now, anything can live in that lake. (RP02)

While some lakes, such as Clearwater Lake, have seen recovery without the addition of lime, acidified lakes that have been repeatedly treated with powdered limestone to neutralize acidity have responded positively with increases in alkalinity and decreases in metal concentrations (Pearson et al., 2002). Researchers note that more extensive liming of catchment areas will inevitably improve runoff water quality and, eventually, lake water quality. Though a data gap remains on how area lake water quality affects residents, it has been documented both anecdotally and scientifically that acidified lakes cannot support a wide variety of aquatic life (Angeler & Johnson, 2012; Keller et al., 2019). This

is due partially to poor water quality but also to biomagnification.[55] One Métis participant at Participant Observation Event #2 mentioned that following Sudbury's acidification, he noticed the crayfish disappeared first, followed by fish, amphibians, loons, and other birds. Other Métis participants are so distrustful of industrial water quality reports that they collect and test the lakes and creeks themselves. In the words of MP02, '*There's certain [Métis] people that really care. I call them' traditional people' because they care about the water. So, they don't have to sit on a committee; they go by themselves and take water samples and then complain to the company that's supposed to clean it up.'*

5.3.2. Tailings as a top concern

Of all the hazardous waste produced throughout mining and processing phases, tailings – waste material produced after the ore is separated by milling and flotation – are considered the largest primary source of contamination associated with extraction (Salomons & Forstner, 1988). Mining industries in Sudbury produce several million tons of tailings each year, and a large amount of this waste is stored in surface tailings ponds (Peters, 1995). (Refer to Figure 5-3 for an image of Sudbury's south end tailings ponds.) In addition to acid mine drainage issues, as tailings dry, they produce serious dust problems (Peter, 1995). Unsurprisingly, tailings waste was the top concern among Métis survey respondents, with all thirty-five participants ranking tailings as a threat to the Métis way of life in Sudbury (twenty of the thirty-five respondents ranked them as a 'very high' threat). MP17 was so concerned that his trapline was contaminated by tailings leach that

[55] Biomagnification occurs when xenobiotics substances (such as metals, chemicals and other toxins) transfer from lower trophic levels to higher trophic levels within a food web, thereby resulting in higher concentrations in top predators (Gray, 2002).

he delivered a bucket of sand for me to test. Knowing that I performed the occasional water and soil sampling for a local stewardship committee, he asked me to do whatever analysis possible. While my relatively rudimentary testing kit limited me, I did find high levels of iron in the sample.

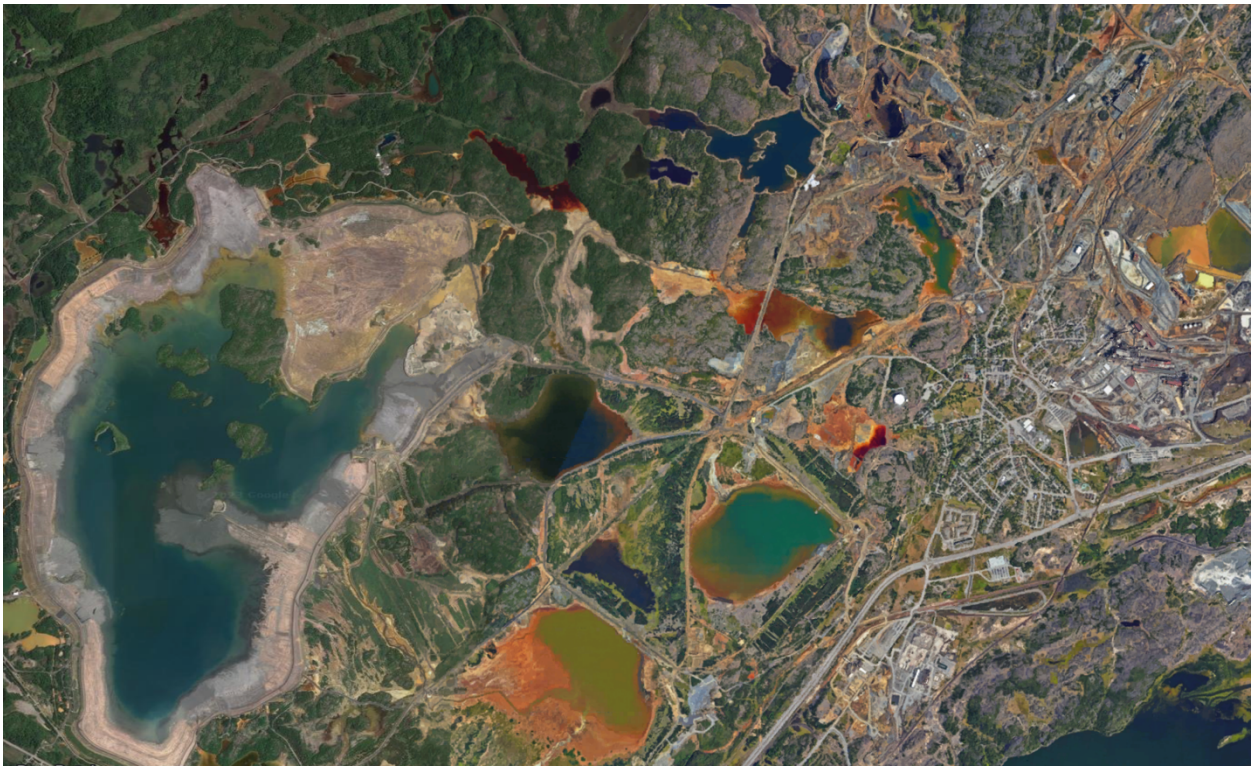


Figure 5-3: The massive scope of Sudbury's tailings ponds in Sudbury's south end
(source: Google Earth, 2023)

MP17 offered his opinion, *'We're ignorant about tailings and their leaching. I've seen dead geese floating in those [tailings] ponds. And then other people are hunting and eating them after they've landed in those ponds!'* My observations in ethnographic interviews, however, were that participants were actually quite aware about potential threats from tailings ponds.

MP05 suggested that the biggest concern for governments and industry present ought to be the cleanup of tailings waste:

Well, the cleanup of the tailings is the biggest [issue]–and I don't know how they go about doing that–but when they close a mine, all they do is the fence off this huge area, right? And they just leave it there, and it doesn't mean that those tailings aren't still leaking into the adjacent creeks and to the adjacent lakes. I've shot behind Levak [tailings] ponds; like, we've shot a bear close to the tailings, and he had some green on the legs on him, so I don't know what happened there, but there's animals that go in those tailings. So, that's [cleanup] what we got to do. Because you don't know what you're ingesting. That goose or duck can fly over to the next three [tailings] ponds over and there's hunters (could be even myself) hunting. So, you never know. As long as those tailings are not cleaned up; and I mean cleaned up, not just contained! What they do now is just contain it and let it settle and dry up. Well, that's not cleanup... You still got that orange sludge (see Figures 5-4 and 5-5), that mud leaking that stays there forever.



Figure 5-4: A tailings pond in the south end with its trail of 'orange sludge' across from an elementary school *(source: Google Earth, 2021)*



Figure 5-5: Copper Cliff tailings leaching into spring runoff *(source: author, 2020)*

The concern regarding tailings, however, extends beyond threats of leaching. In light of the Brumadinho tailings break at Vale's Córrego do Feijao mine in Brazil in 2019 (Hoskins, 2024), and in consideration of the billion tons of similar tailings sludge in Sudbury, the Métis and Sudburians at large, have cause for concern. As the world watched the catastrophic live-streamed Brazilian collapse in horror, most Sudburians had a different reaction – fear. The toxic mudflow that swept away homes, farms, roads, rivers, and hundreds of lives was not just a foreign story in a far-away country; it was Sudbury's largest private employer neglecting a familiar problem. Sudburians live in the inundation zone of one of the world's biggest tailing dams. There has been much local speculation in recent years that the berm containing tailings by Meatbird Lake is simply one microburst or bad weather event from collapsing, a situation which would have catastrophic results (Figure 5-6).

See the big berm in the back of Meatbird Lake. That's holding in the tailings pond. I kid you not. I went down there two years ago, and my husband said, 'Don't go without rubber boots because there's tailings leaching in all of that area.' They keep treating them and treating them, but they always stay green. Or orange. I'm almost 59, and it's been that way forever. What's in there? That's not normal. And no trees or weeds can grow around it. Our birds and geese are landing there… And then we eat them. (MP07)

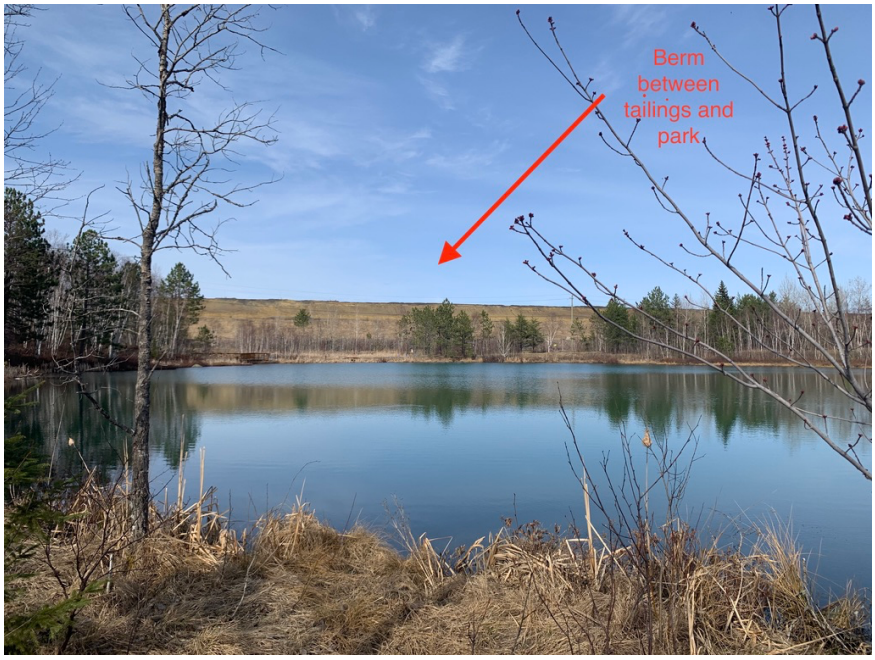


Figure 5-6: The berm separating the Meatbird tailings pond and the city-owned recreational property, Meatbird Lake *(source: author, 2021)*

In 2021, Vale purchased the land around Meatbird Lake (Figures 5-7 and 5-8) from the City of Greater Sudbury (Durnan, 2021). At the time of purchase, the mining giant stated that they were on track to initiate a ten-year tailings dam improvement and erosion control project on the property. The purchase and upcoming remediation project are essential for three reasons (Campbell, 2020):

- Seepage from the tailings behind the lake has occurred over the years; the lake requires environmental remediation;
- The company has been pumping potable water into Meatbird Lake to keep it safe for recreational purposes; it feels it can no longer do this sustainably;
- Haulage of rock to upgrade the Meatbird tailings pond (behind Meatbird Lake) is slated to begin soon; this potentially poses a public safety concern.



Figure 5-7: Meatbird Lake Park; City of Greater Sudbury recreational property
(source: Google Earth, 2021)

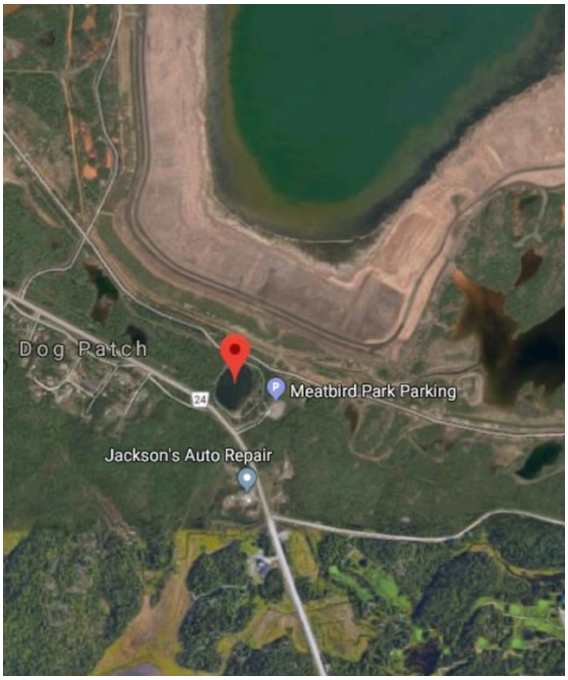


Figure 5-8: Meatbird Lake in proximity to Vale's massive Meatbird tailings pond
(source: Google Earth, 2021)

5.3.3 Drinking water concerns

Canada boasts twenty percent of the world's freshwater reserves (Statistics Canada, 2018), and Sudbury – the 'City of Lakes' – contains a bounty of this freshwater. Most City of Greater Sudbury residents consume lake water via municipal sources, whereas rural residents draw their drinking water from drilled wells or by pipe directly from a lake. While Sudbury's municipal drinking water is considered safe by Ontario Drinking Water Quality Standards, a rural Métis participant questioned the safety of her well water and lamented that tax dollars were being spent on city infrastructure rather than on reclaiming old mine sites. Citing the funding of a new art gallery as a potential source of capital towards cleanup, MP01 said, '*People say, 'Arts building – oh my gosh, I can't wait'. But they don't know that they drink poison in the water!'*

However, at least one group in the city is aware that they are 'drinking poison'. Long Lake residents, an affluent neighbourhood in the city's south end, have been lobbying governments to clean up approximately 200,000 tons of leaking tailings from a gold mine that operated in the area between 1908 and 1937 (CBC News, 2019). Acidic mine tailings and arsenic contaminated Long Lake and nearby Luke Creek from 1908 to 1937; the remediation effort is expected to restore water quality within Ontario Drinking Water Guidelines. Arsenic from the tailings has been leaking into the lake since the mine was improperly closed nearly a century ago, and in 2019, the government finally began moving forward with a cleanup that entails excavating the tailings, bringing them together, encapsulating them, and then covering it. While the Long Lake Stewardship Group were happy with the long-awaited progress, they noted, *"Contamination doesn't just affect Long*

Lake; it affects other watersheds in the area. So, it's not just Long Lake residents and Long Lake Stewardship that's concerned about this; I think that all people that live in the greater geographic area are concerned' (CBC News, 2019). Similarly, MP16 questioned why it is only the proverbial 'squeaky wheel' that has been addressed:

I think what is happening out in Long Lake, where they're actually removing contaminated soil, is a positive thing, but I bet there are a lot of other places like that in Sudbury. It's just that Long Lake tends to have a lot of rich lakefront homes, so you get the squeaky wheels, or you get people who are able to hire outside consultants to go in and say, 'what's in our environment, what kind of water are we drinking?' There are probably other places in the region where this just doesn't happen. So, I would like to see more of that. I would like to see more of an effort in identifying contaminated areas.

Investigators of the Sudbury Soils Study identified arsenic in Sudbury's drinking water as high as 4 micrograms per litre (a typical Ontario community has about 0.64 micrograms per litre); however, this finding does not exceed the Canadian maximum guideline of 10 micrograms per litre, and therefore, not flagged as a risk to human health (Health Canada, 2006). RP03, however, shared that a local workers' union once hired an external doctor to perform an arsenic study in the region. This participant stated, *'There was a Sudbury family digging in the ground, in their backyard for a pool, and they ended up with really high levels of arsenic in their blood. This was in 2004. Some doctors and scientists got involved, but I don't know what, if anything, became of it.'*[56]

[56] I could not source documentation for a 2004 arsenic report in Sudbury, however, a 2012 Ministry of Environment and Climate Change report did note arsenic in Long Lake water due to run off from the abandoned Long Lake Gold Mine. See https://www.phsd.ca/health-topics-programs/environment/arsenic/long-lake-gold-mine-arsenic/

5.3.4 Fishing Sudbury Lakes

Government documents as early as 1862 reference the 'fishing waters' of the 'Halfbreeds' in and around the Great Lakes (Miner, 2022), and while many of the ethnographic interviews with Métis participants in this project centred around hunting and gathering, fishing was also discussed as an integral part of the traditional way of life. Fishing for sustenance was almost universally reported, and many participants knew about traditional approaches to fishing, including when, where, and what to fish, as well as how to prepare it. Most of these participants, however, have avoided a Sudbury lake at one time or another due to fears of industrial contamination. Furthermore, while some lakes bustle with recreational activities such as swimming, sailing, and skating, trepidation surrounding subsistence fishing remains. Though some participants enjoy 'catch and release' fishing, most Métis participants practice fishing for sustenance even though they distrust the quality of fish harvested from local lakes. A great deal of suspicion remains about what may be hidden in the sediment, and, therefore, what is eventually infiltrating lake food webs: *'I do fish, but I don't fish in the Sudbury region anymore.'* (MP06)

Kelly Lake, a large lake at the south end of the city (Figure 5-9), has suffered substantial chemical and biological degradation of water quality due to smelter proximity (McPherson et al., 2004; Nriagu & Wong, 1983; Pyle et al., 2005; Sadiq et al., 2002). More recent reports of the lake receiving metal-rich effluent from the smelter site and treated wastewater from the municipal sewage treatment plant leave residents wary of its water quality. For example, while MP05 has serious concerns about Sudbury lakes' past pollutants, he also worries about current industrial practices of withdrawing lake water to cool drilling equipment. Presently, the practice involves withdrawing water from lakes,

using it for operations, releasing and treating it in a holding pond, and then discharging it back into a nearby creek. In his words,' *They [the mines] are saying they try to mitigate impact; they're saying there's no impact to Metis way of life because their footprint is small. True, the [amount of] water they're taking is not significant to affect the lake, the level of the lake, but the water they're putting back is actually so 'clean' that they have to put minerals back in for the fish to be able to live in it. And the water is warmer now. And we don't know, just by recycling the water into this lake, whether it's heating up the lake, whether it's going to create more worms in the bass, because you know that the lake is warmer by about five degrees than it should be.'* MP10 sums up his concerns about Kelly Lake by saying, *'Kelly Lake – I wouldn't swim there! I would never take a dip or eat anything out of there!'*



Figure 5-9: Vale superstack and smelting complex with Kelly Lake in the foreground
(*source: author, 2021*)

MP07 shared that she and some of her family members no longer eat all parts of the fish they catch in the Sudbury area, '*We used to eat everything. Nothing would go to waste. But now I don't eat the organs. It's not a good idea now. I'm sure you know this because of your Aboriginal background, but there's no waste of any animal. You eat the tongue, the liver, the heart. And people don't know that anymore. That hurts. It bothers me because it was a big deal in my family that you eat all the vital organs. Nothing goes to waste. And people still do that because that's their traditional way of doing things.'* While refraining from consuming all parts of fish or fowl was a personal decision based on her understanding of contamination in the area, there is scientific research supporting this decision. Nriagu (1983) studied arsenic enrichment in Sudbury lakes and noted that bioaccumulation of dissolved arsenic was accumulating in aquatic organisms through gill and prey consumption. As expected, the bioaccumulations observed was from anthropogenic sources and mine effluent (Nriagu, 1983). Today, the *Fisheries Act of Canada* and amendments to the *Metal Mining Effluent Regulations* require assessments of effluent effects on fish and fish habitats (Weber et al., 2008). To this end, field surveys in Sudbury's Junction Creek have shown that fish diversity and density were both reduced downstream of metal mining effluent (Jaagumagi & Bedard, 2002; Weber et al., 2008).

The extensive loss of sportfish in Sudbury lakes is perhaps the most striking example of biological damage due to acidification. Decades of high emissions and acidic runoff have taken a devastating toll on fish populations in Sudbury lakes. Those fish that did survive suffered from 'acid stress': decreased growth, failure to spawn, deformities in young, and increased susceptibility to disease (Jeffries et al., 2003). As such, natural recolonisation rates for fish are slow. Many lakes in Sudbury remain dominated by acid-tolerant yellow

perch; acid-sensitive species, such as lake trout, are rare and not necessarily reproducing (Keller & Gunn, 1995). This lack of species richness in lakes has been concerning to both aquatic scientists and Métis fishers. MP07 fondly recalled how the annual sucker harvest was an event where the family would join in together. Smokehouses, pails and nets would be set up alongside the creek and the entire family would gather to net, clean, and smoke the fish each spring. She mourns that '*there are just no suckers left here anymore*.'[57] Likewise, MP12 notes the generational changes his family has observed in the region:

My dad was a fishing guide for years, so I go with him at different times, and he shows us. We do a lot of inland lake fishing. Dad said he notices a change in how and what fish are biting, or rather, not biting.

As acid-tolerant species have become dominant, distorted predation patterns and altered community structures have occurred. For example, a 2006 netting survey revealed that 48 percent of the biomass in 12 inner zone lakes (lakes within 20 km of smelters) is yellow perch (Vascotto et al., 2006). Comparatively, the researchers noted that yellow perch occupy just 5 percent of the biomass in lakes outside the inner zone (Vascotto et al., 2006). This shift in biomass affects food webs and food chains at all trophic levels. Complicating these losses, scientific literature describes how alien and invasive species can gain footholds and potentially thrive when native species vacate polluted lakes, thereby leaving gaps in the ecosystems (Crooks et al., 2011). In recent years, Sudbury's lakes have indeed been affected by many exotic species, including Eurasian milfoil (Figure 5-10), which grow from lake bottom to lake surface and make casting a fishing line almost impossible. Most often, humans have inadvertently introduced these aliens,

[57] Indeed, range maps for both the longnose and white sucker show a noticeable gap in the Sudbury area. See https://www.ontariofishes.ca/fish_detail.php?FID=18

and as is the case in the forested landscapes, for lakes already struggling, introduced and invasive species augment the difficulties of native repopulation (Crooks et al., 2011; Gallardo et al., 2016). Ultimately, aquatic biodiversity suffers and biological recovery is inhibited.



Figure 5-10: Invasive Eurasian milfoil in St. Charles Lake *(source: author, 2021)*

5.4 The Green Thread: Land

Despite the injurious fact that very few treaties were ratified between the Crown and the Métis (as discussed in Chapter 4), the Métis have identified and secured opportunities to continue their traditional way of life on the land, albeit in less-than-ideal terms with private contracts and handshake deals with mining companies. As MP21 stated, *'Nuclear sites, mining, housing development, forestry, wildfires, roads, First Nations land claims – we're losing land every day! Where do they [the Crown] want us to go? Is it any wonder that we have to make handshake deals with private landowners?'*

Cantzler (2013, p. 69) terms this practice of private dealings ‘Indigenous tactical innovation’ and claims it is fundamental to cultural and economic decolonisation. In this regard, Métis living in Sudbury are indeed a notable example of Cantzler's concept of the power of human agency to deploy innovative solutions towards environmental justice. In Cantzler's conception of environmental justice, employing tactical strategies, such as private deals, can help improve environmental equity. There are, however, substantial concerns that must be considered when this innovative strategy is invoked in industrially damaged regions such as Sudbury. Some of these concerns are addressed in this section, including land claims, access, habitat fragmentation, and human health risks, all of which negatively impact the Métis ability to harvest for subsistence and sustenance.

5.4.1. Land Claims & Inaccessibility

While all the Métis participants in this research respectfully acknowledged the Atikameksheng Anishnawbek as the traditional occupants and signing party to the Robinson-Huron Treaty in which Sudbury resides, they also lament the difficulty of accessing lands and waters to practice Métis traditional ways. As discussed, the predicament for the Métis rests in the fact that they do not have reserves or land claims as First Nations do (Chrétien and Murphy, 2009). Métis have been displaced from location to location for centuries and must practice their traditional ways on either Crown land or private land. Crown land in the area, however, is increasingly being returned to First Nations as a form of reparation. Private land – that which is large enough to support traditional harvesting – is financially out of reach for most Métis who participated in this project. The frustration that MP02 felt was palpable, *'Where can you hunt in Region 5*

now? You have to go a long way. The price of fuel, snowmachines, 4-wheelers... The people who rely on subsistence harvesting can't afford all that.' A participant at Participant Observation Event #3 added:

We have no mobility anymore. 'Regions' – we didn't have regions [before effective control]. We were semi-nomadic. You can even look at census records and see the movements of families across Georgian Bay/Lake Huron. But now, with our harvesters' cards, we're so confined. It can be better to just ask to go hunting with a First Nations friend. Except that, with declining moose populations and land loss, they're losing out too. And they need to feed their families. I understand that, but you know, it's hard for us.

Though it is pertinent to note that the Métis interviewed have no notions of encroaching upon First Nations lands and territories, there is palpable frustration that land they have harvested for generations is increasingly inaccessible. MP02 stated, '*We were a mobile people. We harvested where we lived. But we have no mobility left now. The First Nations do; they have mobility rights. But we don't.'* MP05 echoed those sentiments when he said, *'We're not treated the same when it comes to negotiations in land claims or anything like that. And I don't know where that's stemming from, whether it's at a political level or at an industrial level. But we're not treated the same.'*

Without ample access, competition over natural resources that are perceived as scarce becomes a predictor of inequality since it motivates one group to dominate another (Healy et al., 2010). As land is increasingly encroached upon, no matter the reason, the lateral rivalry between the Métis and First Nations seemingly stirs up. During Participant Observation Event #11, a group lamented about land loss due to roads and housing; one participant stated, '*Colonial structures interrupted our hunts and harvests. And now land is scarce, so everything changes for us*.' Framing the lack of land access as an

environmental injustice exposes the constraints on the Métis who are striving to maintain traditional lifestyles. Another participant in the same group stated,

All these areas where we can and can't go. And we're told that if we're in the wrong place, we'll get charged. Well, I don't understand that. Like, we're Métis and some of us have had traplines in places for generations. But now we're not supposed to be there? Or, it's not our 'rights-bearing territory'. It's so confusing. I don't even know if it [harvesting] is worth it anymore.

While a few Métis individuals shared that they owned private tracts of land large enough to hunt and harvest, the large majority of participants had either made handshake deals with private land owners or travelled hundreds of kilometres to access Crown land. The latter group felt increasingly squeezed by the high price of fuel to access harvesting territory and were forced to wonder how long it could be sustained.

5.4.2. Land Access & Opportunities

While I expected to hear concerns about harvesting contaminated lands and waters in the ethnographic interviews (as described in section 5.3), I was surprised to hear additional issues regarding land access, particularly in terms of safety and opportunity. Many Métis participants spoke of either abandoning meaningful practices, travelling long distances to access territory, or striking deals with private land owners, including Sudbury's largest private land owner, Vale, the region's Brazilian-owned mining giant. In addition to contamination concerns, participants spoke about issues of mine expansion, safety, and difficulties obtaining permission. Though Métis have the right to harvest and obtain sustenance, the inability to access land in which to practice this right presents a conundrum unique to Métis (Figure 5-11):

I have an area where I hunt moose, an area for partridge, an area for rabbits. It's all Vale property. That's the issue with industry. It's the land that they take away… If you look out

over Sudbury, if you took away everything that Vale owns, there'd be nothing left for us to use. You'd have to go very far to find land to be able to harvest. (MP05)

Victoria Mine is the area we used to hunt. There's roadblocks there now. Signs saying 'no hunting' and maybe a guy working around the corner. So, it's safety, right? Oh yeah, I have permission to be down there hunting, but if you run into someone, it's a confrontation thing you just don't want. (MP12)

The mines have taken over. Where my son hunts, it's gated now. Well, they gave him and his little group a key, but you know, there wasn't even a road back there when I was a kid. (MP07)



Figure 5-11: Vale Property with 'No Trespassing' signage *(source: author, 2021)*

Nevertheless, despite the objections of some, several Métis participants expressed appreciation and gratitude to the mining companies for granting permission to hunt on private land. It is, however, obviously less complex and more manageable for the industry to focus on individual access permits than address the harm done to the Métis as a collective group. Reconciliatory efforts and respect for Indigenous peoples is now ubiquitous in corporate lingo across Canada; unfortunately, there is often little direction

about what this means or whom it benefits. Certainly, granting allowances to hunt and fish is a corporate feel-good initiative, but it does little to help the Métis community as a whole. Moreover, it highlights the disparity that although the Métis have attained the right to harvest, this right does not address the realities of distribution or the practicalities of opportunity. One participant suggested an idea for industry to address the Métis community's needs via financial support for traditional cultural activities instead of Christmas parties and private deals.

These guys [industry] are gonna build these mines either way. So, you got to learn to deal with them and get what's going to work and help our community, not just ask for money for parties. Other [Métis] communities have canoes, they have tents, they put on events for the youth. They take them camping and canoeing. I did two things at the Sudbury office, and there was nothing done before in our area, but I was showing the kids a little bit about how to trap and snare rabbits and stuff. (MP05)

MP18, a Métis community leader in 2019, argues, however, that dealing with industry is complicated and taxing, *'I'm on the road all the time, talks and more talks, there is never enough time, money, or people. And you can't make everyone happy.'* Persistent issues with negotiating capacity have been identified by Métis leaders, who express feeling pitted against First Nations kin for the '*same pieces of industrial pie*.' As MP02 shared, '*If you come [to a consultation meeting] as a Métis, they don't want to have a dialogue with you. But if you come in as a First Nation, then they have a dialogue. We've got to be able to change that, right? Because we do exist.'* Adding to the complexity, the language used in industrial documentation often lies in an epistemological parameter of Western-centric principles that guide decisions. For example, a discussion overheard during a participant observation event highlighted how industry and government consultants often rely on geographical maps when discussing land use with Indigenous peoples, despite the fact

that some traditional knowledge holders and land users may have never seen a map in their lives. Indeed, many Métis participants claimed to know the lands and waters via landmarks and memory, not cartographically. Thus, discussions and meetings on the land are far preferable to those held in hotel or office meeting rooms.

5.4.3. Habitat Fragmentation

Though white-tailed deer tend to be plentiful in the Sudbury region, moose are seemingly on the decline. The stability of moose populations in Canada varies considerably and has seen substantial decreases in some regions (see Demarchi & Schultze, 2011; Laliberte & Ripple, 2004; Murray et al., 2012). These local declines pose a nutritional burden on Métis families who rely on moose meat to get them through the winter. Moose is a primary source of protein for many Indigenous people and is essential for sustenance and maintaining traditional ways of life (Popp, 2018). Several factors have been linked to moose population fluctuations, including variables related to climate change (moose populations migrating farther north), increasing anthropogenic activity (habitat disturbance), the parasitic brainworm (deer encroaching upon moose territory), and over-harvesting (DelGiudice et al., 2011; Murray et al., 2012, 2012, Popp et al., 2010). However, local harvesters believe mining roads are also a contributing factor in the decline.

Some people say that the moose aren't around because of, you know, road development. That sort of thing… I don't know if it's really a problem or not. Probably. Probably because you can see moose on the highways all the time now. Now it seems as though the road construction is pushing them out of their territory, and they're just confused and they don't know where they're supposed to go and they even end up downtown. (Participation Observation Event #7)

What happens when we lose trees? If you look at a clearcut, a number of things happen. Nothing can breathe. Nothing can regenerate there. The good soil is eroded. Where does

it go? It goes into the lakes. What if the soil is contaminated? Now you've contaminated your lake. Lake Wahnapitae suffers, and then everything suffers because that's our drinking water. Above all, we have to protect our waters. They tell us that they won't cut or build a road near a lake but that's bullshit. 400 ft from the lake – sometimes that only means leaving three trees. You can see the lake. You open up areas near lakes and a number of things happen. The last thing that happens opening near lakes is that it gets fished out and that moose lose their territory. They get slaughtered. The moose return to those areas in the fall and realize that the 'house' they left in the spring is all gone. Once you put roads in, an area should be closed to hunting for at least five years. (MP06)

While some organizations such as PETA and the World Animal Foundation point fingers at hunting patterns for declining species populations, this preponderance of thinking fits the stereotypical notion that Indigenous harvesting rights destroy the natural environment. Traditional knowledge and scientific research, however, do not back this up.

People like to judge us for harvesting, using animals in our crafts, in our culture. Especially the young and the woke. They judge us for hunting and fishing, but we've been doing it respectfully for hundreds, for thousands of years. We know how to do it responsibly. Yes, some abuse their harvesting rights. You will hear some Indigenous harvesters boasting about taking four moose and many whitetails. That is a damn shame! That is not who we [the Métis] are. We take care of our animals. That is why the Métis have a Captain of the Hunt (COTH). Our COTH ensure that what comes out of the bush is done humanely, respectfully and sustainably. The MNO has very tight restrictions on harvesting. If a COTH finds out about overharvesting, there would be no hesitation to pull cards. Abuse it and lose it. (Participant Observation Event #6)

Indigenous harvesters respectfully recognize that population densities ebb and flow with ecological and climatic cycles. Several harvesters shared sentiments similar to MP21 regarding how the abundance of deer depends on the severity of winter conditions, the availability of food, and the presence of predators: '*Everything is cyclical, right? You get an easy winter, and then there'll be too many deer. So, then the wolves have lots of food and their numbers increase. Then they'll take out a bunch of deer, or there might be a bad winter where deer will starve. It's all nature's way.'* Scientific research generally supports these claims and rejects the notion that responsible hunting necessitates population

decline. Simard et al. (2013) performed Canadian experiments attempting to show the effect of sport hunting on white-tailed deer population density over six years. The study was unable to show a significant correlation between a sport-hunted study group and a control group. The authors cited various compensatory mechanisms as possible reasons why population declines were not observed.

5.4.4. Harvesting Health Risks

While life on the land is essential to Métis for balance and connectedness, it is also important for sustenance. The reduction of harvesting prevents nourishment, and barriers to obtaining traditional foods can lead to a host of health issues in Indigenous populations (Mundel & Champan, 2010) and, in some cases, higher morbidity and mortality rates (Gracey & King, 2009). When the land harvested has been industrially contaminated, a whole host of additional health problems potentially arise. Some participant trepidation surrounding environmental and human health risks aligns with the findings I observed in my master's thesis. For example, the parameters under which the Sudbury Soils Study was performed, contaminated sites, and high cancer rates were all mentioned as concerns during ethnographic interviews with Métis participants.

The original Ontario Ministry of Environment soil survey that sparked the soils study included 8,148 soil samples; after the investigators employed screening criteria and removed statistical outliers, the sample number dropped to 1,265 (Sudbury Soils Study, 2008). It is unfathomable to imagine that 84 percent of samples were outliers. Is it possible that areas with exceptionally high metal concentrations were ignored due to decision rules

and statistical principles? RP10 stated, *'That [the number of outliers] was just shocking to me when I heard it for the first time. That would never fly in an academic setting.'* Additionally, soil sample inclusion criteria stated that metals had to be found throughout the study area to be considered. Sudbury, however, is the largest geographical municipality in Ontario. It is probably that metal hot spots were overlooked because of this rigid requirement. RP01 also mentioned concern regarding the soils study methodology, '*I haven't read the Sudbury Soils Survey cover to cover, but I don't like the parameters in which it was done. It was too limited. They eliminated certain things right off the bat. And there are political and economic reasons for this. Why did they look at this instead of that? And so on.'*

As outlined in Chapter 2, Ontario Ministry of Environment (MOE) trigger levels have been lowered since the 1997 guidelines used in the Sudbury Soils Study. Given the new guidelines, cadmium, antimony, barium, beryllium, chromium, molybdenum, and zinc would have been added to the existing six chemicals under investigation. MP07, a cancer survivor, tearfully shared this concern:

Sometimes I stop and I think about why am I in Sudbury… Why do I stay in Sudbury? Why did I raise my kids in Sudbury? We have such a high rate of cancer in this city. Why did I stay here? And gee… I wonder if that's got anything to do with the mines!? And I try not to put myself into that guilt feeling over it. But I do, especially in light of me having fought cancer since I was forty-six years old. So, it was like, what have I done to my kids? So, my output of that was if you guys can ever get a job or transfer out of town, take it. But then, where are they going to go?

This participant's experience was shared by RP09 who mentioned, *'I have a rare tumour that isn't even reported in Ontario statistics, so, you know, this is personal to me as well*

as my professional work.' RP03 was more direct about his feelings regarding health statistics in the region and said, *'Sudbury is the worst place for cancers!'* In further conversation, he mentioned his concern about the the 2011 headline, 'Sudbury in cancer death zone' (Clarkson, 2011). Despite assurances from the industry-funded study that health risks are not occurring from Sudbury's mining and smelting legacy, many participants in this project remain unconvinced. RP12 summed up his impressions of the soils study:

I certainly could see the idea of there being an update. [An update] being a vehicle for engaging in a much more substantial way than has happened in the past. Engaging the First Nations and Metis communities, people, Indigenous peoples. It would have to be a deliberate objective, and I think it could be, so it wouldn't be just to update the science, to look at new thresholds that had been identified. But also, a deliberate communication, an engagement. But it wouldn't happen unless there was an agreement that those should be objectives. Otherwise, it will just be a revision of the numbers and that will be it. But if somebody were to say to a gathering of the Metis community, Atikameksheng Anishnawbek, Wahnipitae First Nation, and so forth, 'we are going to have a look again, we're going to look at the metal concentrations and what the implications might be for human health and for the health of the berries and parts of the ecosystem that you depend upon. We're going to have another look, and this time, we need to listen to your knowledge. We need to hear that and build it into the process.'

Of particular concern to the Indigenous peoples in the region, investigators of the Sudbury Soils Study gathered food ingestion patterns with a local food consumption survey. The survey, however, was an informal recall survey, and thus, data was potentially unreliable because of residents' lack of recollection. Ultimately, the authors used 1997 U.S. EPA consumption data from a generic handbook despite speculation that there are higher soil and, thereby soil contaminant ingestion rates due to angling and hunting in the area. At the time, the U.S. EPA recommended a conservative soil ingestion estimate of 200 mg/day for children and a 400 mg/day protective estimate. Intriguingly, the Sudbury Soils

Study used an ingestion rate for preschool children of just 91 mg/day. Considering that it is not uncommon for Métis to harvest on property owned by the mining companies and that meals are typically a family affair, there is a particular concern that exposure criteria, and therefore risk, has been minimized in the Métis.

While discussing this observation, RP11 stated:

I would like to see more sampling. Anishinaabe are utilizing fruit, tissues, and roots from plants for medicines which are grown in these soils. And I think heavy metals and contaminants absorption will vary depending on the species. Another aspect to consider is dust on the leaves and fruits. Are they being washed properly before ingestion? Lots of questions to be answered.

RP09 echoed the sentiments:

If you read the fine details of the soil study, there is actually a recommendation to test peoples' soils/backyards, especially if you grow food. But that hasn't happened. I am, however, determined to make that happen, even if I partner with an out-of-town university. There is a Russian study that shows raspberries grown near copper and nickel mines (just like ours!) are toxic for ingestion. So, what about our berries? Maybe the berry is okay, but First Nations shouldn't drink tea from the leaves and roots, you know?

An interesting side note to both of these conversations was that, even though I had identified myself as a Métis researcher, there was an unintentional pattern of conflation or assumption that Métis and First Nations in the area have similar plant uses and, therefore ingestion rates. This scenario harkens back to the same pattern of thought that almost assuredly occurred during retrieval of consumption data in the 2008 Sudbury Soils Study, and which carries on today in mainstream society – the inadvertent reflex to group Métis-specific issues under a First Nations or pan-Indigenous umbrella.

While Indigenous harvesting and ingestion patterns in a contaminated region trigger distributive justice concerns, the idea of equality through just distribution in a case such as this is inconceivable. Métis participants are certainly not advocating to share pollution

impacts equitably. Further, to do so would be objectifying the waters and lands as distributive goods, which is counter to Indigenous practices and values (McGregor, 2009). Rather, the sacredness of the waters and lands places a value on the environment, which is central to Métis capabilities and the opportunity to continue practising traditional harvesting even when offered alternatives (Pelenc & Ballet, 2015). In this particular case study, traditional harvesting territory can be conceptualized as making a 'non-substitutable contribution to wellbeing' (Holland, 2020 p.70).

5.6. Discussion of Findings

This chapter examined major issues impeding Métis access and opportunity in and around Sudbury's lands and waters – the green and blue threads. Acidification and tailings have impacted drinking water and sustenance fishing in lakes, while safety issues, contamination, land claims and species declines are impacting Métis harvesting on lands. While harvesting for sustenance on Sudbury's lands and waters is important in the maintenance of the Métis way-of-life, Indigenous relationships to the land go beyond survival and encompass a fundamental respect for the connections between living and non-living elements of a healthy functional ecosystem (Berkes et al., 2008). In other words, the focus on harvesting runs deeper than mere access; indeed, it is food security, culture, language and tradition. When this relationship is severed by processes of environmental dispossession, whether directly or indirectly, physical and emotional harm can ensue (Tobias & Richmond, 2014).

Rawls and distributive justice theorists are primarily concerned with the fair distribution of social benefits and burdens; as such, distributional justice is jeopardized whenever society requires sacrifices from worse-off groups to benefit better-off groups (Merchant, 1992). While Sudbury as a community is experiencing impacts from historical mining practices, the distributional issues impacting the Métis directly relate to recognition and procedural problems. For example, the lack of Métis recognition and participation in the Sudbury Soils Study has had the effect of researchers missing the important point that Métis harvesting is disproportionately occurring on contaminated land. Consequently, the Métis could argue that practising traditional harvesting in parts of Sudbury results in higher risks of exposure and consumption patterns than for the average Sudburian. When land access, or the lack thereof, necessitates the need to harvest on industrial land, the risk is further heightened. It is possible, and even likely, that Métis exposure to soil and water pollutants is higher than individuals harvesting in the area's First Nations communities. Such findings are reflected in previous literature, which indicates distributional outcomes in marginalised communities are related to recognition and participation issues (Fraser, 2000, 2001; Schlosberg, 2007; Shrader-Frechette, 2002).

In terms of distributive 'goods' and 'bads', the issue of whether land access can be conceptualized as a 'natural good' is debatable, particularly given the holistic Indigenous worldview and preference for guardianship and custodianship of land rather than ownership. In Rawlsian justice, 'natural goods' cannot be objects of distributive justice (Vagero, 1995). However, the Métis, as section 35 rights holders, could argue that the government has the ability to influence land access/distribution as it would a material

'good'. In this scenario, the necessity for Métis to harvest on contaminated land could potentially be mitigated. Land access for the Métis, however, would undoubtedly face considerable objection from First Nation communities on treaty territory. Moreover, because the Métis, like their First Nations relatives, also have a preference for land guardianship, it is highly unlikely that a request to designate land as a material ‘good’ would ever be made. Nevertheless, the heuristic exercise to consider shifting values from Indigenous land 'rights' to 'goods' is critical to understanding how social justice discourses have the potential to unfold.

As discussed in Chapter 4, identity politics have heavily informed Indigenous land rights. When identity is conceptualised at multiple levels, it is difficult to address local land rights and this, in turn, has constrained opportunities for Métis peoples. In this case, the Métis have the right to harvest on the land without the land to do so; opportunities have been constrained without any fault or free choice of their own. The absence of free choice is evident in Sen's capability approach, which focuses on the degree to which people have the capabilities to lead a meaningful life (Sen, 2005, 2008). Clearly, for Métis participants in this study, a meaningful life involves practising traditional ways of life on Sudbury area lands and waters free of contaminants. And thus, harvesting as an essential capability would be compatible with a capability approach.

If harvesting is a Métis right and a crucial capability, then harvesting opportunity becomes the object of justice. Young (1990) draws on several aspects of the social justice movement to reject a distributive paradigm favouring framing injustice as a product of

oppression. While Young positions oppression as occurring on a group, individual circumstances and reactions to such experiences can vary. In this regard, Young's approach requires further examination. It was evident that finding a place to practice the traditional Métis way-of-life was becoming an individual endeavour; the collective nature of the harvest is increasingly being lost. When collective identity and way of life are lost, different people begin to experience the land differently. I observed this pattern when one Métis participant, a private land owner, described her tendency to harvest the same area as a connection to that particular place, '*We always favour, you know, go back to the same areas because it's a thing of connection, like, the universe has provided us with the food there. So, we tend to go back and respect that…that environment means so much to me.'* Meanwhile, a Métis participant without private land but the ability to travel prefers harvesting in different locations in an effort to sustain the species: '*We [Métis] have unique relationships with the land. We understand what the land and waterways can provide, and we don't abuse it in the way that modern men do – by only taking what we need, not wasting any parts of the animal, by being conscious of how the land works for us. As an example, I don't always fish in the same spot. I give time for spots to replenish themselves.'*

Even if equitable access could be achieved, it would not necessarily generate equitable opportunity. Nor would equal access result in equal distribution of food, health, and wellness. Thus, while equitable access can be a good starting point, support beyond mere access rests on defining opportunity. A few fortunate harvesters in this study had access and opportunity (in the form of boat and motors, all-terrain vehicles and

sophisticated gear). Others had various degrees of access and opportunity, while some had neither. In these latter cases, harvesting healthy, thriving ecosystems has been reduced to a luxury and no longer a way of life.

Considering the complexities facing Métis harvesting access and opportunity in the Sudbury region, there is undoubtedly a need for an Indigenous framework sensitive to their challenges, identity, and culture. A Métis-specific framework could help address elements of fairness that environmental and social justice theorists imbue. In fact, the theoretical perspectives in social justice can help support the stance that Métis environmental justice requires. Without critical perspectives in specific cases, we risk adaptation to circumstances rather than crucial steps to address systemic issues that impact individuals and communities as a whole.

6. RESTORATION AS ENVIRONMENTAL JUSTICE

6.1. Introduction

Since becoming a committee member of the Métis Nation of Ontario Great Lakes Advisory Group (MNO GLAG) in 2021, I have been inspired and buoyed by the prayers to the Creator at the openings and closings of each meeting. Though delivered by different Elders and knowledge keepers each time, the messages of profound gratitude to the Creator for our Métis people and the lands and water that nurture us, are always centred. This message of gratitude typically segues into an appeal to the Creator for guidance and prosperity into the future. These prayers align with the white and yellow threads of the sash, which respectively signify strong spiritual connections and prosperity. The white threads represent the Métis connection to Mother Earth and its Creator, while the yellow threads signify hope for a prosperous Métis Nation. Although the definition of Métis 'prosperity' is arguably broad, most Métis citizens familiar to me would agree that healthy lands and waters were a necessary component of a prosperous nation.

What constitutes a healthy ecosystem, however, can sometimes depend upon the observer and whether they experience the ecosystem through an Indigenous lens. RP14, a First Nations biologist, explained that while Western and Indigenous knowledge systems can often be successfully braided, they are fundamentally distinct. For example, she noted that in scientific terms, a keystone species is one which has a profound effect on an ecosystem, so profound that if it were removed, the ecosystem would change. Through an Indigenous lens, however, she stated that a cultural keystone species could

be one which is critical for diet, materials, medicines, or spiritual practices. When a cultural keystone species – such as sweetgrass, the hair of Mother Earth – is removed from an ecosystem, a cascade of enviro-psycho-socio-cultural changes can ensue for Indigenous peoples. The acknowledgement of potentially negative feedback loops through cultural change corresponds to research done by Coe and Gaoue (2020a,b), which highlights how an enhanced understanding of cultural keystones in ecosystems is foundational for facilitating conservation among different cultures. While environmental conservation is somewhat dissimilar to ecological restoration, contemplating restorative work with an eye toward the Haudenosaunee 7th Generation Principle – considering the seven generations behind and the seven generations ahead during decision-making – can be a step toward cultural prosperity.

The Society for Ecological Restoration (SER) defines ecological restoration as 'the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed' (SER, n.d).[58] In June 2021, the United Nations Decade on Ecosystem Restoration began an effort to restore millions of hectares globally. This effort corresponds with the One Trillion Trees Initiative that the World Economic Forum launched in January 2020, with the goal of conserving and growing a trillion trees by 2030. While noble and

[58] Ecological restoration, rehabilitation, reclamation, and remediation are terms that are sometimes used interchangeably. While they all are processes that repair or restore something to its original state, there are subtle differences between them. In North America, post-closure environmental clean-up activities are typically referred to as *remediation*, although other terms such as *rehabilitation* and *reclamation* are also frequently used. In Canada, the terms restoration and reclamation are used most often, though rehabilitation is also becoming a common term (See Dance, 2015; Hockley & Hockley, 2015; Steenhof, 2015). Lima et al. (2016, p. 227) states that *reclamation* 'aims to recover key ecosystem services and biogeochemical functions,' while *rehabilitation* 'implies a repurposing of the landscape.'

lofty goals, these numerical targets – number of trees, number of hectares, number of years – do not necessarily align with Indigenous peoples' notions of ecological restoration. Both social scientists and ecologists have been increasingly emphasising local peoples' perspectives within restoration scholarship (see Clewell & Aronson 2006; Di Sacco et al. 2021; Elias et al. 2021; Erbaugh et al. 2020; Ghazoul & Schweizer 2021; Holl & Brancalion 2020; Osborne et al. 2021). Still, a lack of understanding about what constitutes equitable and effective restoration exists on national and international stages (Löfqvist et al., 2023). Consequently, ecological restoration requires long-term commitment and thoughtful deliberation (Choi et al., 2008; Higgs, 2003; Palmer et al., 2010); it is a multidisciplinary intervention grounded in scientific knowledge and traditional knowledge.

Restoration in the context of mining refers to the goal of restoring ecological health or integrity (Bradshaw, 1997; Cooke & Johnson, 2002; Kivinen, 2017). Mining has left a legacy of environmental damage and displacement for Indigenous peoples around the globe (Horowitz et al., 2018; Roche et al., 2021). Additionally, because remediation and restoration projects tend to prioritise technical and scientific components, the projects may achieve little in healing historical, social, economic, and environmental wounds (Keeling & Sandlos, 2017). Though scientific approaches to ecological restoration in the 20th century heavily focused on restoring land to pre-mining conditions (Hobbs, 2018), the majority of North American projects fall far short of this goal (Beckett & Keeling, 2019). Meanwhile, recent ecological restoration scholarship has criticised the idea of recreating past conditions, citing that the practice tends to elicit power differentials and struggles of what is remembered and what is forgotten (Beckett & Keeling, 2019). Rohwer and Marris (2016) propose that restoration should embody a 'moral value rather than a historical

state' (p. 678). Even so, how can one determine which moral values should be prioritised? To date, Sudbury's restoration plan has been grounded in scientific knowledge. Results from this project, however, indicate that Métis in the region wish to see Indigenous Knowledge, and more specifically, Métis Knowledge incorporated in the re-greening plan.

Considering the harvesting and way-of-life challenges so many Métis individuals have faced due to Sudbury's legacy of industrial impacts (as discussed in Chapter 5), how can the city's regreening programme respond to enhance environmental and social outcomes for the Métis? Section 6.2 of this chapter discusses Sudbury's regreening programme from its experimental scientific origins to its awards and successes today. Noting a lack of Indigenous knowledge in the programme to date, however, the chapter continues the examination of the re-greening process through a 'restoration as EJ' context. This perspective acknowledges both Métis knowledge and agency in the city's restoration processes. As such, sections 6.3 and 6.4 cover re-greening through a primarily Métis epistemological lens. The chapter concludes in section 6.5 and 6.6 by addressing how Indigenous knowledge gaps could operate in a restoration-as-environmental justice framework.

6.2. Re-greening Practices of the Past and Present

Sudbury's re-greening programme has received acclaim from national and international organisations, including the UN Local Government Honors Award in 1992 for its re-greening efforts (City of Greater Sudbury, 2024b). In 2023, forty-five years into a one-of-a-kind land restoration initiative, the re-greening project marked its ten millionth tree

planting. In addition to tree planting, and as seen in figures 6-1 to 6-4 (inclusive), 3500 hectares have been limed and fertilised, 1200 forest plots have been planted, and 4800 individuals have been employed through the programme (City of Sudbury, 2024c). As mentioned, these parameters do not necessarily resonate with Indigenous peoples' understandings of restoration, and importantly, they did not unequivocally impress Métis participants in this project:

I have mixed feelings about regreening because if they're going in and just planting all pine trees, well, that is not what moose and deer need as habitat. Just to give you some facts: they [researchers] consider a moose herd as 200 head. No, no! A moose herd is about 6, and they need 10 square miles to survive. Now, what they need in that is clean water (first thing). Second, a house–pine, cedars, swamps–somewhere to bed down at night. And last, feeding ground. A nibble here and there. And that is why they need 10 square miles. In the 6 [herd]: 2 bulls (one old and one young), two cows, a calf or two... I'll give you some advice: go to a regreening zone. It will be green at the front and bare in the back. Green for people driving the highway; bare in the bush for us. I can see for 4 miles without a tree. What happens? Animals move out. They [animals] go somewhere else. But there might already be too many in that area they move to; they get stressed. They die. They [restorationists] don't restore spots in the bush. Look around the old mine sites and see that nothing grows. To this day, nothing grows on-site. You would think that there would be some trees growing by now. Well, they just plant pines. Conifers. You know, and they [pines] sterilise the soils for years. Might take 15 years before things come back. When they plant pine trees, that's just to make money. That's got nothing to do with saving the moose, saving the deer… What's the first tree that blows down in a wind storm? A pine tree. Shallow roots. I'm a hunter. I know that well enough… (MP06)

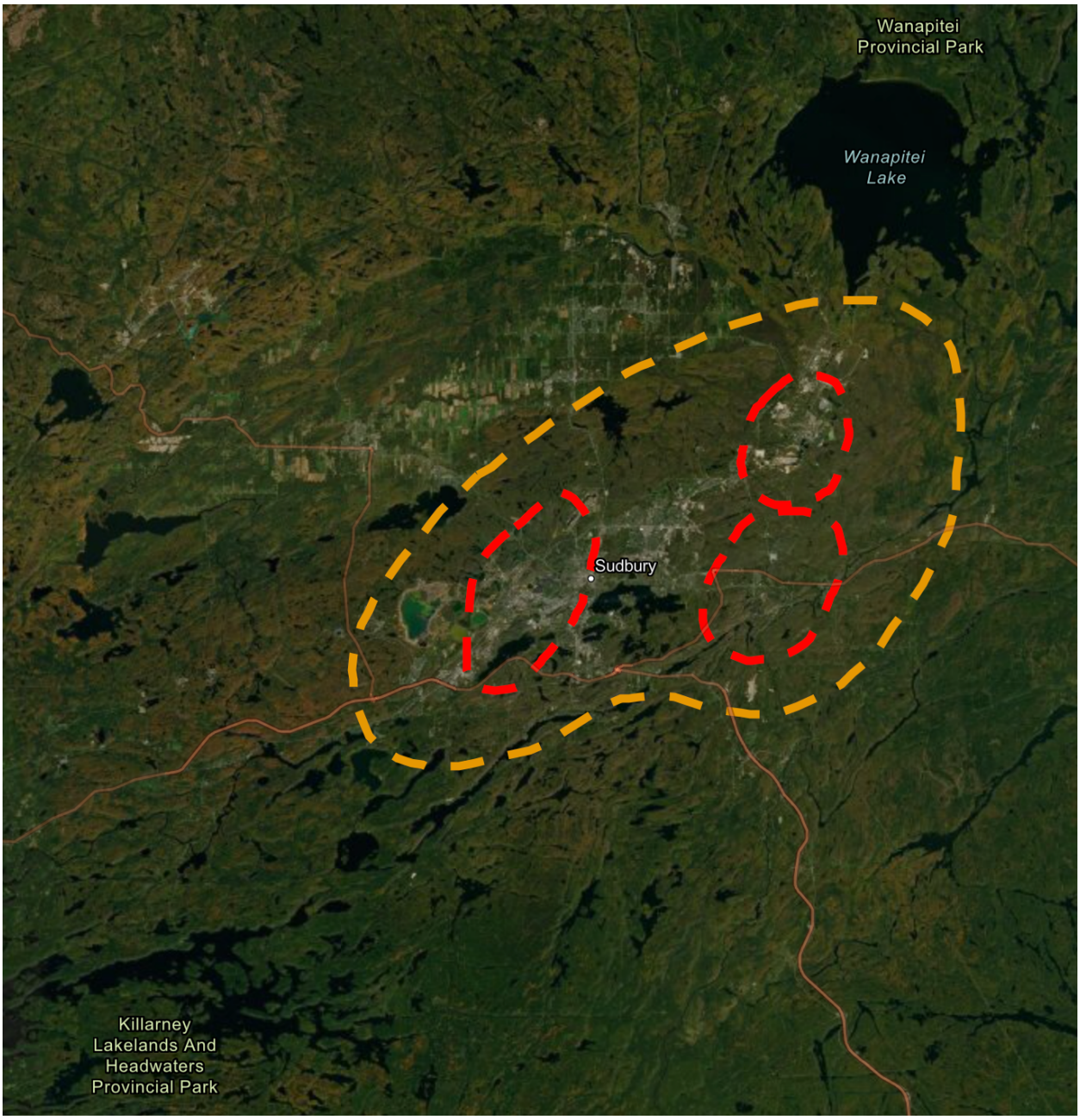


Figure 6-1: The Barrens (yellow ring) and Semi-Barrens (red rings) of Greater Sudbury[59]
(*source: City of Sudbury, 2024c; map layers modified by author*)

[59] 'Barren' (lacking vegetation) and 'Semi-barren' (stunted vegetative growth) as defined by Amiro and Courtin (1981,1985). See Appendix VIII for detailed locations of these forest communities.

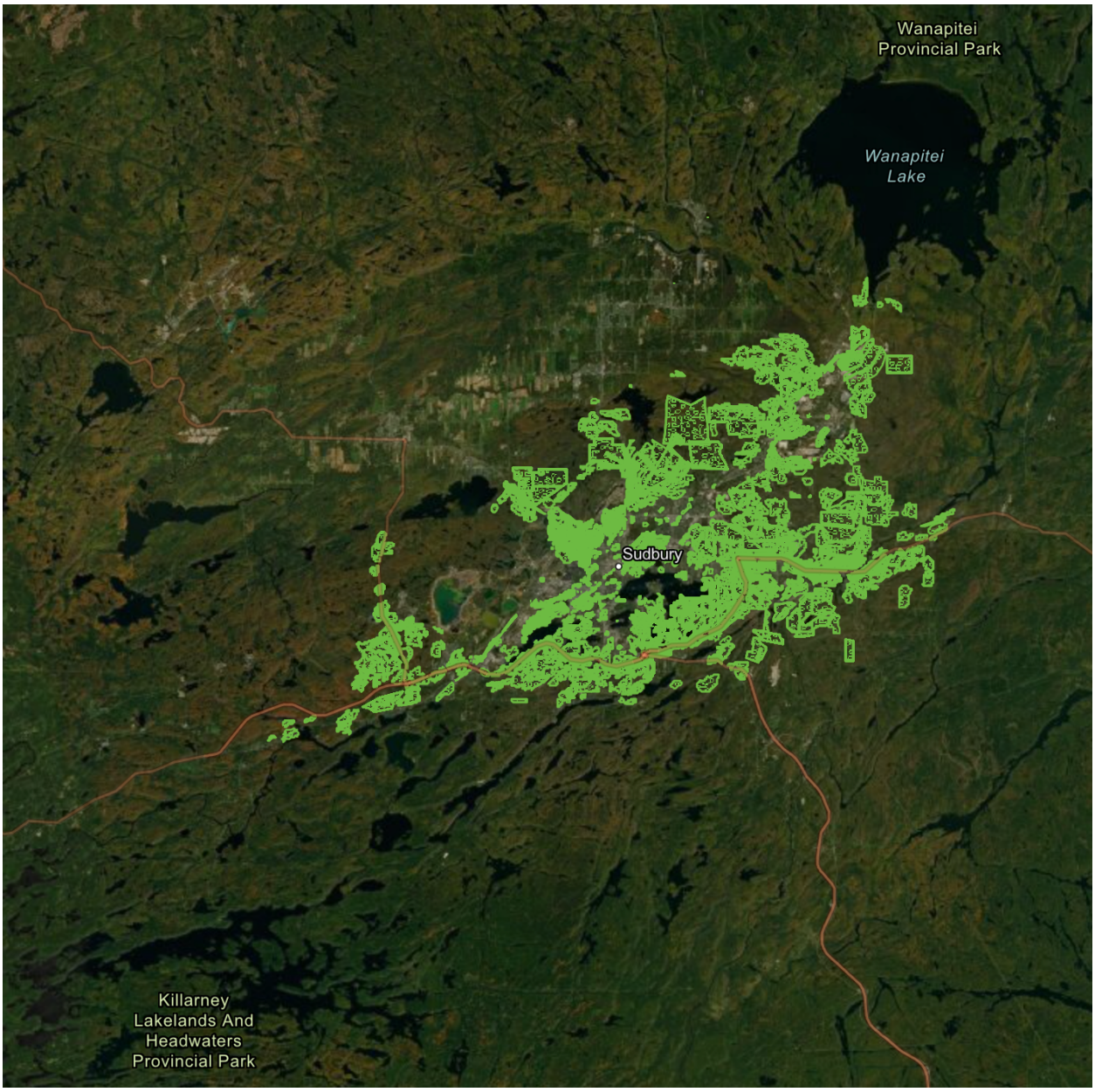


Figure 6-2: Tree planting efforts (bright green) in Greater Sudbury
(*source: City of Greater Sudbury, 2024c; map layers modified by author*)

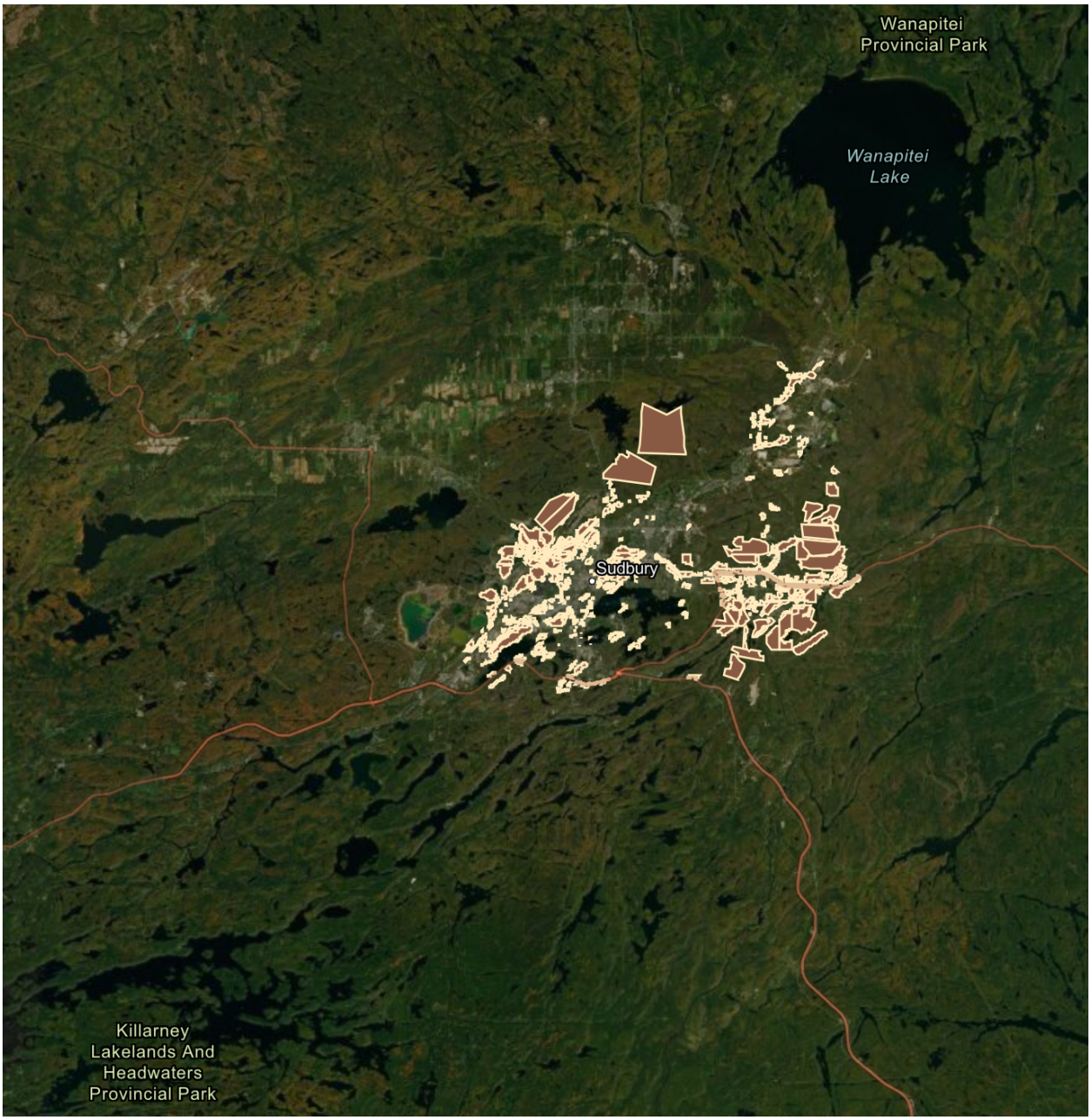


Figure 6-3: Liming zones (brown with beige outlining) of Greater Sudbury
(*source: City of Greater Sudbury, 20214c; map layers modified by author*)

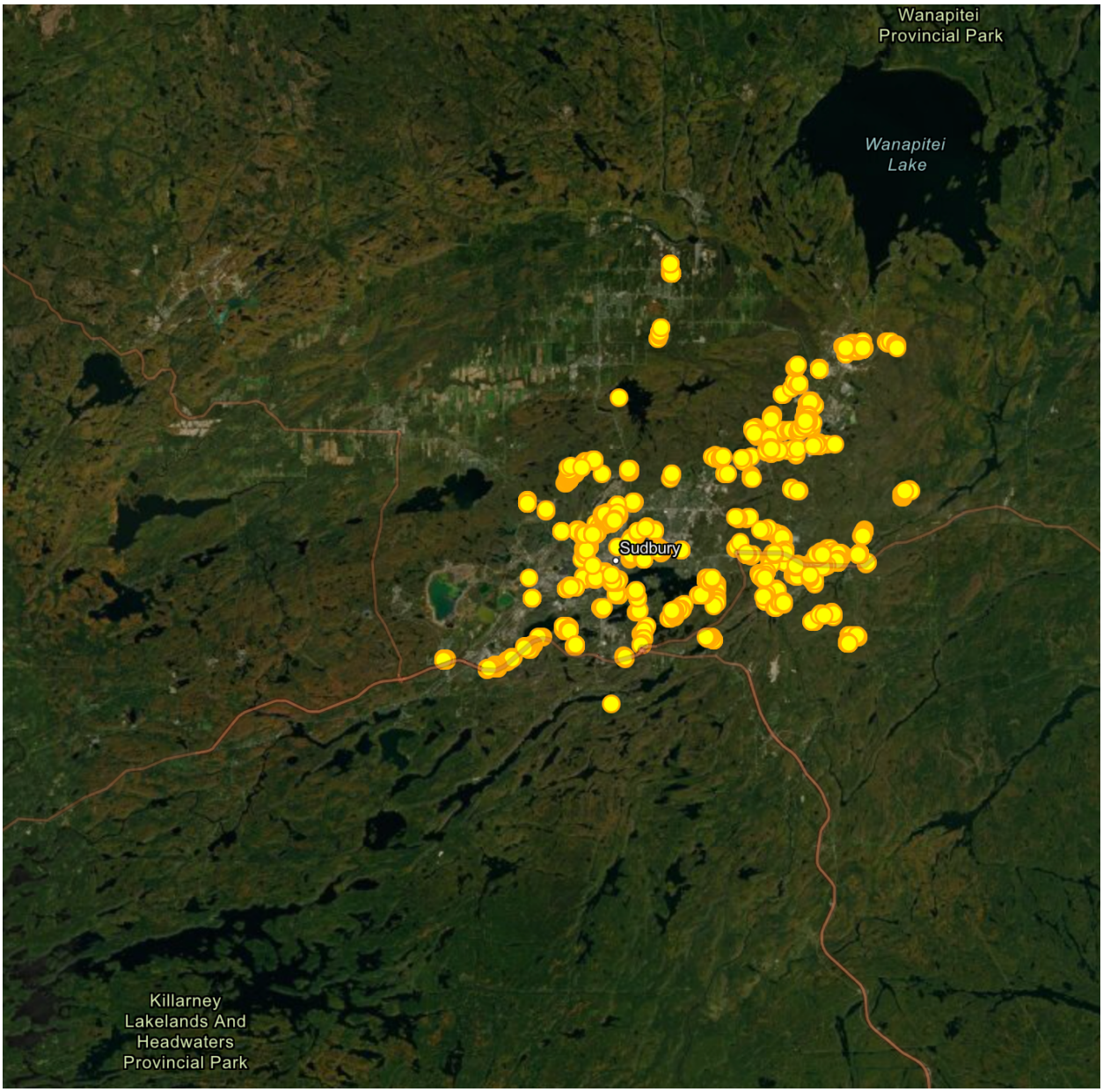


Figure 6-4: Forest Floor Transplants (yellow dots) in Greater Sudbury
(*source: City of Greater Sudbury, 2024c; map layers modified by author*)

RP02 noted that his motivation to re-green Sudbury was to help transform the city's international image from a unit of pollution to a unit of restoration, '*I wanted to turn Sudbury from a unit of pollution to a unit of restoration. Not, 'How many 'Sudburys' [as a unit of pollution] did your city create?"* Indeed, the 'Sudbury Story' and the 'Sudbury Regreening Protocol' are widely shared worldwide as hopeful examples of ecological recovery. As I toured several restoration sites with Restoration Participants 06, 07, and 08 (a reclamation scientist, a city regreening manager, and a soil scientist), their pride and sense of achievement were palpable, and rightfully so. Undoubtedly, the restoration work they have tirelessly advocated for and participated in has dramatically transformed the landscape. Figure 6-5 highlights the landscape improvements over thirty years.



Figure 6-5: Before and After Reclamation – approximately 1966 and 1996
(source: City of Greater Sudbury 2024c)

Other biologists also heralded the success of the regreening project:

I think it's a success, I really do, I think it's a huge amount of natural infrastructure that we've added, and it's not just cosmetic. Was it what was here before? Not even close, you know, we don't have the soil, the understorey plants, the trees, we have white birch. But it will get there. It will take hundreds of years at this rate. But I think it's [the regreening] fabulous. We actually have functioning ecosystems again. We have foxes in my backyard, that type of thing. I think that's really important. Now we're becoming a modern city that is integrated with nature in a way that other cities can't be, because we're surrounded by so much of it. So, I think it's wonderful. It's a way to invite nature into the city. Just in saying that, I think, damn, that's true! (RP05)

In addition to the dramatic physical alterations observed, RP02 calculates that approximately 650,000 tons of carbon have been sequestered as of 2021 due to

regreening. Sequestration will inevitably increase well into the future since RP02 also estimates that the regreening programme is only halfway to completion. In other words, there is a lot more restoration work to do. As the community celebrated forty years of regreening in 2018, it was a time of reflection and acknowledgement that ecological restoration is a dynamic and evolving practice which continuously builds upon past successes and failures.

Amiro and Courtin (1981) performed Sudbury's first forest community study, which despairingly concluded that most of the area was a severely disturbed ecosystem – much of it similar to a tundra-forest ecotone. While northeastern Ontario soils typically have a pH of 5.5, some Sudbury soil samples were well below 4.0 (Amiro & Courtin, 1981). Moreover, the authors and their colleagues questioned whether such disturbed sites could ever fully recover given the severe impairment of the soil chemistry and the choking levels of sulphur:

I grew up in a coal-mining town in northern England, but I had never seen anything like Sudbury. I was quite astonished. And I remember, one day (in the 70s), parking my car in the parking lot, just about 100 m from the university entrance and actually having to run and hold my breath because the air was so bad. The smell was so strong and awful, and that was very shocking to me because I had never smelled anything like that. So, it was a surprise and, in some ways, a shock, and I had no idea that it would be possible for all my colleagues to bring trees and, shrubs and vegetation back to the landscape. And I remember taking pictures of their one square metre plots along Highway 17 and thinking, 'those poor little seedlings poking through the bare clay.' So, I still have images and reserves of those times. Quite vividly. (RP12)

RP02 added that by the 1980s, the research community, including himself, believed that if land reclamation could be achieved, tailings stabilisation, lake neutralisation, and reintroduction of extirpated species would all, eventually, follow. There was, however, no

prescriptive strategy to guide the process – no restoration on this scale had ever been attempted. The general notion was that natural primary succession in boreal sites could take hundreds of years, but Sudbury scientists wanted to accelerate that process. RP12 stated that the late Keith Winterhalder formulated an initial mixture to amend Sudbury's soil using lime (calcium carbonate) and fertiliser. It was a two-step reclamation process: the first step involved applying dolomitic limestone at a rate of 10 tons per hectare; fertiliser ($N_6P_{24}K_{24}$) was added at 400 kilograms per hectare (Winterhalder, 1996). Naturally, and as described by several participants, this two-step process of chemically amending the soil to promote biological recovery has evolved over the years.

RP06 described how the 'new' Sudbury recipe for greening has altered over time: the 'old' recipe was to toss bags of lime over the landscape and then spread the ground with some fertiliser or European lawn seed, as demonstrated in Figure 6-6. According to RP07, this mixture grew too quickly and prohibited other species, including native species, from colonising the landscape. Thus, treated areas remained in a state of 'arrested succession'. RP06 describes the Sudbury regreening recipe as a six-phase process today: lime an area in the summer, plant it with a seed mix of ryegrass and clover in the fall, fertilise it, watch for seeds to blow in, plant seedlings (primarily pine) the following year, and lastly, plant forest floor species. The lack of vegetation in the early stages allows for the diversity missing in the early iterations of the formula. Eventually, the grass and clover will die out as other species move in and grow, but in the interim, they provide shade and enhance the soil while seedlings get carried in and established. Tree planting of alder (a nitrogen-

fixing species) and pine during a subsequent spring is the final step towards a primary pine forest.



Figure 6-6: Volunteers spreading bags of lime across barren rock
(source: City of Greater Sudbury, 2024c)

Restoration Participants 06, 07, and 08 acknowledged that walnut trees, while native to the area, were not considered because their roots inhibit other species. Chestnut trees, again native to the region, were not added because of an outbreak of blight[60] in Southern Ontario. Naturally, the researchers recognise that a functional forest requires bushes, shrubs, edible berries, and an understorey for wildlife and birds to exist and thrive. Further, there is some concern that plantings have not taken an ecosystem approach to restoration over the years. For example, the Fall 2018 trail walk participants acknowledged that the pines in Figure 6-7 were planted too close together forty to fifty years ago. There is now too much shade for the understorey to survive. Once the pines die, there will be nothing remaining to replace them. Similarly, Restoration Participant 03

[60] Chestnut blight is an imported fungal disease that has been negatively impacting trees in North America for several decades.

contends that the mature birch in Figure 6-8 survived the emissions because they are west of the stacks, which often blow east. Nevertheless, like the pine forest in Figure 6-7, there is a lack of understorey plants. James and Courtin (1985) observed that birch stands did comparatively well in Sudbury's damaged zones; however, without a healthy understorey, this tract of land could become barren again once the birch perish. Contrast this to a more recently planted birch stand in Figure 6-9, which has a healthy understorey of mayflowers, lilies, strawberries, blueberries, big-leaf asters, and horsetail.



Figure 6-7: Pine forest without understorey plants (*source: author, 2018*)



Figure 6-8: Mature birch forest without understorey plants (*source: author, 2018*)



Figure 6-9: Healthy planted understorey under birch tree (*source: author, 2018*)

There is no question that Sudbury is ‘greener’ because of the re-greening programme. Areas without treatment (lime, fertiliser, and planting) lack growth. According to RP06, the maple and birch trees in Figure 6-10 have roots estimated to be over 100 years old. These trees should be substantial in size, but because of Sudbury’s historical emissions, the trees would grow, die, produce branches, die again, grow again, and so on. These cycles of growth and die-back perpetuated the stunted multi-branched trees so common in the Sudbury landscape. Interpretive signs along the trail inform passersby that this area would likely be one of butternut, walnut and sugar maples before industrial contamination.



Figure 6-10: Stunted multi-branch mature maples (*source: author, 2018*)

Complicating Sudbury’s restoration is the proliferation of invasive species. Figure 6-11 shows a stand of Himalayan balsam that RP08 suggested almost certainly escaped from someone’s garden into a forested trail. Both scientific and Indigenous participants

recognise that a landscape void of native vegetation invites intrusion by invasive and introduced species. As appealing as some of these introduced species may be to both humans and bees, they can be highly aggressive and impede the proliferation of native species and optimal restoration. While on this particular trail, RP07 asserted that the surrounding landscape would ideally have aster seeds and goldenrods for the birds and edible berries, such as the hybrid cranberry and wild raisins, for wildlife. However, voids persisting in Sudbury's recovering ecosystems leave room for invasives to flourish.



Figure 6-11: Invasive Himalayan Balsam in a forested area *(source: author, 2018)*

Restoration Participants 06, 07, and 08 all acknowledged that a forest with a greater number of species would prove to be a more resilient forest over time – hence the term 're-greening programme', *not* 'restoration programme'. Interestingly, the semantics of regreening versus restoration have not escaped most Métis participants in this project:

Yes, it's [regreening] somewhat successful. Because when you think [re]greening, most people think of downtown Sudbury with the rock, the black rock, and they planted all the trees and stuff like that. It goes all the way to Garson… I think the roasting beds are still there. I don't know if they are covering those up or not, they were still there about five years ago… I guess it's a good effort. It's just, you know, I don't know if they're going about it the right way.. I don't know to what extent that project goes. It seems centralised to corridors to me. Go out of town, and it's still bare rock. We can't harvest or gather there. (MP05)

I would say it's [the regreening] good. But that's only what we can see, right? Like, we had a little bit of an eye opener when we took a flight. We were actually able to see Sudbury from above. It's quite interesting. I never realised that there was an open pit mine right beside the college. Looks like the Grand Canyon. That's crazy. There's just giant hole in the ground. And you would never know it is there if you didn't take a flight. (MP09)

Yes, yes, I have heard of the initiatives that we've planted more trees than most of the world in the shortest amount of time to regreen the whole area that used to look like the moon landing. So that's what I heard essentially…I think we have come a long way, and the fact that we have regreened more so than anywhere. But I do think that there are a lot of ways we can improve on how to do that and how to be more ecologically friendly and improve our surroundings, for sure. (MP11)

Yeah, we have more trees around now. But should we have this many birch trees here? We have trees, but not the right kind of trees. I could be wrong, but I think this is where stories could help. From people who have lived on this land for millennia. For evidence – what was here? What animals were harvested? Compare those stories to what we're seeing now. We should probably be more interested in diversity of species than quantity. White pines – snore! We have regreened, but are we restoring? Reclaiming? We have re-greened, but it's not restoring. It's not the same animal. (RP01)

Still, local scientists and the municipal government contend that planted pines have approximately a 95 percent chance of survival, whereas a planted spruce might have a 60 percent chance of survival. RP05 applauds the success of Sudbury re-greening while conceding that there is more work to do:

I think it's possibly the case that the destruction has been so much that bringing it back to restoration entirely, the original state within a human lifetime, is not possible. So, re-greening is one of the steps to get there. I don't want to say it's a fake; it's not. It's one of the steps and it's a big step. It's huge. It's having an impact on lakes and wetlands

and everything. I think it's beautiful. I really can't complain about it. It's not going far enough. Efforts need to continue, as they are. And we need to focus on other things too: soils is one, preserving and maintaining wetlands is another, but the other thing I put as a bug in the brain of the people doing re-greening is using re-greening as a form of climate adaptation. So, rather than re-green with species that were originally here, we anticipate what's coming, and we create an island of plants, of organisms from the south so that as they migrate here, they will find habitat. These species won't come here to a white pine forest when what they really need is a hemlock tree. That type of thing.

While scientific participants noted that it would be ideal to have a mixture of ecosystems to support wildlife – hardwood forests, open areas, wetlands, and more – the re-greening programme to date has primarily concentrated on providing early succession pine forests. They hope and plan that biodiversity will intensify as ecological succession advances over the years.

6.3. Métis Positionality in Sudbury Lands and Waters

It became evident throughout this project that Métis knowledge is synonymous with the Métis way-of-life. Métis ecological knowledge, more specifically, is about understanding the flux and flows of the natural world, whether the knowledge helps an individual net a fish or helps a community perform a ceremony. Further, while much of this knowledge has been passed down generationally, it has not been static or without adaptation. Most participants use the skills and behaviour passed down to adapt to ecological and contemporary conditions experienced every day. As such, most Métis participants favoured the term Métis knowledge or Métis way-of-life over the term traditional ecological knowledge, where the word 'traditional' may invoke notions of 'old' or 'unchanging'.

While every survey respondent reported that Métis knowledge should be included in Sudbury's re-greening programme, many Métis participants prefaced conversations by

saying that ‘they didn’t know much’ or that ‘I’m not a knowledge keeper.’ Nevertheless, as the conversation flowed, so did the knowledge. The majority of Métis participants intrinsically and profoundly understood the Métis way-of-life, and once they were assured that their knowledge was important and relevant, they were happy to talk about it:

To me, it is just living what we learn. Like I said at the beginning, I grew up in the bush, spending time with my grandfather. So, to me, traditional knowledge is the things he taught me – the ways. Do we know when the sap is coming, to be able to predict a nice day ahead, or a day with frost. To be able to go in the bush and recognise a habitat. Yes, I think, if I'm remembering the question correctly that having that information could definitely contribute to Sudbury reclamation process, because how do you know how to reclaim something without context, without knowing what was there before? (MP16)

While there is no singular definition of Métis knowledge, I observed instances of knowledge expressed as oral stories, artistry, ceremony, and intergenerational thinking throughout this project. This knowledge was often built by groups and families living and working alongside nature. This knowledge, however, was not static and included changes in practices associated with animal behaviour, migration, and development. As MP20 said, ‘*Métis know important hunting, fishing and trapping spots - places that help our families get through winters. These are good spots – places where fish can repopulate when conditions get good again. Important places.’*

MP12 shared that she began trapping in Killarney at age 7, *‘I was seven years old, setting my own traps, my own snares. I would get home from school and just go out on the land. Dad would just say, ‘See you later,’ and I’d go.’* Most participants, including MP12, did not realise that the wildlife, plants, and medicines they harvested throughout their lives could be significant to this research. Nevertheless, I noticed a growing appreciation emerge with every meeting, workshop, or event. As Métis continue to learn from each other at

these events, the depth of knowledge and sense of community increases. Harvesting, food, crafts, and music were frequently mentioned as necessary to Métis culture in the region, and several participants spoke about the significance of kitchen parties (where music, conversation, and, of course, food merged) as a highlight growing up. In the words of MP12, '*Bootleg parties: Well, kitchen parties began as bootleg parties. Quite a few [people] would come to those kitchen parties [in Killarney]. People playing the violin, the guitar, the washboards*.' She smiled and laughed at her fond memories of kitchen parties in Killarney, and then later in the interview added morosely, *'But now I live in Copper Cliff. The creek is orange, and sometimes it smells…We decided to do a vegetable garden, but I won't use the soil from here. God, no!'*

Despite the land use challenges in the Sudbury region, the desire for the Métis to harvest remains strong. Beyond common subsistence foods such as deer, moose, rabbit, and berries, medicinal plants such as sage, sweetgrass, tobacco, and cedar were commonly mentioned. These popular medicinal plants in Indigenous culture and others less often mentioned had a much broader significance than a simple remedy for a physical ailment. As discussed earlier in the chapter regarding cultural keystones, a definite overlap between all aspects of healing – mental, physical, and spiritual – was observed in discussion of these medicinal plants.

6.4. Distinctions of Métis Knowledge

Many Métis participants in this research grew and regularly smudged with the same sacred medicines known to be used by First Nations in the region. Noticing this similarity,

I asked participants whether they believed Métis knowledge in the region was distinct from First Nations:

There's some things similar and some things different. Our backgrounds, as Métis, as Indigenous Peoples, are First Nations, after all. So, there's going to be some similarities. But we also have French. And some of us also have Irish, English, Scottish; so that's going to be mixed in there too. That's what we are. We're mixed. So, there will be some similarities with First Nations, but it's not going to be identical because we're going to have European ways of doing things, too. And, since we have distinct First Nations communities across Canada, it is unrealistic for us to expect all Métis to be the same across Canada. Again, the Métis across Canada will be similar in some ways and distinct in other ways. Just as the First Nations across the country have similarities and differences. I don't think it's unrealistic to believe that there are regional differences in any Indigenous community. (MP19)

Similarly, another participant stated:

Well, it depends where you grew up. If you are Métis from here [Great Lakes], you'll have a different way of doing things than a Métis who moved here from the west [Alberta, Saskatchewan or Manitoba]. It depends how you were raised, where you were raised. (*MP07)*

This latter comment resonated with me personally since some medicinal plants discussed during interviews and participant observation events had unfamiliar names. Whereas I grew up speaking English with an Ojibwe influence in MNO Region 7, many of my participants grew up speaking French, with English and Ojibwe influences in MNO Region 5. Consequently, common or folk names for plants and medicines sometimes differed. For example, though discussing the same plant, what I knew as sorrel was what MP01 knew as pain d'oiseaux. Or, what I knew as bikojiish, others knew as puffball mushrooms. Though considered an important cultural species to both of us, the difference in language highlights subtle regional distinctions.

In addition to food, many participants spoke about using natural items for crafts and other household purposes. MP02 proudly showed me a traditional canoe carefully crafted with

softwoods, while another participant proudly showed me her leather works, which included deerhide medicine bags and moccasins. Interestingly, while her moccasins were unlined, she spoke about how her great-grandmother would use the 'fluff' from cattails to line her moccasins for warmth during winter months. MP06 showed me his furs, products of his trapline, and affirming, *'We are not First Nations. We have our own culture. Our own identity. Fur traders meeting women through tribal chiefs. That's our heritage. Sometimes identifying as French or Indian Michif.'* Seemingly, in an effort to highlight a subtle cultural difference between the local First Nations and Métis, he added, '*Did you know that Ojibwe wore furs out; Metis wore fur in?'*

Upon some additional prodding, MP06 added, *'I think a lot of our knowledge is based on it [First Nation knowledge], but we never stayed in one place. So, we had to learn the ways of the land in which we lived in at the time. Then, we picked up roots and moved on. And because we travelled the waterways so much, your landscape changes. A landscape changes. And so, with that, so does the vegetation. And so does the wildlife that feeds on that vegetation.'* Similarly, MP16 added, *'Maybe our ancestors didn't live here. But they travelled through here. They knew these lakes, they knew these rivers, they knew these habitats. And all those years of knowledge have passed to us, so we know where there are supposed to be moose, we know where there are supposed to be deer. We know what those habitats should look like.'*

MP07 shared, *'Métis knowledge is stuff we grew up with. Lots of cedar trees around? You know darn well there's going to be deer. It's like second nature for us. For me, anyways, a second nature. Or, you see poplar trees? Look for Moose. Moose love poplar trees.*

Want to see an owl? Owls love to live in pine trees. My dad always said you know, if you're in a lot of pine trees, look up, and you'll see an owl. Partridge –spruce trees; they love spruce. That's why we call them Spruce Partridge. So, yeah, knowledge trickles down.'

Evidently, Métis Elders continue to transmit knowledge to subsequent generations via oral tradition. Storytelling among the Métis, which almost always highlights a teaching, emerged and persists with attributes from First Nations and Euro-Canadian cultures. These distinct teachings underscore the Métis aptitude for cultural transformation. While these teachings are integral to the continuance of intergenerational knowledge, they also demonstrate how Western and Indigenous knowledges can be applied to land-based scenarios.

6.5. Métis Knowledge Inclusion in Re-greening

Planning for the future can involve many facets of Indigenous participation and engagement. Yet, an important self-governing component of this engagement will invariably include a domain of nation-specific knowledge. In return, research supports that incorporating Indigenous knowledge into environmental projects tends to be more effective and sustainable in addressing socio-ecological challenges (Austin et al., 2019; Robinson et al., 2021). Kyle Whyte (2017) highlights that a crucial aspect of self-determination among Indigenous peoples is the ability to plan for the future in ways which are inclusive, well-informed, culturally relevant and respectful of the reciprocity between humans, nonhumans, and the environment.

The reasons participants gave for desiring inclusion into Sudbury's re-greening programme corresponded with themes in this thesis: disproportionately high impacts from contamination, a lack of recognition of Métis identity and knowledge in the region, participation omission in the Sudbury Soils Study, a lack of meaningful consultation with industry, and a desire to lead and share the Métis way of life with future generations: '*I think I think it's pretty important for us to be involved in those kind of things because it affects us'* (MP07).

6.5.1. Disproportionate Impacts and Knowledge

Considering that Métis participants in this project remain actively engaged with Sudbury lands and waters and, in many cases, subsist off the land, they are undoubtedly highly and uniquely impacted by the region's industrial legacy of contamination (as discussed in Chapter 5). It is, therefore, judicious that they have the opportunity to help restore and monitor the land. MP05, a Métis knowledge keeper, believes that the Sudbury Métis need to be more heavily involved in environmental monitoring: *'I think we need more involvement in monitoring the area that we live in, whether it's the impact from mines, whether it's the impact from forestry, whether it's the impact from global warming. I think our people are on the land, and we should be in charge of doing our testing on our lakes that are important to us, that we use daily. Testing the soil, testing the aggregates that they use for the roads (making new roads for forestry or mining or anything else), making sure that what they put down is not contaminated. Check in on our creeks and our fish and animals.'*

Further, Sudbury's Métis, and indeed Sudbury's entire Indigenous population, can offer a lot of information regarding spatial, temporal and social perspectives of re-greening and restoration. Traditional knowledge is an effective and efficient means of monitoring restoration projects (Uprety et al., 2012) because traditional knowledge keepers are adept at observing and remembering variations and patterns (Lyver et al., 2009). Additionally, traditional people often interact with a landscape at a much larger scale and over more extended periods than scientific investigators (Fraser et al., 2006). Areas or species that scientists believe to be sensitive are not necessarily the same areas or species identified at risk by harvesters in the region. Conversely, there may be species that harvesters deem in jeopardy that environmental impact assessment criteria have somehow overlooked. Likewise, the timing of wildlife migrations and aggregations are critical restoration criteria, though these patterns can be variable and missed within a scientific investigation's temporal and spatial limits. On the other hand, harvesters typically observe wildlife habits year-round, so they can provide valuable observations regarding seasonal habits. And while TEK should not be used outside of its context and agency, social perspectives can help researchers understand how the environment is perceived.

Other Métis participants contend that knowledge of the region and its species is abundant among knowledge keepers. In the words of MP09, '*I think some [Métis] have, probably have, a deep well of traditional knowledge to, the word in English escapes me, but just based on family members who are Métis, they're... quite involved in the community, and they really know their stuff.'* MP13 added that her father was heavily involved in his own ideas of restoration on his property, '*He planted, oh, about 16,000 trees on his property.*

He said there was evidence of cedar and red and white pine existing as charred stumps.' This knowledge corresponds with the knowledge of RP08 who speculated that 'Sudbury once had mixed forests with vast cedar and pine stands among smatterings of northern hardwoods.'

6.5.2. The Right to Exist and be Heard

Yaqui legal scholar Rebecca Tsosie (2015) notes that mining remediation should include social and political objectives to facilitate the restoration of trust and instil a sense of peace with Indigenous peoples. She argues that omitting Indigenous voices in favour of scientific and economic accounts perpetuates injustices. Adequate participation and environmental consultation were recurring concerns among Sudbury's Métis. While interest and discourses of Indigenous justice have increased, action and policy have lagged. The omission of Métis consultation in Sudbury's restoration programmes has left Sudbury's Métis feeling somewhat sidelined. However, the lack of meaningful dialogue with the mining industry sometimes invoked anger: *'Our traditional rights are being taken from us. They're not being protected. And in turn, we are not able to take ownership of our obligation to our environment!' (MP08).* Or, as MP07 affirmatively stated, *'Is there enough consultation with Sudbury's Indigenous people? Oh, heck no! I think that is one area that could be improved upon, definitely!'*

Industry is expected by government standards to develop awareness and consult with the Métis; however, the expectation falls short of allowing the Métis to refuse developments or industrial projects. Instead, a conservative nod toward social inequality has been made

of duty, but little is done to uphold principles of equity and fairness. Though the nod to equality is not itself problematic, the underlying 'checking a box' scenario as a concept of egalitarianism should draw attention. Industry leaders commonly offer consultation or land use studies for local Métis peoples today; however, without adequate engagement concerning the analyses of the land and its significance or an explication of issues and policies that continue to impede the community, there is a significant risk that any transformative dimension of justice will be overlooked. Unless leaders are genuinely listening and engaging about experiences of unequal opportunity or racialised practices that perpetuate inequality, these consultation approaches continue to risk precluding actions aimed at improving broader policies and structures.

6.6. Restoration as a Reconciliation of Ways

The Government of Canada states it is 'committed to a renewed nation-to-nation relationship with Indigenous Peoples based on recognition of rights, respect, co-operation and partnership' (Government of Canada, 2022). The Truth and Reconciliation Commission (TRC) 'Calls to Action' Report of June 2015 specifically calls upon the government to adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples as a framework. To this end, Article 29 (1) of the United Nations Declaration recognises the need to protect the environment.[61] Once marginalised, displaced and dispossessed, Indigenous peoples are now affirming these rights,

[61] Article 29 (1) of the United Nations Declaration on the Rights of Indigenous Peoples states: 'Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources. States shall establish and implement assistance programmes for Indigenous peoples for such conservation and protection, without discrimination.'

expecting results from the TRC's Calls to Action, and asserting themselves as self-determining nations. Importantly, original peoples in Canada are rights-bearing, not rights-seeking. Indigenous peoples are not seeking rights from the Canadian government; they are their own nations and have their own agency.[62] Thus, increasing acceptance of Indigenous worldviews presents an opportunity for Canada to move forward on its path to reconciliation with all three Indigenous peoples. In Sudbury, applying Métis knowledge and the conceptual Indigenous notion of 'Two-Eyed Seeing' to the city's regreening programme is both an opportunity to diversify the process and a reconciling of ways.

At present, Indigenous participation and inclusion of Indigenous knowledge in any form are noticeably absent in Sudbury's current regreening programme. Whether from the Métis community, industry, or academia, none of my participants knew of any restoration or regreening project utilising Indigenous ways of knowing. So, while local restoration efforts have been precedent-setting, they have been without input from the people who rely most on the region's land. RP12 was modest and apologetic when asked if he knew of any local project that utilised Indigenous knowledge:

I don't, and I guess I feel a bit sheepish about that, to be honest. And not that I am deeply involved in the regreening to be able to say that we should do this, but I am surprised that we haven't done this. Especially… there are some strong communities right here on our doorstep. It's not as if we are without. People from those communities have been involved, but it is surprising to me that TEK has not had a stronger presence in those conversations. To be honest, I am surprised that nobody has done this in Sudbury. We have a large Indigenous population. We have a fabulous record of ecological restoration. So, it is hard to believe that the two haven't been married.

[62] Prior to February 2018, and the Canadian government's *Recognition and Implementation of Rights Framework,* the Métis were considered a provincial responsibility. The recent turn to recognize Métis nationhood and to engage in nation-to-nation and government-to-government dialogue has been positioned as an act of federal reconciliation.

He continued:

This is all very interesting. And quite important. And I think you've got a contribution that you can make and I think you should have the confidence to do it. It's important that it comes from somebody with the credentials. And by credentials, I don't just mean science. I mean you know both sides of the splice. You can do it in a way; well, I don't know anybody else who can do it. You can articulate both sides of splice. Both parts of the splice. I don't want to say sides as if they are opposing one another. But it's, you know, when I'm taking people around the lake centre, I show people the splice in the beams. And I'll say, you know why that beam is so strong? It's because it's spliced. Two knowledge systems. Splice them, and you've got something that is stronger than both.

How the Sudbury Métis regard particular environmental issues (the epistemology) and how they perceive their reality living in an industrially-impacted land (the ontology) have guided their actions (or inaction) in terms of knowledge sharing. The power relationships between the Métis and the societal structure have been embedded in elements of power and control. To date, the Métis have had little power and little control.

Bacon (2018) and Whyte (2018a,b) both contend that colonial natural resource management policies amount to 'ecological violence', considering that the policies disrupt intergenerational systems of traditional ecological knowledge transfer, which can often define Indigenous community. While Indigenous environmental justice literature is frequently framed in terms of injustices associated with initial colonial contact periods, less is written regarding the continued occupation of land (Bacon, 2018; Whyte, 2018b). In other words, these authors view the continued control of land as an ongoing injustice. Similarly, Métis participants were deeply concerned about what continued land occupation would mean for future generations. Most participants were heavily invested in maintaining traditional ways and teaching these ways to the next generation. Sudbury's

Métis have been resilient and innovative and have taken collective action to ensure the continuance of their traditional way of life; thus, retaining and transferring this knowledge was of fundamental importance.

If I have grandkids, hopefully, I'll show them a lot more. The Métis part of medicines. That side. Thinking about animal spirits and respecting those things. I didn't have that before, but I do now. And I'm going to try to pass that on. (MP04)

I am worried about my kids growing up in pollution. I am worried about changes on the land that we are not consulted about. I am concerned about the division in our community. We need to learn how to consult with our First Nations cousins. (MP07)

My father is 94 years old, and he can still describe where things were back in the day. He is a big contributor in helping us children know everything he knows. Now, I want to pass that knowledge to my grandchildren so they can keep passing it along to their children and so on. To me, if I can do that, I can go see the Creator in peace. (MP19)

Looking ahead to a better future for Indigenous peoples, the Truth and Reconciliation Commission of Canada (2015) defined reconciliation as an ongoing process of establishing and maintaining respectful relations. While not explicitly mentioned as a component of Indigenous reconciliation, ecological restoration provides the opportunity to re-establish connections between the land, Indigenous peoples, and Canadians in general. If done thoughtfully and respectfully, restoration work – liming, planting, and even forest floor transplants – could provide an opportunity to acknowledge reciprocity, the act of giving back to Mother Earth. Successful implementation of IK into the regreening programme would require conscious and reflexive practices that centre around reciprocal relationships.

MP16 mentioned that education and ceremony were also important to restoring reciprocal relations:

Well, Indigenous Knowledge is important [to restoration] because, from the Elders and old tradition, we never take from the land without giving back. We don't take except to feed ourselves and our families, right? And I don't know how, or I don't think we can change society to look through an Indigenous lens, but I think those old beliefs and respect to Mother Earth is important wherever remediation occurs… I have a biased point of view, but I think it needs to start in early education. The basics. I think ceremony is important. My belief is in the spirit world, right? Bringing them in – ancestors, the grandmas and the grandpas and bringing them in this process to help us. Make sure that we're guided in the right way. Especially in terms of the seven grandfather teachings.[63] *So, ceremony speaks a lot in terms of land and water and air remediation.*

Another simple but significant act that Métis participants repeatedly mentioned as a means of healing the relationship with the land was leaving tobacco offerings on recovering sites. The practice of laying tobacco in exchange for harvested animals, plants, or medicine was an example of reciprocity frequently cited as a means to restore relationships with Mother Earth. Whether harvesting berries or harvesting a moose, many participants said that tobacco was respectfully laid behind in the bush or water as a token of thanks, a reminder not to waste or misuse things provided, and as recognition that you never take without giving back.

6.7. Re-greening for a Prosperous Future: the next 45

Despite forty-five years of re-greening, Sudbury's emerging forests, like other industrially damaged landscapes worldwide, are still being rehabilitated. The best tools must be used

[63] The Seven Grandfather teachings have several versions, but the Ojibway version most frequently cited by the Métis in the Sudbury region is that seven grandfathers gave seven teachings to live the Indigenous way of life: Nibwaakaawin – wisdom; Zaagi'idiwin – love; Minaadendamowin – respect; Aakode'ewin – bravery; Gwayakwaadiziwin – honesty; Dabaadendiziwin – humility; Debwewin – truth.

to solve some of the problems facing these landscapes, not just those derived from Western science. To this end, Indigenous knowledge systems hold a vast repository of knowledge that has been developed over time. Indigenous peoples have been managing lands and waters in the Sudbury area for generations, thus, their knowledge provides a wealth of insight to contemporary restoration practices. Some participants believe that the Métis community is perfectly positioned and outfitted with the tools for restoration by the very nature of their existence. Métis, as descendants of European fur traders and Indigenous women, have frequently been raised or exposed to Western and Indigenous traditions. Thus, it is unsurprising that Two-Eyed Seeing, though initially a Mi'kmaq concept, strongly resonated with the Métis participants in this project – weaving Western and Indigenous knowledges together is a natural and familiar concept. As MP14 states:

Métis should be part of the (restoration) conversation because we kind of straddle both worlds. Most of the time, we have sort of an office job or a regular 'white person job', yet we live, hunting and fishing and skidooing in, you know, the remote parts. And then getting game, whatever the seasons are, like the hares and the rabbits, partridges—getting food sources from different areas. So, I imagine that Métis are very knowledgeable, particularly when we're involved in both parts of the worlds.

6.7.1. Braiding Knowledges

In the words of RP14, *'Indigenous peoples were the first ecologists; they had to learn the behaviour of the plants and animals around them.'* The essence of this statement is captured perfectly in the knowledge pertaining to the 'three sisters' – staples of local Indigenous diets. The three sisters – beans, corn, and squash – are almost always grown together in Indigenous gardens as a polyculture. However, Scholar Robin Kimmerer (2013) is the first to articulate how the three sisters are also living metaphors for a

reconciliation of ways. In her story, corn is the first to be planted; it provides the scaffolding for the other plants. In this manner, corn is the symbolic representation of Indigenous Elders – the intellectual scaffolding. The bean, Western science, meanders up, and though guided by the corn, the bean is powerful in its own right. Beans would become a monoculture without corn, but alongside the corn, they provide balance. Scientific knowledge can stand alone, too, but when directed by the principles of respect, reciprocity, reverence, and responsibility of Indigenous knowledge, science becomes symbiotic knowledge. And just as the corn and the bean never blend, Western science and Indigenous knowledge never blend either. The two ways of knowing remain sovereign entities – the sovereignty of knowledge systems. Lastly, squash, a symbolic representation of humanity, provides shade, keeps the weeds out, and generally creates a microclimate for the corn and bean to remain in balance and harmony. The question then becomes: how do we create a microclimate where scientific knowledge and Indigenous knowledge can achieve this level of balance?

Two-Eyed Seeing includes contributions from multiple perspectives (Bartlett et al., 2012; Carjuzaa & Ruff, 2010); we learn to see from one eye with the best in Indigenous ways of knowing and from the other eye with the best in the Western (or mainstream) ways of knowing. We learn to use both these eyes together for the benefit of all (Bartlett et al., 2012). Kimmerer (2000), again, elucidates the term using sweetgrass as a metaphor: Sweetgrass, the hair of Mother Earth, is often braided using three strands – one of those strands is scientific knowledge, another is Indigenous knowledge. The third is the plants themselves. We weave the three together as carers to our Mother, and together, the strands are stronger.

MP09, when asked if he thought the re-greening programme was an opportunity to consult with Indigenous knowledge keepers, replied, *'I think the ideal solution for us to move in is that direction of inviting, you know, people who know the land, who have been living here way before immigrants ever came over, for hundreds of years before, and get their input on what we're doing with this land and how we're treating the land. I think that we can come together with our Western ideas and traditional ideas and find a very happy middle.'* Currently, colonial governance systems influence restoration such that the processes primarily rest with governments, academia, and industry. Thus, restoration knowledge and decision-making occur within a primarily Western worldview. If meeting community needs is the purpose of the re-greening programme, many Métis land users would argue that the programme requires re-evaluation.

A good restoration plan requires a holistic view incorporating historical, social, cultural, political, aesthetic, and moral aspects (Higgs, 2003). As mentioned, the Métis have effectively straddled both worlds – colonial and Indigenous – for hundreds of years. Consequently, it seems logical that both ecological and social systems should be considered rational regarding this holistic and historical approach. Though many of this project's participants acknowledge that it is unlikely Sudbury will ever return to its pre-disturbance state, there was widespread belief among Métis participants that intergenerational knowledge of historical conditions and species could offer a starting point for restoration design and discussion. Concerning the restoration design, and to my surprise, there were no objections to the incorporation of Western scientific knowledge alongside Indigenous methodologies.

We've used Western science up to this point. And it's gotten us pretty far. We've done well with it. But like I said, I think, Indigenous peoples, Métis people should be involved. I don't know how that happens or what that looks like. But there must be a way to get everyone at a table and talk about goals, and how to get there. (MP10)

Well, they [scientists] are proving it [our knowledge], saying, 'Now we've gone out and done measurements so we can prove it [traditional knowledge validity]. Like, for example, the scientific benefits of maple syrup. Well, we've already known this for thousands of years! So, there's nothing to say that our practices are ineffective and don't work; they do work. So, why aren't we bringing this into the education system? 'Cause I mean, there's still a lot of racism and so much to deal with in society, and this is just one small aspect of it. How do you massage it [traditional knowledge] in? We [the Métis] know that this is the case, we know that contaminants are out there, we can do this remediation, but if we can help with the knowledge in the people who are coming up, if children learn a different way of thinking about what we [the Métis] have to offer, then that's a pretty big issue, right? (MP16)

I'm not sure how widely I want to go on public record with this, but I will tell you that I have not heard, I have not heard in the presentations that I've been to about the re-greening of Sudbury, that traditional knowledge has been referred to… We have to show that we respect and will listen to the knowledge holders, whether Métis or First Nations. Go in not to tell but to talk. And not to say that I'm here to listen, but to actually to listen. Set up conversations to listen. (RP12)

Research suggests that TEK co-evolved alongside ecosystems and may provide a strong foundation for ecological restoration (Higgs, 2005; Long et al., 2003; Turner et al., 2000; Shebitz, 2005). However, like Sudbury's re-greening programme, most efforts to restore ecological integrity involve tree planting as a primary mechanism (Lamb et al., 2005). To date, the tendency in the re-greening programme has been to plant monocultures of pines. In cases where the tree species selected have no use to the local people, ecological restoration can be perceived as a failure (Sayer et al., 2007). Hence, recognising the distinction between re-greening with tree plantations and re-greening with regard to Indigenous uses could help restore relationships between the scientific and Indigenous communities while also restoring Indigenous relationships with the land. Though planting trees is a visually appealing and cost-effective means to 'green' the city, the initiatives

lack the proper consideration for biodiversity or cultural significance. To most Métis participants in this project, restoration means bringing back natural forests or attempting to do so. To this end, First Nations and Métis peoples can help reinvent the Sudbury forests by providing archaeological forest frameworks.

It is within this archaeological framework, however, where Western scientific restoration and Indigenous knowledge frameworks may potentially face some incompatibilities. RP05 shared that he is a firm believer in restoring landscapes with the changing climate in mind, *'So when they put in the new innovation centre, I was in charge of picking the plants. And in that case, I pushed for planting southern Ontario species in anticipation of climate change. So, this would be adaptation.'* While Métis participants widely acknowledged concerns about a changing climate, all three participants, aware of the practice of increasingly using southern Ontario plantings in Sudbury, objected to it.

Sometimes I find that they're [restoration biologists] are trying to put stuff that was never really here. They're making up a very artificial kind of forest… They're also talking about regreening and climate change. So, bringing species from down south. So up here, it's considered assisted migration - that thinking is, 'Well, if can exist here in 50, 60, 70 years... that type of climate, so we're planting species in preparation.' Well, I don't believe that that's the way we should do it. That's different points of view though… (MP04)

So, do I want trees coming from down south transplanted here? You know, I'd like to know what kind of tree it is and know what pests they have, what they're bringing up here. (MP07)

Nevertheless, RP05 did concede that though it might be paradoxical to climate change adaptation, there is enough land in the Sudbury area in need of restoration that it would be conceivable to have a TEK/IK forest, *'Yes, it might be paradoxical, but we're still a big experiment here. We don't know what things will look like beyond the next generation. So,*

let's give them the skills that we do have now. To monitor [science] and to determine value [IK]. We owe this much to our Indigenous stakeholders. We can also employ Indigenous methods elsewhere – fire breaks, food forests. But before food forests, we need a retooled Sudbury Soils Study with more indigenous engagement, exposure assessment, and metal threshold.' (RP05)

While supportive and open to the addition of Indigenous knowledge in Sudbury's regreening programme, I found the phrases '*let's give them the skills*' and '*we owe this much to our Indigenous stakeholders*' noteworthy and thought-provoking in retrospect. Though I did not have an opportunity to have RP05 elaborate on these thoughts, nor was I able to discuss them with Métis participants (due to COVID-19 restrictions at the time), it occurred to me that Sudbury's Métis may perceive the situation quite differently. Firstly, the Métis participants in this project were open to and accepting of Western scientific knowledge and skills; one participant even identified himself as a 'forestry scientist'. Thus, it seems quite likely that scientific skills such as environmental monitoring and planting already exist in the Métis community. In the event that workshops or sessions could be held to increase capacity of these skills in the Métis community, I would argue that Métis participants may prefer a knowledge sharing session. In contrast to being seen as potential recipients of Western knowledge, results from this research suggest that Métis knowledge holders and Western scientists may have more in common than they realise and that knowledge could be transferred in both directions.

While it is evident that Sudbury's Métis would like to see engagement in regional restoration, as RP05 astutely noted, the matter of contamination also remains a pressing

concern. There is consensus that it does little good to 'green' the city if the soil and water that nourish the fish, birds, and wildlife–and, by extension, humans–are contaminated. In reference to the Sudbury Soils Study, MP16 aptly noted, *'A human health risk assessment and an ecological risk assessment are not distinct for us as Indigenous people. We operate in tandem.'* In light of the new provincial targets for chemicals of concern and the exclusion of Métis in the entire Sudbury Soils Study consultation process, it is reasonable to prioritise a new soils study whilst pursuing restoration goals.

Well, knowing that there's abandoned mines, and we don't know the current state of their pollutants, I think priority should be put on trying to make sure that we're putting a stopgap to whatever, whatever harm might be bestowed upon the land here. And then once we know that we've put a stop to any sort of like, new contamination, then we can move forward to improving the land at that point. (MP09)

Whether in terms of a revised soil study or a redefined restoration plan, genuine acceptance and integration of Indigenous knowledge requires redefining relationships and promoting the legitimacy of it. The quantitative approach inherent in the current re-greening programme reduces Sudbury's land to trees as objects rather than trees as beings, and as such, is dissimilar from an Indigenous approach that would not necessarily mark success by the number of trees planted or hectares seeded (Martin & Mirraboopa, 2003). The trees, the seeds, and even the limestone are not a means to an end; rather, they are integral components of a way of life. Though the Métis participants in this project were not affronted by scientific restoration practises, the consensus was that scientific metrics should be secondary to healing relationships with the land. In other words, restoration success should also be measured in terms of healthy food forests and restored place-based relationships. A shift towards a more ethnoecological approach such as this would provide alternative applications of the re-greening programme. When

re-greening a barren landscape is purely ecological and scientific, manipulating plantings to achieve quantitative objectives is justifiable. However, when re-greening becomes a socio-ecological process, as the Métis suggest they wish it to become, approaches that encompass knowledge gathering and inclusive management, become priorities.

6.7.2. Métis Participatory Pathways in Practice

Effective implementation of a two-eyed seeing approach to restoration would undoubtedly require Indigenous oversight and agency. Restoration projects exist within a social context; thus, they must produce environmental conditions that are ecologically sound and socially acceptable (Hull & Gobster, 2000). Any structure of implementation that retained the current power imbalance would likely be temporary or ineffective. Indigenous and non-Indigenous stakeholders would be required to collaborate while regularly consulting with community members. Much like the steps taken in this project, workshops to help gauge suitable pedagogical approaches, focus groups to identify paths forward, and surveys to assess progress could be carried out to ensure that community concerns are heard. In this format, the Métis would become critical stakeholders in partnership with the city, the university, and the mining companies. There is, however, another format suggested by a participant that would grant the Métis even more autonomy. This format would see the Métis given the agency to restore a tract of land as they wished.

We've got plenty of land to work with. So, we can try one forest here and a different forest there. The scientists can speculate what will be doing well in 2050 and 2080, and at the same time, we can be respectful of traditional knowledge and say, we'll do it differently here. And then the next generation of Indigenous knowledge holders and the next generation of Western science knowledge holders will be able to look at the results in 30-40 years and say, right, so what will we do now? It's not one solution. It can be several solutions. And I think RP06 will be the first to say that we're really not sure which species will do well. Because it's not just a question of climate, it's also a question of soil. It's much more complicated than just climate. So, I would recommend try different recipes in

different places—some based on speculation from this group and, some from Western science and some from Indigenous knowledge. Give everybody a chance to feed their knowledge into what is still an experiment. And monitor it. Keep your eye on it. I think part of what Western science can pass on to younger guardians is how to monitor, how to observe, how to use methods of science to increase the capacity of yourself to develop your traditional understanding of the land. (RP12)

In this format, care and consultation would be required in site selection for such restoration. The Métis have recognised areas north of the city as an area of significance. Importantly, site selection can be as critical as species selection (Shebitz, 2005). In the Sudbury case, both site selection and species selection are important to the Métis; moreover, the land north of the city was mentioned as having the potential to be prime moose habitat. Nevertheless, the selection of priority areas should rest with the Métis community since the project's success could hinge on the social and cultural concepts that exist within a particular landscape. It has been demonstrated that hunting and harvesting are much more than sustenance for Sudbury's Métis; the practices are also about family and tradition. Indeed, traditional knowledge is fundamental in restoring culturally important species and traditional landscapes (Anderson, 2016; Shebitz, 2005).

As suggested by RP05, the use of fireproof forests and fire breaks is another particularly relevant and helpful suggestion*: 'We should worry about fire. So, build fireproof forests...Exactly the way that Indigenous peoples used to do with scheduled burns.'* Prescribed burning is a traditional land management practice that often creates a forest with a tree canopy and an understorey of grasses and forbs that can ultimately produce the desired species composition in a restored community (Anderson & Barbour, 2003). Both fire ecologists and traditional knowledge keepers emphasise the role of fire in

ecosystem renewal cycles and challenge ideas that all fires should be suppressed (Berkes et al., 2008).

Further, the concept of fireproof forest aligns with the idea of food forests. Again, in the words of RP05: *'The forests that we have change all the time. The forests that the Europeans saw when they came here were, I think, 200 years ago, still showed a strong influence from Indigenous peoples. They had left this region for whatever reason, but when they were managing these forests, they would do it actively. So, they would promote the growth of certain trees – hemlocks, stuff like that – because they would be food for bears. They would manage it with fire. With fire, they would keep out understorey trees and vulnerable species. So, they were deliberately creating a forest that was fireproof. And also would promote production of deer and bears and their food. So it was, in a sense, a food forest. And they would consume the nuts from these trees. Chestnuts in southern Ontario. I know they had agreements between tribes to manage these systems, and it was all done really well. You know, it has considerable ecological advantages to have that kind of system, and I see no reason why we can't go back to that.'*

This fundamental shift in knowledge application and equitable distribution of decision-making authority would help broaden the restoration paradigm. Empowering the Métis community through sharing decisions and respecting autonomy could lead to a more collaborative and comprehensive re-greening model. In fact, resilient socio-ecological systems could also be the beginning of a new, dynamic relationship between stakeholders. Löfqvist et al. (2023) offer a definition of equity-centred ecosystem restoration, arguing

that restoration approached through an equity lens in addition to sound ecological principles is more likely to improve ecological outcomes and promote environmental and social justice. In their scholarly work, the authors underscore the importance of integrating social considerations into the planning, decision-making, and execution of restoration programmes. They contend that such an approach can mitigate the risk of compounding inequality through restoration interventions. The authors suggest that a restorative strategy that prioritises equity can significantly enhance the prospects of realising and preserving the ecological gains of restoration over an extended period. One scientific participant was rather excited at the prospect that this project could lay the groundwork for a Two-Eyed-Seeing approach in the Sudbury region:

I think that you should, as I say, make it (socio-ecological incorporation) a goal of your work. Find a way to begin that knowledge splicing. And I think that you need to do it in a way so that those who have been doing regreening for forty years don't become defensive. You want a conversation. So, it has to be a gentle invitation. And you've got, because of your understanding and that work that you've already done, ways that the soil study might have been different, you've got some credibility with the science audience, right? So, you need to wear two hats. You need to wear your Métis hat, and you need to wear your science hat. And you need to say that I think it would be a great service to the entire community, including not just Anglosaxon or Francophone Sudbury, but also the Métis and Indigenous communities within the boundaries of Greater Sudbury, then let's have a go at broadening the conversation of bringing in TEK. I think you should be positive about that. And it's, you know, it takes somebody to say it. (RP12)

Achieving complete restoration, in the sense of total ecosystem recovery, is always difficult to achieve (Palmer et al., 2016). Total restoration of a pre-damaged region such as Sudbury is likely unattainable due to climatic and biological events that have occurred in the past fifty years. Consequently, some scholars prefer the term rehabilitation to restoration (Chazdon, 2008). In this context, rehabilitation implies returning a site to a previous condition such that the original productivity or structure is regained along with

some, but not all, of the original biodiversity (Higgs, 2003; Lamb & Gilmour, 2003). Under this context, a rehabilitated Sudbury would have a degree of ecosystem recovery but with a somewhat repurposed landscape.

Regardless of potential restoration endpoints, this research demonstrates that the Métis living in Sudbury would prefer a more inclusive re-greening process. Academic participants in this project agree that Indigenous involvement could improve social and environmental outcomes of restoration. However, power differentials – based on whose knowledge is valued – exist and are difficult to dismantle. Indigenous knowledge, particularly Métis knowledge, is still generally unrecognised and underutilised in scientific paradigms. While no clear pathways or structures exist to utilise Métis knowledge in a meaningful way, one can envision a power shift where Métis epistemology and participation are valued as essential components of ecological restoration plans. Though suggesting specific approaches toward power-sharing is speculative, this research demonstrates that Métis epistemology places two-eyed seeing in a position where VETAC and local Métis citizens could meaningfully collaborate. Structurally, this could occur through regular land-based consultations between VETAC and Métis knowledge holders and harvesters. Alternatively, or additionally, VETAC and the MNO's Region 5 Consultation Committee (RCC) could prioritise and plan restoration goals and activities in accordance with Métis values. The RCC in Region 5 – together with the Sudbury Métis Council and Métis citizens – could then move ahead with Métis-led restoration projects at significant sites (as democratically determined by local Métis citizens).

6.7. Discussion of Findings

Restoring and remediating mines has gained momentum under growing environmental pressures and public concern about unsustainable mining practices (Amoah et al., 2021; Beckett & Keeling, 2019; Hilson & Murck, 2000; Whitmore, 2005). Ecological restoration, at its core, works to recreate some version of nature and, in doing so, inherently makes assumptions about past conditions and anthropogenic roles within such conditions (Hall, 2005). As discussed in previous chapters, contaminated ecosystems disproportionately affect Sudbury's Métis. Yet, industrially contaminated harvesting sites remain unchecked throughout the region, and environmental restoration in the city persists as a primarily Westernised endeavour. In keeping with recent studies, which contend that minority environmentalists have been under-represented (Pearson et al., 2018), Sudbury's re-greening programme has, to date, been led by academics, industrial managers, and municipal leaders without ties to Indigenous communities. Consequently, advocating for inclusive land use and inclusive restoration policies tends to become lost in a long list of diverse stakeholder priorities.

The perspectives voiced in this chapter elucidate how distributive impacts, identity recognition, and participation parity are complexly woven together in Métis environmental justice as they correspond to ecological restoration. Specifically, the empirical findings emphasise that the presence, knowledge, and land use of Sudbury's Métis necessitate the inclusion of Métis in Sudbury's re-greening programme. While it became evident that Métis knowledge has not been taken into consideration to date, several ideas emerged – from both Métis and restoration participants – about how inclusion and participation could

be achieved moving forward. Though non-Indigenous participants profess their support for a more inclusive restoration process, conversations held within the context of this research suggest that it will take somewhat of an epistemological leap and a greater acceptance of Indigenous knowledge in the broader community for this to occur.

Sudbury has high restoration potential, and as an international award winner in the past, it has the new opportunity to be a leader in closing the gap between Western Science and Indigenous Knowledge – an endeavour with the potential to promote more equitable and effective restoration globally. Löfqvist et al. (2023) argue that restoration can simultaneously advance ecological recovery and prosperity for vulnerable people worldwide. Along these lines, findings from this research shed light on the crucial role played by recognitional equity, distributional equity, and procedural justice in determining the overall equity of restoration. Specifically, the findings highlight how the aforementioned factors influence ecological restoration equity through recognition of identity and worldview, the distribution of impacts and benefits, and representation in decision-making processes. Restoration, in turn, can provide economic, cultural, and social value through healing (Hourdequin & Havlick, 2015). Moreover, situating ecological restoration within an environmental justice (EJ) framework will help address the multi-layered cultural components regarding relationships connected to degraded industrial environments.

As seen in the literature (see Kermoal, 2016 and Kermoal & Altamirano-Jiménez, 2016) and reinforced in this research, Métis communities suffer when their connection to the land is disrupted. Restoring land, therefore, begins to restore this relationship. When this

work is grounded in Métis epistemological and ontological foundations and situated within an environmental justice framework, it has the potential to rectify the complex relationship between land and people (see Beckett, 2019). It is within this framework that Métis environmental justice can be envisioned in Sudbury: the recognition that the Upper Great Lakes Métis, though historically sidelined, have persevered, an acknowledgement that practising our traditional ways may place us at increased risk of contaminant exposure than other residents in the region, and that we have the intergenerational knowledge, ability, and desire to help restore the lands and waters that define and shape us. Acknowledging the hope of the sash's yellow and white threads, the adoption of a Métis EJ approach towards ecological restoration, and the incorporation of Two-Eyed Seeing in the process hold the potential to pave the way towards a prosperous future for all.

7. CONCLUSION

7.1. Introduction

This thesis was designed to research how the Upper Great Lakes Métis in Sudbury, Ontario, have been uniquely impacted by industrial extraction and how their knowledge – as a distinct Indigenous people – could facilitate ecological restoration in the region. Additionally, this research contributes to the theoretical debates on ecological restoration as environmental justice, particularly for Indigenous peoples. Using the Métis sash as a metonym for Métis principles found in the project's empirical findings, Chapter 4 examined issues of identity through red and black sash threads – the blood shed defending Métis rights and recognition and the dark era of dispossession. Chapter 5 continued with a look at regional distributional impacts on the lands and waters – green and blue sash threads. The final empirical chapter, Chapter 6, discussed the sash's white and yellow threads – spiritual connections and the hope for prosperity in terms of ecological restoration as environmental justice. The results reveal that concepts of Métis identity, wellbeing, relationship to the land, and traditional knowledge are complexly woven and tied together. As such, this research highlights how landscape changes impact Métis relationships with the land and challenge Métis harvesting, which impacts their health, wellness, way of life, and knowledge transfer. Despite these many challenges, the Sudbury Métis have managed to endure and retain their Indigenous identity.

The empirical chapters (Chapters 4, 5 and 6), together with the literature review (Chapter 2) and community-based participatory research (CBPR) method (Chapter 3), offer

guidance on how to enhance the social and environmental goals of Sudbury's environmental restoration efforts in consideration of Métis land use. To this end, I found that using a Two-Eyed Seeing approach in an environmental justice framework proved helpful in examining issues of identity (recognition justice), impacts (distributional justice), and participation (procedural justice). Beyond advancing the restoration-as-environmental justice discussion in literature, the findings of this research also have practical implications regarding policy practices. While this thesis focuses primarily on Métis experiences, the reality is that many people from diverse cultures exercise rights on (what is commonly known as) Crown land in the region. Thus, healthy ecosystems have significance for everyone, not only Indigenous land users practising traditional ways of life.

While acknowledging the broader implications of this thesis, this concluding chapter offers a summary of key findings in accordance with the primary objectives of the research:

- To document how the Métis people in Sudbury perceive their Indigenous identity and practice their traditional ways;
- To identify parameters of injustice affecting the Métis way of life, including how industrial impacts and ecological pressures are impacting traditional ways in the Sudbury region;
- To determine how Indigenous knowledge, and more specifically, Métis ecological knowledge, fits within Sudbury's ongoing environmental restoration programme;
- To develop the associations between Métis way-of-life impacts, epistemology, and Indigenous environmental justice.

While it is evident that recognition, distribution, and capabilities do not operate as mutually exclusive dimensions of environmental justice, examining their components offered a useful and practical approach. Complicating this approach, however, is the acknowledgement that many Indigenous scholars criticise discourses of mainstream environmental justice for not engaging with Indigenous literature on inter-generational, more-than-human relationality, reciprocity, and decolonisation (see Dhillon, 2018; Hoover, 2017; Lexmond & Boje, 2020; McGregor, 2018a,b; Middleton, 2010; Whyte, 2011, 2017). Empirical findings in this research, however, demonstrate that Métis participants were not opposed to mainstream dimensions of environmental justice, thus demonstrating that pan-Indigenous approaches are not always appropriate. In this research, Métis participants favoured a Métis-specific approach toward ecological restoration – one which emphasised Métis epistemology and Two-Eyed Seeing. Section 7.2 of this chapter discusses key research findings as they relate to the aforementioned objectives. The subsequent section summarises the theoretical and methodological contributions of the research. Lastly, the chapter concludes by considering the limitations of the research and making suggestions for future study and application.

7.2. Discussion of Key Findings

Few environmental science textbooks are complete without mention of Sudbury; it was, after all, one of the largest ecologically damaged zones on Earth in the 1970s. Since inception, however, Sudbury's VETAC (Vegetation Enhancement Technical Advisory Committee) has worked tirelessly to regreen the city. To date, several thousands of

hectares of land have been limed and seeded, and millions of trees have been planted (City of Greater Sudbury, 2023). Since initial restoration efforts concentrated primarily on increasing biomass, much of Sudbury remains dominated by pioneer species. Nevertheless, city and mining officials continue to encourage coniferous plantings; to date, conifers account for close to one hundred percent of tree plantings (City of Greater Sudbury, 2023). While productivity in terms of biomass has noticeably increased, some areas remain so degraded that seed sources are simply too far away to blow in and establish native plant communities. Because Sudbury's forests remain low in species diversity, project participants acknowledge that these recovering forests are potentially more vulnerable to environmental threats such as invasive species, climate change, and wildfires.

As noted by Métis harvesters in this project, Sudbury's forests are also largely inadequate for maintaining a traditional subsistence lifestyle. Harvesters interviewed in this project contend that restoration work to date has taken more of a quantitative scientific approach than a holistic Indigenous approach. In other words, restoration quantified by the number of trees or hectares planted is reductive next to an ecosystem or habitat approach. To this end, Métis participants in this project preferred concepts of interconnectedness and habitat reconstruction as means toward environmental restoration.

Environmental remediation has traditionally been understood as a technical, scientific and engineering endeavour (NOAMI, 2003). As documented in the literature, because contamination and environmental remediation tend to be framed as scientific issues, the

contributions of Indigenous peoples are often limited (Sandlos & Keeling, 2016a,b). As active land users, however, Métis harvesters believe their knowledge could facilitate restoration. They are keen to contribute to restoration work through collaborative knowledge-sharing projects, and indeed, previous research supports the notion that Indigenous knowledge can help address historical damage due to mining activities (Sistili et al., 2006). Likewise, this thesis supports literature advocating for environmental restoration as a component of environmental justice (Beckett, 2021; Beckett & Keeling, 2019; Keeling & Sandlos, 2009, 2016a,b, 2017). To this end, this work demonstrates how Métis traditional ways, knowledge, and well-being are inextricably connected to recognition issues, distributional impacts, and participatory processes. It also addresses how the capability approach allows for an understanding of the relationships between these tenets of justice.

7.2.1. Nested Justice Issues

Drawing upon the Métis trail tours and interviews, layers of past and present injustices were complexly unravelled in this study. Among these layers, injustices related to a lack of land access – whether by identity rights, land contamination, safety issues, or land privatisation – were the most frequently expressed. However, within each of these access barriers, deeper roots of injustices are revealed and, thus, the nested structure of this study. It was impossible to examine one aspect of justice in this study without another aspect of justice coming into play. Empirical findings elucidated how valued capabilities were embedded in other aspects of justice. For example, distributive concerns were frequently mentioned regarding unfair land or harvesting access; procedural concerns,

however, were linked to unfair participatory processes whereby the underlying reasons could be traced to the misrecognition of Métis identity and rights. When cultural practices and intergenerational knowledge sharing are inextricably linked to the lands and waters, inaccessibility issues have complex root causes and far-reaching effects.

When Métis participants were asked about Sudbury's ecological restoration, respondents would often lament that re-greening was insufficient to improve habitat and, therefore, harvesting and traditional subsistence patterns. This discussion would invariably evolve into a conversation about Métis harvesting rights, long-lasting industrial legacies, and health concerns. When probed to elaborate on these concerns, responses often centred on being the 'forgotten' Indigenous people. For example, participants explained how their disproportionately high amount of time spent harvesting on contaminated land, along with their disproportionately low amount of time in consultation or engagement on land issues, surely placed them at greater risk of becoming negatively impacted by legacy mining contaminants.

Inherent in these concerns are issues of unfair distribution, procedure, and recognition, which, as discussed in Chapters 4, 5, and 6, are understood to be products of disrespect that devalues some people and places in comparison to others (Walker, 2009). A central problem in this study was that Métis participants felt that others deemed their identity and culture subordinate to industrial development, municipal effort, academic interest, and even First Nations rights and customs. These competing interests intersected to the exclusion of the Métis in processes such as the Sudbury Soils Study, land use studies,

First Nation land claims, and ecological restoration work. By assembling all Indigenous peoples under one pan-Indigenous umbrella in some of the aforementioned processes, a misrecognition of identity ensued for the Métis, which impeded their ability to participate (see Fraser, 1997).

By positioning recognition at the forefront of this project, one could argue that misrecognition of the Métis is at the core of environmental injustices they face in the region. This stance would align with Young & Nussbaum (2011) and Honneth (1996), who claim that misrecognition and mal-recognition are key to understanding reasons for unjust processes and maldistribution. This position would be in departure from Fraser's (1996) claim that both distribution and recognition injustices are primary components of injustice. Results in this project, however, question Fraser's bivalent conception of justice, offering that maldistribution (increased consumption of potentially contaminated fish, game, berries, and medicines) occurs only because the Métis have been historically forgotten and ignored. The ignorance and misrecognition of Métis identity over the past two hundred years have, naturally, had negative distributional impacts on educational attainment, employment, and overall dignity in mainstream society. These distributional consequences have contemporary repercussions because even an assertion of identity does not necessarily give the Métis means to practise their culture with dignity. The Métis in Sudbury harvest on privately-held contaminated lands or nearby barren Crown land because travel to and from Crown lands outside of Sudbury is often prohibitively expensive, and purchasing private land is beyond the means of many Métis harvesters. Complicating land access issues, First Nation land claims are increasingly transferring

Crown land to local First Nations as a means of reparation. The effect, however, is that when Crown land is lost, Métis access and customs are lost too.

Arguably, attaining capabilities related to procedural environmental justice would go a long way toward distributive environmental justice for the Métis. Participation in land use studies, soils studies, and ecological restoration would inevitably change regreening endpoints, which would, in turn, lead to fairer distributive outcomes, which would ultimately enhance capabilities such as health, wellbeing, family relationships, land relationships, and knowledge transfer. These outcomes, however, inevitably link back to recognition justice, whereby being recognised and respected is a pre-condition for participation and engagement.

Just as the Métis sash is complexly woven, so too are the dimensions of environmental justice in this research. For example, attaining resources such as wealth or high incomes is sometimes required for Métis citizens to realise a capability such as practising traditional harvesting on private land. Moreover, capabilities can often be viewed as the basis of distributional justice; in this regard, education and technical knowledge of restoration science (capabilities and distributive justice) are beneficial to engaging with government, industry, and academic consultation processes (capabilities and procedural justice). Thus, the findings in this project demonstrate how the challenges in achieving Métis environmental justice do not operate in silos.

7.2.2. Intra- and Inter- Métis Identity Issues

Industry, government, academic, and Indigenous leaders must recognise and understand that Indigenous peoples differ across the country. Recognition of regional distinctions requires an acceptance of the different histories, experiences, and worldviews. In terms of Sudbury's Métis community, this acceptance could begin with outsider curiosity and willingness to learn about the Upper Great Lakes Métis. The first objective, addressed in Chapter 4, explored conceptions of Métis identity at the national, provincial, and local levels. Since the landmark Powley case, there has been substantial growth in people self-identifying as Métis in Eastern Canada, particularly in Quebec and the maritime provinces (CBC Radio, 2017). Leroux (2018, 2019) contends that these 'self-indigenising' claims are at the expense of their First Nations neighbours and believes that most of these claims would not meet the Métis criteria outlined in *R. v. Powley* [2003]. Though the Métis Nation of Ontario has affirmed its position as the eastern wall of the Métis Nation, some Indigenous leaders concerned about the growth–those who feel it dilutes and threatens understanding of Métis identity–argue for a much narrower descriptor of Métis peoplehood. Anderson (2008) goes as far as to restrict the term to those rooted in the Red River Valley of Manitoba.

While the Powley criteria largely describes *who* is Métis, it does not specify *where* a historic Métis community can be found or *what* constitutes a Métis community. Moreover, it does not determine distinctions between Métis communities. Nevertheless, the Métis Nation of Ontario and the Government of Ontario have identified six historic Métis communities in Ontario (in addition to the community recognised by the Supreme Court

in Powley). Killarney, a municipality on the north shore of Lake Huron in the Sudbury District, is one such community. Many participants in this project had ancestral roots to Killarney and spoke fondly about cultural customs and practices in and around the community.

While First Nation communities are expected to be culturally diverse across this vast country, the same social or scholarly allowance is not granted to Métis communities. Quite conversely, regional variability is sometimes perceived by Indigenous scholars as evidence against Métis cohesion as a people (see Leroux, 2023). Participants in this project recognised this hypocrisy but were quick to reject and dismiss it entirely. Métis participants widely acknowledged throughout this project that the ‘canoe Métis’ of the Great Lakes in Ontario would naturally be at least somewhat distinct from the ‘cart Métis’ of the Plains in western Canada.

Nevertheless, Indigenous responses to the contentious identity politics within the Métis Nation have left unease about Métis peoplehood in Ontario, including Sudbury. Currently, the Métis National Council (MNC) represents Métis peoples in the historic Métis homelands, which includes Métis Nation–British Columbia, Métis Nation of Alberta, Métis Nation–Saskatchewan, and the Métis Nation of Ontario. (The Manitoba Métis Federation stands alone as the representative body to the Métis in that province.) As such, the Métis in Sudbury remain under MNC jurisdiction, and the small community of Killarney persists as a provincially significant historic community of the Métis Nation. Consequently, this

work asserts that the Métis community with whom I engaged are indeed Métis, and the Supreme Court supports this assertion.

Beyond self-identification and legal criteria, TallBear (2013) describes how Indigenous identity is derived from how the first peoples emerged in relation to their lands and waters. He argues that this relational emergence is a distinct phenomenon from racial identity, which he states is grounded in genetics and blood quantum. In other words, Tallbear, like the Métis Nation, contend that Indigenous identity ought to correspond to relationality, not biology. While this notion of peoplehood may undercut the legitimacy of Métis in some eastern parts of Canada, findings from this research support the Indigenous identity of Métis in the Sudbury region using these relationality criteria. Without exception, Métis participants had shared memories and strong connections to the lands and waters within the region.

Scholar Zoe Todd (2017) describes her claim to Métis identity through her informal ‘fish test’, which is her unceremonious method of explaining where she is from, what species of fish is integral to her family’s survival, and how community stories are derived from the lakes within her territory. If such a test were applied to the Upper Great Lakes Métis in the Sudbury area, based on my conversations with citizens and on my own upbringing, we would share that species, such as walleye, trout, whitefish, bass, and perch, nourish us physically, culturally, and spiritually. We would talk about the longing to be on, in, or around the water with family and friends and laugh and cry about the happy and tragic tales along the North Channel of Lake Huron.

Though water exists in relation to land, its fluid nature transcends geographical boundaries and tightly bound regions. Similarly, the Métis participants in this research have had to practice mutability and resilience in the face of evolving discourses of identity. Despite the historical and present experiences of identity concerns, the maintenance of strong relationships with the lands and waters has shaped and sustained participants' identities. In all interviews, the land was held in high regard as the provider of sustenance, the space where knowledge is acquired, and the location where community and family ties were strengthened. The need for continued support of programmes and activities to connect Métis youth to the land was also a consistent theme, which supports the notion that lands and waters will continue to play a central role in subsequent generations.

Nathalie Kermoal, a Métis historian (Kermoal & Áltamirano-Jiménez, 2016), argues that colonial forces function in ways which tend to sever Métis connections to land, community, and ways of being. In keeping with her assertions, this research revealed that harvesting practices and connections to land are essential to the maintenance of Métis ontologies. When relationships between the land and the Métis peoples are strained, the Métis way of life is jeopardised. This strain is felt at the individual and group levels, making it challenging for the Métis to operate as a cohesive community.

Acknowledgement and accommodation of Métis identity and way of life are undoubtedly crucial steps toward recognition justice; however, it is simply not this tidy on the ground in practice. The persistent inequalities of the past that have carried over into the present are increasingly evident in ongoing legal cases, land losses, and cartographic practices. These longstanding social and historical injustices highlight the need for more

comprehensive and equitable approaches towards redressing these issues. Métis citizenship places some Aboriginal rights (including hunting, fishing, trapping, representation and consultation) at odds with our First Nations relations. That said, Aboriginal rights bestowed on Métis do not, and likely will not ever, be comparable to those of the First Nations. Aboriginal rights are distinct from one society to another because, historically, each First Nation functioned as its own separate community. Thus, while there is no overarching definition of what Aboriginal rights entail, in general terms, First Nations typically have rights to land, subsistence, resources, and activities. The right to self-determination and self-government also exists, as do the rights to practice one's culture and religion. Further, there are fiduciary benefits to status Indians (First Nations) that do not apply to the Métis (for example, section 87 of the Indian Act exempts the personal property of First Nations from taxation). So, though it seemed that the Daniels decision declaring Métis as 'Indians' under section 91 (24) of the *Constitution Act, 1982* would secure Indigenous status, colonial federal and provincial governments continue to apply Aboriginal rights on a sub-'Indian' or Tier 2 level to the Métis. The ability to practice traditional harvesting is as constrained as ever, and the fiduciary duty of the King and the right to be consulted by the federal government on a collective basis is still not on par with that of First Nations.

While many of the Métis participants had constitutional rights to harvest and be consulted on issues which could affect the lands and waters harvested, they were very impassioned to speak about the social and political dynamics through which these rights have been devalued or ignored in environmental and judicial processes. Recognition justice acknowledges power structures in shaping outcomes such as these (Newell & Mulvaney,

2013), and to this end, recognition justice is sometimes considered the link between distributive and procedural justice. York and Yazar (2022) note that inequitable distributional patterns are likely to continue in even new processes unless historical injustices and relative experiences of the marginalised are recognised. Thus, just as social justice scholars like Young and Fraser have expanded conceptions of justice to incorporate recognition and participation, so too have environmental justice theorists. Historical disconnections between distributional, recognition, and procedural justice echo broader environmental justice literature such that it has now become widely accepted that fair distribution is best achieved via inclusive decision-making (Schlosberg, 2007; Schrader-Frechette, 2002; Walker & Day, 2012). Though this project was not centred on any one aspect of social or environmental justice, the scholarly expansion of justice is particularly crucial for Métis who have felt sidelined from equitable processes and outcomes for decades.

7.2.3. Industrial Impacts on the Métis

Chapter 5 considered the experiences Métis participants had with environmental dispossession due to industrial impacts. Environmental dispossession, a term describing both direct and indirect processes whereby Indigenous peoples lose access to traditional resources or environments (Richmond & Ross, 2009), was examined from the perspective of impacts on traditional ways-of-life. Results from the survey, trail tours, and interviews identified that barriers to physical access and environmental contamination were two major reasons behind the loss of land access. It quickly became evident that when access to traditional harvesting places is disrupted, there are adverse effects on Métis relationships with each other and with the land. This observation was not

unexpected as it is consistent with previous findings that Indigenous peoples have strong attachments to their lands, and this attachment enhances holistic health and wellness (see Ballard et al., 2020; Bartlett et al., 2012; Blackstock, 2007; Pace, 2020). Harris and Harper (1997, 2011) offer several measures of injustice for Indigenous groups based on connections to land, including the inability to practice subsistence lifestyles (hunting, fishing, trapping) or traditional practices (access to sacred sites, traditional medicines, cultural landmarks, sacred ceremonies). Further, when lands are destroyed or degraded by mining activities, impacts can lead to losses of social cohesion, spiritual relationships, and mental health (see Gibson & Klinck, 2005; Horowitz et al., 2018; Lewis et al., 2021; Myette & Riva, 2021; Richmond & Big-Canoe, 2018).

While Métis harvesters acknowledged solutions to overcome some of the physical accessibility barriers (negotiating to harvest on private land, purchasing private land, travelling elsewhere to access Crown land), these adaptations were less than ideal, impermanent solutions, and certainly not universal among participants. Deals with private landowners, including Sudbury's two major mining companies, were often tenuous, with no assurances of long-term access. Meanwhile, purchasing private land and travelling to distant places were often considered cost-prohibitive –hence, not distributively just – ways to access land. Métis continue to experience inequalities in the labour force with lower salaries, higher unemployment rates, and greater vulnerability to economic downturns than the non-Indigenous Canadian population (Arriagada, 2016; Moyser, 2017). Thus, purchasing large tracts of land to harvest or affording transportation such as cars, snowmachines, quads, and boats to travel far beyond city limits is prohibitively expensive for many individuals and not easily addressed collectively.

While some Métis participants appreciatively mentioned that they receive fish, wild game, berries, firewood and medicine from family and community members' harvests, other Métis participants recounted the pride and joy of sharing these foods and medicines. This practice emphasises the Métis way of collective responsibility to support one another (Macdougall, 2017). Reciprocal relationships are critical to minimising inequity within the community while also supporting the wellness of Elders unable to participate in traditional harvesting. Further, when younger generations are relied upon to provide for older generations, knowledge, values, and relationships are given opportunities to be nurtured and passed along intergenerationally (Blackstock, 2007, 2011).

Drawing from the ethnographic interviews with Métis participants, it became clear that the proliferation of residential and mining roads was having a detrimental effect on wildlife habitat and populations. Participants mentioned that habitat fragmentation was reducing the population of moose and deer that the community depends upon for sustenance. Additionally, there was concern that the impervious surfaces were negatively impacting water quality around Sudbury's 330 lakes. The increase in road development was also stated to be a safety issue among Métis harvesters. With increased traffic in harvesting zones, safety and the dispersal of wildlife were cited as reasons to discontinue harvesting in a particular area. This finding is significant because it highlights how even the more innocuous aspects of mining–roads, not toxic waste–can substantially impact and alter harvesting patterns.

Contaminated land was identified as a second major impediment to maintaining traditional ways among Métis participants. Harvesting and habitat protection were deemed essential

to practising the Métis way of life in the region, so it is logical that anything jeopardising ecosystems and species would be of high priority. To this end, tailings waste from the mines and their associated seepage into groundwater and streams was deemed the most threatening contamination issue. Many participants questioned the safety of the fish, birds, game, water, berries, and medicine they harvested and consumed in the Sudbury region. While largely unaware of the concerning details presented in the Sudbury Soils Study, Métis participants questioned whether their traditional ways of living off the local lands were putting them at greater risk than the average Sudburian.

As noted in Appendix I, past research of mine regarding the Sudbury Soils Study led me to conclude that the Sudbury human health risk assessment lacked data on potentially worrisome metals. Additionally, several exposure pathways were excluded or lacked data in the assessment. As mentioned, these exclusions included critical fetal and infant routes and local food ingestion rates, thereby potentially underestimating risk in select populations, including the Métis who frequently harvest from local land and waters. Métis harvesting and consumption patterns, however, were not considered in the Sudbury Soils Study. Unsurprisingly, restoration participants in this research surmised that, if indeed the soils study authors considered the Métis at all, they likely assumed that their consumption and exposure rates were congruent with the First Nations data they obtained. Once I explained some differences in harvesting and consumption patterns between Métis and First Nations, restoration participants acknowledged that there were likely some inherent errors made in assumptions. Because the Métis are distinct from their First Nations relations but without a land base and, in many cases, land access, empirical results from

this project suggest that Métis harvesters are likely to be consuming large and small game from private mining sites (and thus, contaminated land) at disproportionally high rates.

Inequitable distributions can have long-lasting impacts, and temporal disparities can arise when a community deals with toxic legacies caused by previous generations (Graham et al., 2015; Jafino et al., 2021). On one hand, participants noted that the advent of mining around Sudbury has generated opportunity and investment into the region; on the other, it has left environmental harms which have disproportionately affected subsistence harvesters without the means to travel or the mobility rights to do so. This unfortunate experience of land versus livelihood echoes other historic mining frontiers in scholarly literature, most notably in the western US and northern Canada (Keeling & Sandlos, 2017). However, the results of this study show that contrary to some perceptions, there is nothing historic about historic toxicity. Pollution and contamination are enduring and impacting both group and individual functionings and capabilities toward well-being and physical health.

7.2.4. Re-greening and the Restoration of Sudbury

The re-greening of Sudbury has been heralded as an international environmental success story; undoubtedly, the city is ‘greener’ because of scientific, governmental, and mining industry efforts, and both sets of participants in this research acknowledged this fact. While widespread attention has been given to Sudbury’s scientific and technical successes, less attention has been given to participation and Indigenous values associated with the city’s environmental restoration. As reflected in the literature, the

generally positive association with ecological restoration tends to ignore the fact that planting trees is insufficient at dealing with the broader social and environmental implications linked to industrially contaminated sites (Kempton et al., 2010; Langhorst & Bolton, 2017). As such, Chapter 6 of this project investigated how a more inclusive restoration process could mitigate some of the challenges Indigenous peoples face, specifically, the Métis in Sudbury.

Whether from a lack of legal acknowledgement, national identity disputes, or historical legacies, Métis are only beginning to be invited to speak at the tables of government and industry. It is, therefore, somewhat disappointing–if not unsurprising–that the Métis in Sudbury have not been active participants in the city's re-greening programme. Chrétien and Murphy (2009) suggest that egregious historical legacies have, at times, had the unfortunate effect of constraining Indigenous voices or impeding full and equitable participation in environmental consultations. The authors note that this lack of consultation is a particularly salient problem for the Métis since their rights as Indigenous peoples are still in the early days of legal acknowledgement. As discussed earlier in this chapter, the nested convolution of Métis recognition and procedural justice remains at an early juncture.

Despite the fact that Métis participants surveyed and interviewed were active, intergenerational land users and knowledge holders in the region, empirical results of this project show a complete absence of Métis knowledge inclusion in land restoration. This lack of input was a source of frustration for many Métis participants, while it was a source of shame and embarrassment to some restoration practitioners. *All* Métis participants and

a few participants in academia believe that a mythology of restoration is being created. Stated otherwise, they believe the 'Sudbury Success Story' is somewhat of a false narrative that supports industrial partnerships deemed necessary for funding and resources. Though it is well beyond the scope of this project to determine the legitimacy of such a belief, it is a notable one to ponder, particularly because it was a commonality shared by both Métis and restoration participants. While Métis participants had lived histories and experiences that potentially negated their objectivity and influenced this rather suspicious belief, it was surprising that several academics (some of whom you would expect to be biased toward the narrative of restoration success) voiced similar concerns.

Suspicion and false narratives aside, all participants – Métis and the scientific community – were receptive to the idea of having future discussions to address the lack of Métis, and indeed Indigenous, knowledge in Sudbury's ongoing environmental restoration effort. The lack of Indigenous knowledge in the re-greening programme to date reflects the programme's orientation toward Western scientific modes of knowledge. Moreover, and as briefly mentioned, some restoration practitioners also suspect that Indigenous knowledge tends to continue to be overlooked because re-greening and restoration activities are often regarded so highly that they seem beyond reproach and above criticism. While the scientists in this project professed a desire to incorporate IK into Sudbury's restoration, the technical nature of some of the processes and an unfamiliarity with the epistemological basis of IK have assuredly circumvented inclusion. Nevertheless,

the results of this project demonstrate that the Métis could offer a knowledge base that encompasses deep temporal and spatial accounts of ecological changes in the region.

The binary approach toward knowledge construction as Western scientific or Indigenous was certainly more prominent among the restoration participants of this project. While restoration participants were not opposed to integrating Métis knowledge into aspects of Sudbury's re-greening programme, IK was generally perceived as 'distinct' from scientific knowledge. In contrast, there was not always a firm line dividing scientific and Indigenous knowledge among Métis participants; indeed, Indigenous knowledge was often perceived as very scientific, particularly in traditional practices such as tanning hides or producing maple syrup. In this regard, Indigenous and Western knowledge coexisted effortlessly, which is consistent with the concept of Two-Eyed Seeing (Bartlett et al., 2012). Thus, in regreening processes, finding synergies between knowledge systems while privileging the Indigenous worldview offers an opportunity to approach environmental restoration from a position that supports the Métis relationship with the land.

The Métis living in Sudbury, though not Treaty holders, have lived and harvested in local waters and lands for generations – in some cases, since their removal from their own traditional territory. Thus, local Métis epistemology is uniquely connected to the environment in which they live and harvest (while also encompassing traditional knowledge, cultural rituals, and way-of-life practices). Recognising and respecting these practices are key to affirming Métis self-determination in environmental matters and, therefore environmental justice. Further, because of the many cultural challenges

endured, Métis epistemology incorporates distinctive adaptive strategies, which can contribute to environmental justice solutions. Building relationships with industry, government, academia, and the community can promote intercultural dialogue and understanding, thereby enhancing mutual respect and recognition. Recognising historical injustices, addressing power imbalances, and ensuring equitable participation in decision-making are all crucial for the success of collaborative efforts in healing Sudbury's landscape.

7.3. Implications for Advancing Restoration

Though Métis participants were passionate about advocating for the inclusion of participation and knowledge in Sudbury's restoration, most were hesitant to offer concrete suggestions, believing that they did not necessarily have the knowledge for that degree of contribution. RP12 – a biologist who participated in this project and who is accustomed to working with Indigenous peoples in Canada's Arctic – believed part of the onus was on scientists to restore and build confidence in Métis knowledge holders, '*When you talk about building relationships, it's confidence building. It's an enormous part of it. I think that the way to diminish the dilemma that you describe [regarding the hesitancy to contribute] has to begin with the scientists. Set up conversations to listen. And I think that what that does is slowly diminish and dilute the self-doubt (more quickly in some more than others, of course).'*

Nonetheless, while Métis participants did not always explicitly answer questions related to how to enhance participation in Sudbury's restoration process, there were many

informal suggestions offered throughout conversations and interviews. I have summarised these ideas alongside those offered by the scientific restoration practitioners in Figure 7-1. These wide-ranging suggestions included everything from spiritual ceremonies to fireproofing forests to environmental monitoring. This data could potentially provide the foundation for a revised restoration plan with VETAC.

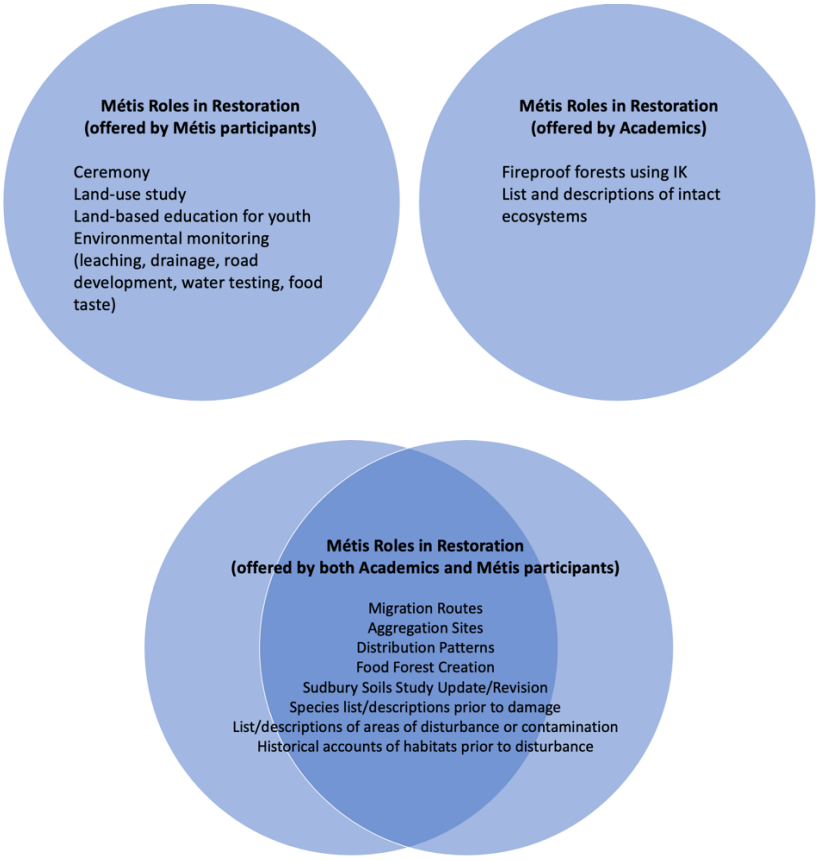


Figure 7-1: Suggestions for Métis engagement within Sudbury's re-greening programme
(source, author, 2022)

Additional Métis-specific goals toward achieving improved social and environmental goals include:

- Restore traditional harvesting sites of significance;
- Restore abandoned mine sites;
- Provide space and opportunities for land-based workshops for youth (trapping, hunting, harvesting, plant medicines);
- Increase intergenerational interaction between Elders and youth on the land;
- Increase community ecological knowledge and traditional teachings with an emphasis on engaging Métis youth.

To achieve these goals, I offer the following suggestions:

- Perform additional studies of mining impacts on Métis way of life. This could potentially include impacts of different stages of operation (for example, environmental assessments, road development, mine openings, operations, mine closures, remediation, and restoration). Geographic extent, duration, and permanence of impacts should be included in any additional research.
- Study cumulative impacts in the region – mining, development (industrial and residential), climate change, land access, and more.
- Create a book, pamphlet, and video of local Métis knowledge regarding medicinal plants, hunting, trapping, fishing, and cooking (in progress as of 2024). These different formats would allow greater access to a variety of audiences.
- Perform a ‘Resource Valuation Study’ where species harvested by households in a calendar year are assessed and given a dollar value based on the time and

expense of travel, loss of livelihood opportunities, and associated barriers. A resource valuation, though imperfect, would contribute to understanding how important each particular species is to a harvester's way of life.

- Build and support local Métis capacity for consultation with governments and industry.
- Partner with local agencies and organisations for plant conservation, particularly in sensitive areas rich in species important to the Métis way of life.
- Provide opportunities for Métis to engage in restoration protection and conservation.
- Develop a process to engage Métis in decision-making and application of traditional ecological knowledge as it relates to restoration status.

7. 4 Contributions to Literature

While this project's research goals and objectives are at the core of this work, deepening the knowledge base of Indigenous environmental justice is also fundamentally important. To place this work into a broader academic perspective, Table 7-1 identifies literature gaps that this thesis addresses. Additionally, this section outlines the implications of the thesis findings in terms of developing Indigenous perspectives, uneven human geographies, two-eyed seeing, restoration as IEJ, and IEJ as reconciliation.

Table 7-1: Theoretical Contributions to the Literature

LITERATURE GAPS	THESIS CONTRIBUTIONS
The literature does not often acknowledge or address issues outside of pan-Indigenous interpretations of environmental justice	Métis-specific issues of social and environmental injustice are addressed
Empirical research on Métis identity in Ontario has been conducted in a politically biased and atheoretical manner	Conceptions of recognition, justice and identity are examined with regard to the Upper Great Lakes Métis
Research on environmental distributional harms to Métis is noticeably scarce, particularly outside the scope of Western Canada	Using Sudbury as a case study contributes to the conceptualisation of Indigenous, specifically, Métis environmental justice in an industrially damaged region.
Ecological restoration processes tend to be grounded in Western scientific concepts	This study contributes to a holistic understanding of Indigenous impacts and decolonising ecological knowledge by including perspectives from academia, governments, non-profits, First Nations, and Métis. This integration encompasses the interplay of relationships that must work together for the betterment of the environment
Literature is only beginning to conceive ecological restoration as a component of environmental justice	This research constructs ecological restoration as a component of Indigenous environmental justice, thereby contributing to a growing body of research on this emerging topic

7.4.1. Pan-Indigenous Perspectives

This study challenges Leroux's (2018, 2019, 2023) assertions that the Upper Great Lakes Métis have assimilated and are no longer distinct. Further, it confronts the idea that Indigenous peoples are homogenous and well-served under a pan-Indigenous umbrella. Rather, as seen in Chapter 4, different groups of Indigenous people continue to assert their existence across the country and indeed within communities. The Métis, as a group

of Indigenous peoples living in Sudbury, lay no claim to the land in the City of Greater Sudbury. They widely acknowledge that Sudbury is located on the traditional lands of the Atikameksheng Anishnawbek and the Wahnapitae First Nations. The Métis living in Greater Sudbury simply wish to continue practising traditional ways of life that have been passed down for generations. Métis participants who have deep ancestral ties to the area, particularly those from the historic Métis community of Killarney, desire access to contaminant-free Crown land that they harvested for generations. Further, they highlight the need for Métis involvement to restore industrially damaged land to prosperous ecosystems.

7.4.2. Uneven Human Geographies

In Chapter 5, results indicate that degraded landscapes and persistent contamination can have negative intergenerational impacts. This finding is in keeping with current literature, which suggests that mining legacies have impacted surrounding Indigenous communities for generations (Keeling & Sandlos, 2017). Nevertheless, participants in this project understand that their history and uneven geography of exposure can help inform best practices of future restorative work.

Global literature about the role of mining in colonial dispossession suggests that remediation may act to perpetuate social and environmental injustices because of their technical and legalistic associations with the original development (see Joly, 2017; Keeling & Sandlos, 2009; Leddy 2017; Sandlos & Keeling, 2013; Wiebe, 2017). I argue, however, that this position undermines the awareness of Indigenous peoples impacted. Métis participants in this study, while inactive in restoration and unaware of the specifics

of the Soils Study, were well aware that they were potentially enduring disproportionately high exposure to Sudbury's legacy contaminants. Making assumptions that remediation or restoration could mitigate conflict and a sense of injustice is, therefore, patronising and a potential injustice in itself.

7.4.3. Two-Eyed Seeing

This project indicates that placing Western science in opposition to traditional ecological knowledge is a false dichotomy. The Métis participants welcomed both scientific and Indigenous interventions in Sudbury's restorative work and believed that they could preserve their Indigenous identity and culture in the presence of both. These findings point to an encouraging future where ecological restoration can embrace different worldviews while complementing both. However, to achieve this, this research argues that recognition is required to overcome procedural and distributive obstacles. Disrupting misrecognition of Métis identity would present an opportunity to discover a middle ground between Western science and IK, offering potential to address environmental injustice through Indigenous ontology and ways of knowing. In other words, I argue for not only ecological restoration but a restoration of relationships that would allow the Métis to enhance their functionings and capabilities.

Métis knowledge may be considered as a means to establish ecological baselines or to measure potential impacts, however, doing so serves to confine the knowledge to flora and fauna. Procter (2012, 2020) has argued that the tendency to equate Indigenous knowledge with tradition and wildlife often results in exclusion from bigger issues within the resource sector. Similarly, Cameron (2012) notes that assuming Indigenous peoples

are ‘traditional’ negates their experiences with the consequences of resource extraction. However, I argue that the very process of ecological restoration is one in which history intersects with the present and the future. Consequently, I envision restoration as potentially becoming a process for addressing past environmental injustices whilst decolonising knowledge of the present and healing the land into the future. Much like the strands of the Métis sash, all threads become woven together such that they remain distinctly identifiable while also complexly woven together to make something whole.

7.4.4. Restoration as IEJ; IEJ as Reconciliation

Encouragingly, there has been a shift toward addressing the contexts and processes in which environmental injustices occur (Holifield, 2012; Mohai et al., 2009). This shift still identifies distributional and procedural imbalances, but it also regards the geography and temporality of environmental pollution as well. This work towards understanding the political and community context of mining legacies and waste has the potential to better address how to heal the land for Indigenous peoples whose way of life depends upon it. Ultimately, and as mentioned, if environmental restoration is to contribute to environmental justice in Sudbury, it must be a process of rebuilding and reconciling relationships with each other and with the land.

Reconciliation involves changing the landscape of Indigenous affairs in Canada (Asch et al., 2018). The purpose of reconciliation, however, differs from decolonisation (Borrows & Tully, 2018). Reconciliation focuses on amending relationships between Indigenous peoples and the Canadian state (Borrows & Tully, 2018; Garneau, 2013), while decolonisation refers to a process which reverses the processes of colonisation. While

some scholars and Indigenous individuals envision decolonisation as returning land stolen through colonial exploits (see Fanon, 1963; Garneau, 2013; Mignolo, 2011; Tuck & Yang, 2012), this thesis places more emphasis on the processes honouring Indigenous ontologies and epistemologies once subjugated by colonial powers. As discussed, because the Métis were never signatories to Treaties in the region, any returned lands transfer back to First Nations (and rightfully so) but with the unfortunate effect of excluding the Métis, including lands once shared between First Nations and their Métis kin.

In colonial settler nations such as Canada, the United States, Australia, and South Africa, reconciliation with Indigenous peoples has been a process of confronting history with honesty, apology, and redress (Truth and Reconciliation Commission of Canada, 2015a,b). This well-intended process, however, has not been without criticism. Indigenous scholarship is often critical of reconciliation attempts and stresses that true decolonisation would involve the decolonisation of land (Coulthard, 2014; McGregor, 2018a,b; Simpson, 2017; Todd, 2014; Tuck & Yang, 2012). Though every nation has different historical, legal, and social contexts in which to situate reconciliation, I argue that environmental justice in the form of restoration can contribute to this goal. Recognising that a healthy and accessible environment is crucial to Indigenous ways of life can begin a process of acknowledging injustices, offering apologies, compensating for past and present harms, and ensuring involvement in the active healing of contaminated land and waters.

7.5. Recommendations for Future Research

This thesis builds on a number of different literatures – namely, environmental justice, Indigenous knowledge systems, decolonising practices, and ecological restoration of industrially contaminated ecosystems. Environmental restoration is an opportunity to recognise and embrace multiple ways of knowing through democratic procedures that centre fair distributive outcomes. I propose that utilising a Two-Eyed Seeing approach toward ecological restoration can function as a framework that will enhance both social and environmental outcomes. While providing insight into Métis epistemology and Métis environmental justice (specifically among the Upper Great Lakes Métis), this research also advances the discussion of ecological restoration as a component of Indigenous environmental justice. While I have proposed numerous recommendations to incorporate Métis knowledge and Two-Eyed Seeing into Sudbury's regreening programme, there is potential to apply and develop research areas on a wider scale. For example, this research has the potential to be expanded to other Indigenous peoples around the world and additional regions afflicted by extractive industries.

Though the case study was narrow in regional scope, it was sufficient to reveal local structural instances of power inequalities resulting from dominant societal views. However, the methodology did not allow for observation of the temporal relationship between Indigenous participation in re-greening and perceptions of environmental justice. Additional longitudinal ethnographic research could be used to observe changes in perceptions and capabilities over time as Indigenous knowledge is increasingly embraced in ecological restoration (King & Cormack, 2023; Sandlos & Keeling, 2016a,b).

Additional temporal research projects could consider the effectiveness of environmental restoration projects utilising Métis knowledge in terms of observed habitat and ecosystem improvements. Research of this nature is increasingly available in First Nation communities but still lacking in Métis communities (see Berkes, 2012; Joly, 2021). Comparative analysis studies could be conducted to understand the effectiveness of projects completed inter or intra-provincially. While scientific endpoints could be reviewed in tandem with Indigenous goals, it would be essential that Indigenous methodology and two-eyed seeing were prioritised in the selection process of measurable improvements.

Another potential avenue for research involves concentrating on the inter and intra-relationships between Métis, the scientific community, industry partners, and governments in longitudinal studies, particularly as they apply to environmental initiatives. Research focused on relationships and reciprocity is in keeping with Indigenous research methodology and could provide reflection on how environmental changes (positive or negative) enhance or constrain these relationships. Qualitative ethnographic methods would be useful in such a study, and empirical research could aid in the advancement of Métis-specific protocols for engagement.

7.6. Final Reflections

In the broadest sense, justice implies a sense of fairness (Rawls, 1971). Today, more than any time in history, there seems to be a greater awareness of inequities within society and a willingness to address these realities. Simultaneously, there is growing interest in reconciliation with Indigenous peoples, which inevitably draws upon Indigenous relationships with the natural world. As such, discourses of social justice and Indigenous

environmental justice are proliferating in academia and drawing on a number of interdisciplinary epistemologies. Scholars such as Lake (1996) and Ishiyama (2003) assert that distributional justice alone will not achieve equity. And yet, procedural justice involves more than just access to those making the decisions. In this study, procedural justice would require centring Indigenous voices – including the Métis – in environmental decision-making. Additionally, it would consist of meaningful engagement between Indigenous peoples in the area, non-Indigenous stakeholders, industry representatives, and regulatory bodies.

In Strang's (1991) words, decolonisation is not a destination but a process. As such, a commitment to decolonising research must be demonstrable in practice. In adopting the two-eyed approach into the environmental justice framework, this research seeks to encourage the use of CBPR among Indigenous geographers. While some scholars contend that geography is rooted in imperialism (see Bell et al., 1995), employing ethnographic and qualitative methods such as CBPR in the discipline challenges and uproots this approach (see Castleden et al., 2008; Castleden et al., 2012). In addition, part of my responsibility in this research was to legitimise forms of knowledge not necessarily perceived as valid (Stoecker, 1999). Throughout my research, I have made a conscious effort to strictly adhere to the cultural protocols and traditional values of the participants involved in my study, whilst also ensuring that the academic integrity of my work aligns with the standards upheld by the University of Birmingham, the institution in which I have studied.

In summary, before being hanged for treason by the Canadian government in 1885 and the subsequent era of denial and dispossession, Métis leader Louis Riel is famously quoted as saying, *"My people will sleep for one hundred years, but when they awake, it will be the artists who give them their spirit back"* (Canadian Museum of History, n.d.). More than 130 years later, while conducting research for this project, I had the immense privilege denied to so many of my ancestors – the freedom to learn about my heritage from Métis elders, harvesters, and elders. Over the eight years of this project – around numerous arts and crafts tables, beading lessons, moccasin workshops, trap line tours, and more – it was an immense honour to learn about Métis identity, land use, and knowledge. I also had the honour of teaching my daughters how to finger-weave their first Métis sashes – threads that connect our past with our present and beyond.

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APPENDICES

APPENDIX I: Sudbury Soils Study Human Health Risks

The three criteria for contaminants to be classified as Chemical(s) of Concern (COC) in the Sudbury Soils Study (2008) were:

1. Levels of the chemical in Sudbury soil samples must have exceeded Ontario's Ministry of Environment (MOE) trigger levels for further study.
2. The chemical must have been found throughout the study area.
3. The chemical must be related to smelting activity.

Table A1 displays the chemicals tested by the Ministry of Environment and those that met the SARA Group's criteria for inclusion as a COC.

Table I-1. Contaminants tested and contaminants meeting the SARA Group's Chemicals of Concern Criteria

Contaminants Tested by MOE	The SARA Group's Chemicals of Concern
Aluminum (Al)	Arsenic (As)
Antimony (Sb)	Cobalt (Co)
Barium (Ba)	Copper (Cu)
Beryllium (Be)	Lead (Pb)
Cadmium (Cd)	Nickel (Ni)
Calcium (Ca)	Selenium (Se)
Chromium (Cr)	
Iron (Fe)	
Magnesium (Mg)	
Manganese (Mn)	
Molybdenum (Mo)	
Strontium (Sr)	
Vanadium (V)	
Zinc (Zn)	

Notably, the Sudbury Soils Study COC trigger levels were based on the MOE's 1997 soil quality criteria (Wren, 2012). However, the trigger levels for soil metal

concentrations were lowered in 2011 to be more protective of human health; in most cases, these levels are considerably lower than 1997 levels. Given these revised guidelines, cadmium – a US EPA probable human carcinogen with many non-cancer toxic effects – would warrant inclusion as a chemical of concern. Likewise, antimony (Sb), barium (Ba), beryllium (Be), chromium (Cr), molybdenum (Mo), and zinc (Zn) all have maximum soil concentrations higher than guidelines (US EPA, 2013).

In light of new soil metal trigger levels, more contaminants ought to be considered as potential 'chemicals of concern' in the Sudbury region and synergisms between metals should be addressed (Smith, 2014). I recommend that blood lead level evaluations should be an option for children living near smelting complexes, and residents consuming large amounts of local produce should amend soils or consider container gardening. Further, because the effects of climate change have the potential to re-acidify and re-mobilize metals in Sudbury's soils, I suggest that future research must address the looming risk. Indeed, particularly with regard to the more toxic metals such as arsenic (As), cadmium (Cd), lead (Pb), and nickel (Ni), additional research is required.

APPENDIX II: Métis Land Use & Perceptions of Industrial Impacts in Sudbury, Ontario

Hello, Bonjour, Tawnshi, Aaanii,

My current research project is entitled, ‘Decolonizing Ecological Knowledge: A Case Study in Sudbury, Ontario, Canada.' Though I was born in Sudbury, and have returned to live and raise my children in Sudbury, I grew up on Manitoulin Island. I am a part-time distance Ph.D. student in the School of Geography, Earth and Environmental Sciences at the University of Birmingham (United Kingdom) currently conducting research under the supervision of Dr. Rosie Day and Dr. Steven Emery. The aim of my research is to explore the potential for incorporating Métis knowledge in Sudbury’s Re-greening Program in an effort to improve social and environmental outcomes. I am also a part-time teaching fellow in the Sustainability Program at Harvard University and co-teach courses in ecology and environmental systems. In my spare time, I enjoy swimming, canoeing, kayaking, skiing, snowshoeing, reading, cooking, and spending time with family and friends at camp.

As Métis, we rely on the land for nutritional, medicinal, and spiritual sustenance. Our voice, however, has been largely absent in Sudbury land reclamation activities to date. My community-based participatory research project will employ Indigenous research methodologies while acknowledging scientific efforts toward environmental reclamation. The objectives of the research include:

- To document Métis land uses and perceptions of reclamation in Sudbury
- To classify current approaches to reclamation
- To collect environmental and social impacts of mining from a Métis perspective
- To identify Métis preferences in reclamation and help inform ecological restoration in our region.

Interviews and questionnaire surveys will provide an opportunity to identify where Métis

knowledge of the land that sustains us can fill potential western scientific knowledge gaps. The research can therefore contribute to improved reclamation processes in scientific terms and also more inclusive processes that give greater acknowledgement to the Indigenous, specifically Métis, land users, their knowledge systems, and their practices.

This project is principally for the well-being of Sudbury's Métis community. The final thesis will be presented to the Sudbury Métis community in a manner of their choosing. Options of delivery may include a written summary, a sharing circle or a tailored presentation. The Métis community will have the opportunity to use the completed project as a reference for future policy and educational discussions. The research will also contribute to the growing body of academic literature on indigenizing environmental reclamation processes, particularly through the environmental justice lens of the Métis peoples.

I am self-funded, which means that I am not requesting, receiving, or offering payment for my research. This research project is purely an academic pursuit of recording perceptions in our community. The research will be conducted with the assistance of anyone who self-identifies as Métis in the City of Greater Sudbury. If you have any questions regarding this study, or would like additional information about participation, please contact me at [redacted] or by email at [redacted] You can also contact my supervisors, Dr. Rosie Day and Dr. Steven Emery, by email at [redacted] and [redacted] respectively.

Thank you, mérci, marsee, miigwetch in advance for your interest and assistance with this research project.

Yours Sincerely, Jillian Smith, Ph.D. Candidate

METIS LAND USE AND PERCEPTIONS OF MINING IMPACTS

IN

SUDBURY, ONTARIO

Please note that by completing this questionnaire, you are consenting to participate in the project and for your answers to be used anonymously in the research. If there are questions that you do not wish to answer, you may leave them blank. While there is an option at the end of the questionnaire to leave your contact information, you are not required to do so. Contact information will be kept secure and accessed only by researchers in the event that individuals are willing to participate in later stages of the project.

Personal Information

Gender:

Age (circle appropriate range):

18 – 24

25 – 34

35 – 49

50 – 64

65 – 74

75 +

Métis Land Use

1. Do you actively use the lands and waters within the Sudbury region? (Circle yes or no)

Yes

No

2. **If yes, for what purposes do you use the land and waters? (Circle all that apply)**

Hunting

Fishing

Berries

Trapping

Firewood

Ceremony

Medicine

Teaching

Recreation (camping, boating, snowmobiling, ATV, other)

Other (please specify)

3. Do you rely on locally caught fish as a large part of your diet? (Circle yes or no)

Yes

No

4. Do you rely on locally hunted wild game as a large part of your diet? (Circle yes or no)

Yes

No

5. Do you eat locally picked wild berries in the summer? (Circle yes or no)

Yes

No

6. Do you have a vegetable garden? (Circle yes or no)

Yes

No

7. If yes, what type of garden do you have?

Traditional yard garden

Container garden

Combination of both gardens

8. How much of a threat (if any) do you think these activities pose to the Métis way-of-life in Sudbury?

	Very High	High	Moderate	Little	None
Agriculture					
Urban Development					
Mining Extraction					
Metal Smelting					
Tailings and Mine Waste					
Tourism/Recreation					
Climate Change					
Other (please specify)					

9. How important do you think the following items are in maintaining the Métis way-of-life?

	Very important	Important	Moderately Important	Somewhat Important	Unimportant
Harvesting					
Habitat Protection					
Medicine					
Ceremony					
Spirituality					
Language					
Teaching					
Recreation					
Other (please specify)					

Environmental Impacts

10. How would you rate the overall state of the environment in the City of Greater Sudbury?

Very Good Good Moderate Poor No Opinion

11. How much of a threat (if any) do you think these activities pose to Sudbury's environment?

	Very High	High	Moderate	Little	None
Agriculture					
Urban development					
Mining/Smelting					
Tourism/Recreation					
Other (please specify)					

12. How much of a threat (if any) do you think these activities pose to Sudbury's lands and waters?

	Very High	High	Moderate	Little	None
Pesticides / Herbicides					
Fertilizers					
Invasive Species					
Habitat destruction					
Road Salt					
Mining Extraction Activities					
Metallurgic fallout					
Tailings					
Acid Rain					
Air pollution					
Water pollution					
Tourism/Recreation					
Climate Change					
Other (please specify)					

13. How do you believe that mining has impacted Sudbury's environment in the following ways?

	Very Positive	Somewhat Positive	Neutral	Somewhat Negative	Very Negative
Soil					
Forest					
Water					
Air					
Other (please specify)					

14. Are you familiar with the City of Greater Sudbury's Re-greening Programme? (Circle yes or no)

Yes

No

15. If yes, how successful do you feel the programme has been at restoring the landscape?

Very successful Successful Moderately Successful Somewhat Successful Unsuccessful

16. Have you ever participated in a City of Greater Sudbury reclamation event?

Yes

No

17. Do you know of any reclamation projects using Indigenous Knowledge/Traditional Ecological Knowledge within the City of Greater Sudbury?

Yes

No

18. How important to you are the following items in improving Sudbury's environment?

	Very important	Important	Moderately Important	Somewhat Important	Unimportant
Local Knowledge					
Métis Knowledge					
TEK/IK					
Citizen Science					
Reclamation Science					

19. How important is it to you that Métis Knowledge becomes incorporated into the City of Sudbury's Re-greening Programme?

Very important Important Moderately Important Somewhat Important Unimportant

20. How important do you think it is to integrate or include each of these items of Métis knowledge into the City of Sudbury's reclamation process?

	Very important	Important	Moderately Important	Somewhat Important	Unimportant
Métis land use					
Healing ceremonies					
Métis/TEK					
Métis employees/volunteers					

Social Impacts

21. What is your perception of mining impacts on Sudbury's Métis way-of-life in the following?

	Very Positive	Somewhat Positive	Neutral	Somewhat Negative	Very Negative
Fishing					
Hunting					
Harvesting					
Drinking water					
Trapping					
Camping					
Firewood					
Medicine					
Ceremony					
Teaching					
Recreation					
Other (please specify)					

22. What is your perception of mining impacts on Sudbury's economy, services, and infrastructure in the following?

	Very Positive	Somewhat Positive	Neutral	Somewhat Negative	Very Negative
Employment					
Economy					
Services					
Infrastructure					
Recreation					

23. What is your perception of mining impacts on Sudbury's lifestyle, safety, and well-being in the following?

	Very Positive	Somewhat Positive	Neutral	Somewhat Negative	Very Negative
Culture					
Health					
Well-being					
Safety					
Social Justice/Equality					

24. Do you have any additional comments that you wish to add to the survey? (Use the space provided below)

_____

_____

_____

_____

_____

25. If you would consider participating in subsequent parts of this project, please leave your name and email address and/or phone number in the space below (Optional)

_____

Thank you, Mérci, Marsee, Miigwetch for your interest and assistance with this research project!

Jillian Smith

APPENDIX III: Interview Guide for Restoration Participant (*source*: author)

Can you begin by describing your current role with the university/city/vegetation enhancement committee?

Can you recall how long you have been involved in reclamation science/Sudbury's Re-Greening Programme?

Do you remember what sparked your interest in reclamation/re-greening?

I am interested in the obstacles, barriers, problems, and successes you have faced over the years. Could you describe some highlights and lowlights of your time in the field/programme?

Could you take me back to when VETAC was established in 1973 and tell me what you think the City of Sudbury hoped to achieve in its re-greening programme?

What events or collaborations occurred from the formation of this advisory panel in 1973 to the on-the-ground liming/grassing stage in 1978,

In your opinion, what was the highest priority task in the beginning of reclamation process? And now?

How effective do you feel the re-greening programme has been in achieving its goal?

Could you describe how the process has changed over time and the impetus to make these changes?

Are you able to speak to the level of community collaboration in the early days of re-greening? And now?

Can you provide any insight into the level of input Indigenous communities–First Nations or Métis–have been able to offer to date?

In your opinion, do you think the political efforts towards reconciliation with Indigenous peoples have any bearing on reclamation science/restoration ecology? Or, is regreening an opportunity towards reconciliation with Indigenous people in Sudbury?

Are you aware of any reclamation projects using citizen science or indigenous knowledge in Ontario? Sudbury?

Do you think there is a place for local knowledge/indigenous knowledge/traditional ecological knowledge in Sudbury's reclamation process?

Are there any recommendation you could provide for improving representation of First Nations and Métis in the reclamation process?

Can you think of other reclamation projects similar to Sudbury's Re-Greening programme?

Sudbury recently celebrated 40 years of re-greening. Can you define what successful reclamation would look like to you in the next 40 years?

APPENDIX IV: Interview Guide for Métis Participants (*source*: author)

Would you be able to begin by sharing what traditional activities you perform in the Sudbury region? In other words, are you a trapper, hunter, fisher, gardener, medicine collector, berry harvester? How do you use what you harvest or collect? What outdoor recreational activities do you enjoy in the Sudbury area?

Are there particular places of significance to you within the Sudbury region? Or, could you expand upon some of your personal history with land and water use in the area?

Do you feel that there are lands or waters in the region that hold special significance to the Sudbury Métis community? Can you tell me about why these areas are significant?

Do you think there is anything that the mining industry, government, academia, indigenous peoples, or others could do to help revive these areas of significance?

Have elders, relatives, or others in the community told you stories or described historical features about these areas of significance?

Have you noticed changes in these areas since you first encountered them? What types of changes have you observed? Or, in what way are these sites different than in the past?

Do you think historical mining operations in the region have impacted Sudbury lands and waters? In what ways do you believe that they have been impacted?

Tails and mine waste were identified (in a previous survey) as major concerns. How much of a threat do you think these are to Sudbury's environment? To the Métis way-of-life?

Do you believe industrially impacted areas in the region can be successfully 'cleaned up' or restored? Example: Long Lake & arsenic clean-up

Have you heard of Sudbury's regreening programme? What are your impressions of the programme? Do you think it has been successful? To what degree?

Scientists estimate that we are at the halfway point to our restoration goals (now, after 40 years). In your opinion, what should the region focus on over the next 40 years? What would total environmental restoration look like to you? How would you like to see Sudbury's landscape restored? Who should be responsible for this restoration? Should it be a combined effort between the city, academia, industry, indigenous peoples, residents, etc?

In your opinion, is there capacity for both indigenous knowledge and western science knowledge systems to merge in restoration goals? Are you aware of any projects using traditional knowledge in the Sudbury area?

Do you believe that Sudbury Métis citizens have a unique relationship with the lands and waters in the region? If so, in what way/s? How might these ways be similar or different to other indigenous relationships?

Can you describe what indigenous knowledge or traditional knowledge means to you?

In your opinion, do you think indigenous knowledge or traditional ecological knowledge could make a contribution to Sudbury's reclamation process? Why or why not? If so, what could some of these contributions be?

Do you think Métis knowledge could add to this scope of knowledge? How so?

In what ways do you feel that Métis knowledge is different or similar to knowledge in First Nations or Inuit communities?

In your opinion, do Métis peoples have similar rights and opportunities to become involved in environmental initiatives as other indigenous peoples?

In what ways do you feel that eastern Métis knowledge is different or similar to western Métis knowledge?

In your opinion, do eastern Métis peoples have equal rights and/or opportunities to participate in environmental consultations as our western cousins?

Can you share any concerns you may have about how Métis knowledge (east of Manitoba) will be valued or perceived by government, industry, or academia with regard to the current politics between the MNO and the MNC?

APPENDIX V: Participant Information and Consent Forms (*source*: author)

Hello, Aanii, Bonjour, Tánishi,

I am a part-time distance Ph.D. student in the School of Geography, Earth and Environmental Sciences at the University of Birmingham currently conducting research under the supervision of Dr. Rosie Day and Dr. Steven Emery. The aim of my research is to explore the potential for incorporating Métis knowledge in Sudbury's environmental recovery. Dynamics of epistemology and ontology will be explored as I consider ways to include Métis and Indigenous ecological knowledge alongside western science. I am also a part-time teaching fellow in the Sustainability Program in the Department of Continuing Education at Harvard University and co-teach courses in ecology and environmental systems.

As a Métis citizen with a background in western science, this community-based participatory research project will employ Indigenous research methodologies while acknowledging scientific efforts toward environmental reclamation. Because this is an on-going co-created project with Sudbury's Métis community, I am not yet at the stage to identify all potential research methods. Nevertheless, the first part of this project included a literature review of Sudbury's environmental history, environmental justice theory, ecological justice, traditional knowledge, Indigenous epistemology, decolonisation, and cross-cultural research methodologies relevant to Métis peoples. The second part of this project will gather data via participant observation of traditional Métis land users and restoration scientists. Questionnaires will also be distributed as appropriate.

I have selected Sudbury as my case study for a number of reasons:

i. Sudbury's mining legacy made it one of the most ecologically ravaged landscapes in the world during the 1970s
ii. Sudbury has become a living laboratory of ecological restoration and reclamation
iii. The City of Greater Sudbury's Re-Greening Program has won international accolades and awards
iv. The 2008 industry-funded Sudbury Soils Study identified potential ecological and community risks
v. Sudbury is home to a variety of Indigenous peoples and therefore contains a wealth of Indigenous knowledge and traditional ecological knowledge
vi. Sudbury is where I was born and where I have chosen to raise my own family.

Contact Information*:* If you have any questions regarding this study, or would like additional information about participation, please contact me at 705.207.8901 or by email a [redacted] You can also contact my supervisors, Professors Rosie Day and Steven Emery by email a [redacted] and [redacted] respectively.

Thank you, mérci, marsee, miigwetch in advance for your interest and assistance with this research project.

Yours Sincerely, Jillian Smith, Ph.D. Candidate

Dear Madam or Sir:

I am writing to confirm that Mrs. Jillian Smith – who is in possession of this letter – is currently a doctoral researcher working on the above subject, under the academic supervision of myself and Dr. Steven Emery. Mrs. Smith commenced her studies at the School of Geography, Earth and Environmental Sciences of the University of Birmingham in May 2016.

The aim of Mrs. Smith's research is to explore the potential for incorporating Métis and Indigenous knowledge in Sudbury's Re-greening Program in an effort to improve social and environmental outcomes. She will use City of Greater Sudbury as a case study area.

I assure you that the data she will gather will be used for academic purposes only. Please feel free to contact me in case of any further queries.

Kind regards, Dr. Rosie Day

Interview Consent Form (*source*: author)

I have read the information presented in the information letter about the research being conducted by ***Jillian Smith*** of the School of Geography, Earth & Environmental sciences at the University of Birmingham, under the supervision of ***Dr. Rosie Day and Dr. Steven Emery.***

I was informed that my participation is voluntary, and there are no personal risks associated with participation in this study. I have had an opportunity to decline to answer any of the questions I do not wish to answer or withdraw my participation at any time. I am aware that all information and data collected will be confidential.

I am aware that this research has been reviewed and received research ethics clearance from the University of Birmingham. I have all rights to contact relevant person for any comments, concerns and clarifications pertaining to my participation in this study. The final decision to participate in this study belongs to me.

I was assured that my name and my associated organisation will remain anonymous in any quotations/excerpts used or any part of the thesis or publications resulting from this research unless I give consent to be identified.

By signing this consent form and from participation in this study, I do not lose any statutory or legal rights.

With full information about the research and its implications, I volunteer to participate in this study.

❑ Yes ❑ No

Any other particular concerns: _____

Participant Name & signature: _____

Witness signature: _____

Date: _____

APPENDIX VI: Historic Killarney Métis Community Timeline (*source:* MNO, 2020a)

In order for a contemporary Métis community to possess section 35 rights, it must have its roots in an identifiable historic Métis community that emerged before Europeans established effective political and legal control in the area. Identifying a historic Metis community requires demographic evidence that the population was identified as distinctive, evidence that the community had its own collective identity, and evidence that the community had its own shared customs, practices and traditions.

Killarney Timeline

1681 The French established a fur-trading network in the waterways between Manitoulin Island and the mainland.

1820 The first identified Métis move from Drummond Island to Shebaonaning/Killarney to open a fur trading store.

1850 The Robinson-Huron Treaty is signed.

1871 The population of Killarney is composed of three distinct groups— an English/Scottish group; a group of First Nations under Chief Anaweigonce; and Métis families (the largest group of the three).

1870s-1890s: An influx of new settlers arrived on account of the nearby resource boom and railway access to Sudbury.The population shift seriously impacted subsistence fishing resources for the Métis population, causing significant changes to the Métis way of life.

1891: The village of Killarney is still predominantly composed of “old Killarney” families who were either Métis, had married into Métis families, or newly arrived Métis families.

The Métis in Killarney and its environs shared a number of customs, traditions, and common vocations, including:

- Fur trading, separate from the Hudson’s Bay Company and the North West Company.
- Cultivation, including Indian corn, potatoes, carrots and hay, maple sugar.
- Shared characteristics, such as language (French and some Ojibwe in addition to English), Roman Catholicism, and harvesting activities like fishing and maple sugaring.
- Culture, with visitors in 1836 describing a gathering at the home of a Métis trader where they ‘*danced away to the merry sound of the fiddle, with the gay and lively half-breeds.’*
- Occupations, transitioning from fur trade-related occupations to labouring jobs generally associated with a lower socio-economic class such as mechanic, cooper, and mail contractor.

APPENDIX VII: Penetanguishene Metis Petition of 1840 (*source*: Ind an Affa rs Record, n.d.)

A petition of the Metis residing in the Town of Penetanguishene to the Governor General, dated January 27, 1840,

The petition of the undersigned half breeds residing in the Town of Penetanguishene, humbly sheweth,

That your Petitioners, have always proved themselves, to be good and loyal Subjects, and a number of them when Call'd upon, have served in the Militia, and will always be ready at any Call when their services may again be required.

That your Petitioners are generally speaking, in poor circumstances, and that they do not share in any advantage in presents issued to the Indians as a number of the half breeds, from the Sault St. Marie (sic) and other places on the shores of Lake Huron have done for the last two years.
Therefore your Petitioners most humbly beg your Excellency will take their case under your Excellency's consideration and that your Excellency would be pleased to allow them to have the same advantages that persons of the same class (living at the Sault St. Marie(sic) and other places on the shores of Lake Huron), derive from the issue of Indian presents to them and their families.

The 22 petitioners, who all signed with their mark were:

Beausoleil, Alexis
Blette, Pierre
Frechette, Baptist
Geroux, Pierre**
Labatte, Louis
Labatte, Michel
Lalonde, J. B.
Langlade, Charles Jr.
Langlade, Charles Sr.
Lavallée, Joseph**
Payette, Ignace**
Payette, Louis*
St. Onge, Antoine
St. Onge, Joseph
St. Onge, Toussaint
Thibeau, Joseph
Toms, Thomas
Trudeau, Antoine

**author's 5th great-grandfather*
***author's ancestors*

APPENDIX VIII: Sudbury Forest Communities (*source*: Amiro & Courtin, 1981)

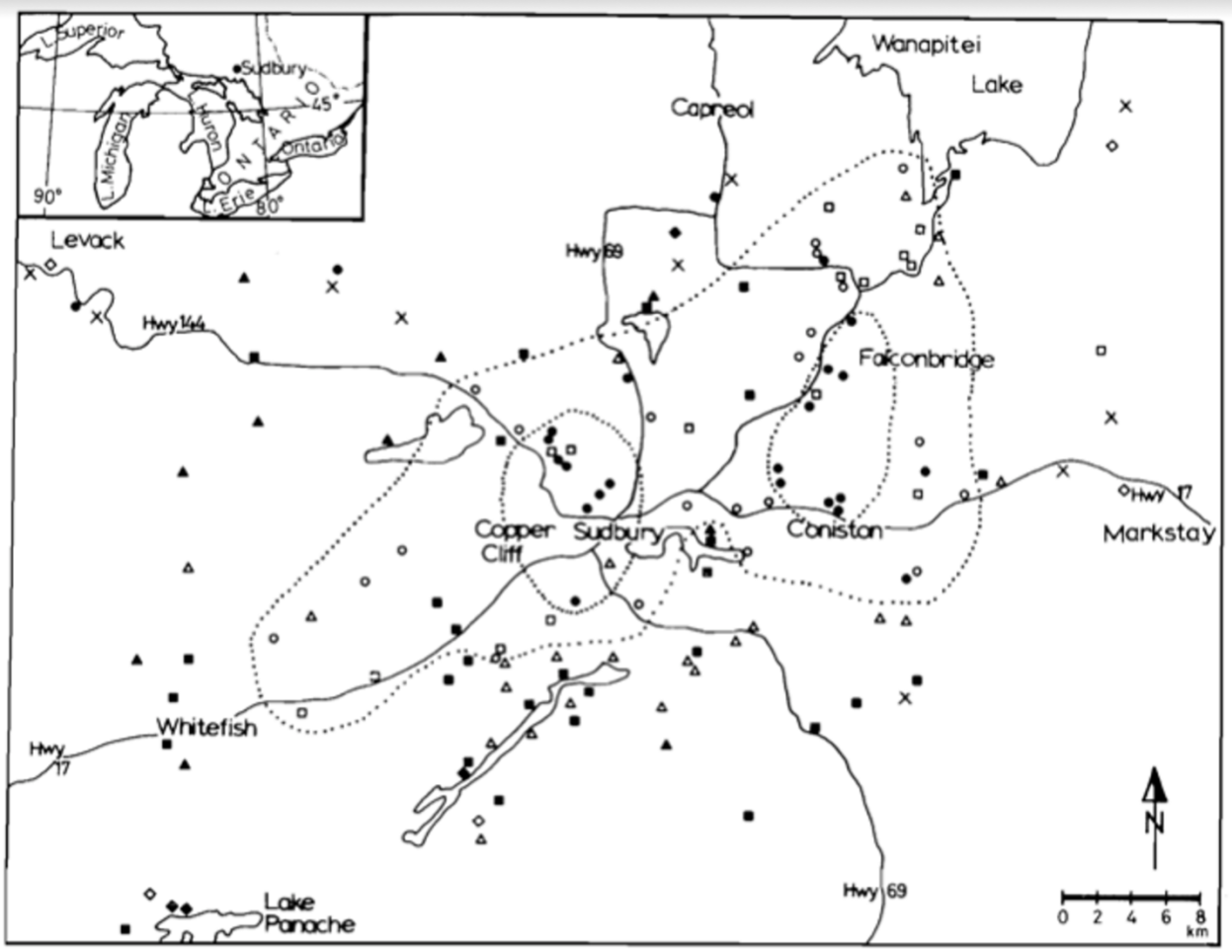


FIG. 2. Map of the Sudbury region showing the location of communities. ●, barren community type; ○, birch transition community type; □, maple transition community type; ■, birch–maple community type; △, red oak community type; ▲, poplar lowland community type; ×, jack pine community type; ◇, largetooth aspen community type; ◆, sugar maple community

Figure VIII-1: Sudbury Forest Communities (barren, birch-transition, maple-transition, birch-maple, red oak, poplar lowland, jack pine, largetooth aspen, sugar maple)
(*source: Amiro & Courtin, 1981)*