

Natural Asset Management and Market-Based Conservation in Indigenous Contexts

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Abstract

This research consists of two parts. The first part provides an extended critique of market-based conservation as exemplary of neo-liberal ideology. Natural asset management, an example of market-based conservation, is described as a form of "progressive neo-liberalism," a political formation that consists of a neo-liberal economic practice and a progressive politics of recognition. Market-based conservation is shown to conflict with Indigenous ways of knowing and Indigenous life practices, posing a potential challenge to the capacity of Indigenous and Settler communities to imagine non-capitalist futures and to realize what Leanne Betasamosake Simpson calls "Indigenous resurgence." The second part of the thesis addresses the challenges faced by the Municipal Natural Asset Initiative in engaging with Indigenous Knowledge in their future work and puts forth multiple recommendations for doing so respectfully, effectively, and ethically.

Keywords: market-based conservation; natural asset management; politics of recognition; neo-liberalism; Indigenous Knowledge; Indigenous politics

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INTRODUCTION:

This 699 essay consists of two parts. The second part, which accounts for the bulk of the project, comprises a condensed and edited version of an extensive report that I wrote for the Municipal Natural Assets Initiative (MNAI), a program of the David Suzuki Foundation (DSF), which promotes the use of a "natural assets approach" in securing and accounting for municipal services (see MNAI 2021). That report was initially conducted as part of my REM 602 internship under the supervision of MNAI. As presented here, the report presents research conducted primarily through the intensive reading of academic, legal, and grey literature on the topics of Indigenous Knowledge, Indigenous governance, and capacity building.

The first part of the project contextualizes that report, considering it in relation to two significant issues that concern conservation and resource management today. First, I consider the report, and the goals of MNAI more broadly, in the context of the ever-increasing use of market-based approaches in environmental and resource conservation and the increasing tendency to conceptualize the natural world, ecosystems, and non-human life more broadly in terms of the "ecosystem services" they provide to human communities. Related to this is the question of valuation of these so-called ecosystem services in monetary terms. This topic is quite broad, and I have oriented my discussion in anticipation of the second context I treat, namely that of Indigenous politics today. I proceed from the assumption that every approach by settler conservation organizations to conservation in Canada--on Crown lands, in Indigenous contexts, on Indigenous lands, or in Indigenous communities--adopts an implicit or explicit stance toward Indigenous or "Aboriginal" politics in Canada today, even if no stance is explicitly articulated in its approach, methodology, or goals.

The contextualization of my report in the first part of this thesis is taken as an opportunity to develop a critique of market-based conservation more broadly. In doing so I draw on a comparatively narrow selection of the already significant literature that has developed in this area, focussing specifically on issues germane to my report and my interest in the potential relationship between market-based conservation approaches and Indigenous communities, politics, and cultures in Canada. Some critiques of such approaches have come from within the disciplines of conservation biology and ecology. A brief, but standout

criticism of "selling out on nature" was composed by Douglas McCauley (2006), and his general framing of his critique has been very important to my own conception of market-based conservation. His critique, targeting above all the trend to focus on "ecosystem services" and their valuations in conservation efforts, though widely cited in the field, has seldom if ever been taken up with much earnestness, or has been dismissed by significant figures in the field (such as Costanza et al 2017). As an alternative to market-based approaches, McCauley advocates an approach to conservation that is grounded in the inherently infinite intrinsic value of the natural world and that "frames" conservation as a "moral issue and argued as such to policy makers." I lean heavily on McCauley's work to frame my critique of market-based conservation, but supplement it with reference to a school of criticism inspired by Marxist approaches to capitalist economics and ideology. The work of Ian Rappell, Neil Smith and David Harvey allows us to understand natural assets approaches and market-based conservation as symptomatic of the general development of neoliberalism around the world, one in which "nature" has become an ever more important "accumulation strategy" (Smith 2007), and thus to understand such approaches as a part of the dominant form of economic organization today that is in no way oppositional or alternative to it. The political theorist Nancy Fraser's concept of "progressive neoliberalism" provides a way to grasp market-based conservation in its ideological dimension, and understand it as an element of a broader neoliberal "common sense" in which it appears natural and unquestioned to frame all questions of value in economic terms. Her work also shows how an apparent paradox can come to be, namely that a political commitment to an inherently "conservative" mode of economic organization can be coupled with an ostensibly "progressive" approach to social issues such as racial and gender equality as well as, in the case of natural assets approaches, environmental conservation.

The spirit of these critiques is echoed in the Indigenous thinkers whose work animates much of part one of this thesis. Leanne Betasamosake Simpson, Glen Coulthard, and Taiaiake Alfred are three contemporary Indigenous intellectuals whose work advocates for an Indigenous "resurgence" that critiques contemporary Aboriginal politics in Canada from a perspective based in what Simpson and Coulthard call "grounded normativity." "Grounded Normativity," as Coulthard has described it (2017), is a "practical ethics" informed by Indigenous life contexts. It "attempts to capture the ethical engagements—with

situations, communities, land, and relationships—that inform our understandings of right and wrong, how to go about resolving conflict, and how to best relate to the world and each other in a healthy and sustainable manner." It is a politics as well that is inherently decolonial; such decoloniality is at once critical, insofar as it points out and attempts to disassemble ongoing colonial relationships in Canada, and "prefigurative" in that it attempts to put into practice--in the present and into the future--"decolonial worlds in our daily lives." This dual perspective--critical and prefigurative--can ground a compelling critique of market-based approaches to conservation. As a specific form of the conceptualization of the land, and as the putting into practice of particular relationships between human beings and the land, market-based approaches are inherently at odds with the practical ethics of grounded normativity as Simpson, Coulthard, and Alfred articulate it in their work and activism. Market-based approaches not only perpetuate a colonial attitude toward the land and Indigenous people, but they also have the potential to foreclose the prefigurative element of grounded normativity, the capacity of Indigenous people--and everyone, for that matter--to put into practice decolonial worlds in our everyday lives.

PART 1: NATURAL ASSET APPROACHES in the CONTEXT of MARKET-BASED CONSERVATION and INDIGENOUS COMMUNITIES

1a: MNAI in the Context of Natural Capital(ism) and Market-Based Approaches to Conservation

The mission of the Municipal Natural Assets Initiative is concisely articulated in its motto: "Making Nature Count" (MNAI 2021). In concrete terms, the MNAI seeks to fulfill the mission shared by the David Suzuki Foundation, a founding member and sponsoring organization of MNAI, to foster conservation in Canada, but specifically by developing methods whereby "natural assets"--"the stock of natural resources or ecosystems that contributes to the provision of one or more services required for the health, well-being, and long-term sustainability of a community and its residents" (Brooke et al. 2017)--can be incorporated into the asset management strategies and mechanisms of Canadian municipalities (and, potentially, in the future, of Indigenous communities in Canada as well). The MNAI's mission is to provide guidance to "local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs and developing leading-edge, sustainable and climate resilient infrastructure" (MNAI 2021)¹ and it wishes to make natural asset management "mainstream" (MNAI 2017) in Canadian municipal management. The MNAI builds upon the pioneering work in the Town of Gibsons, British Columbia, which was the first municipality in North America to incorporate a natural assets strategy into its asset management and financial management programs. As the Town of Gibson's Sustainability department's website explains it, the Town thereby "move[d] natural assets from the periphery of municipal decision-making to its core", making the Town's Natural Asset Strategy central to its asset management actions (Town of Gibsons). This constituted a dramatic shift in the Town's decision-making framework as the new approach treats "nature", in the form of natural assets, as key elements of the Town's infrastructure, recognizing its contributions to the Town's sustainable functioning and the community's overall well-being.

¹ For a more detailed exploration of MNAI's methods, including its valuation methods, see ACT 2020.

As new as this approach might be in municipal asset management in Canada, and perhaps the world, the natural assets model is actually quite typical of the larger movement to think of the natural world as "natural capital", an increasingly prevalent trend in conservation thinking and practice that has come to dominate everyday conversation about the environment as well as the missions, strategies, and practices of governmental and non-governmental environmental organizations large and small (see, for example, Sullivan 2017a, Rappel 2018, and Monbiot for an overview of natural capital's increasing prevalence in conservation). Rappel and Sullivan have argued that the notion of "natural capital" has increasingly come to substitute for the very idea of nature itself (Sullivan 2017a, Rappel 2018), evidence of the profound impact the notion and its rapid spread in discourses about the environment has had on the ways in which we conceive of and relate to the natural world. The language of natural capital has indeed become our *lingua franca* for speaking of the natural world: one hears the term and its related vocabulary used without question in graduate classrooms, at conferences, and in various forms of media. In other words, it has become obvious that nature is an asset and that as an asset it is deserving of--an in fact requires--its monetary value to be assayed, calculated, and assigned in order that it might be protected in a world in which decisions are increasingly based on fiscal considerations, a point to which I will return below. But, as the French Marxist theorist Louis Althusser has argued, when a phenomenon or idea appears obvious, it is actually at its most ideological (Althusser 1971). As George Monbiot (see also Smith 2007, Harvey 1993, Sullivan 2017a, Rappel 2018) has argued, the notion of natural capital is utterly of a piece with neoliberal ideology and its undying conviction that liberalized economic markets and unburdened capitalist enterprise are the solutions to the world's ills; that ideology, and along with it the apparent wisdom of natural capital approaches, has become so entrenched in environmental thought and so obvious in its rectitude as to constitute something of a new common sense that goes unquestioned and uncritiqued. It is thus no wonder that Sian Sullivan likes to think of the approach rather as "natural capital(ism)" (Sullivan 2017a).

Indeed, much, if not all, that has been published about the natural assets approach to conservation or governmental decision-making has discussed the approach at face value, assessing its successes, considering obstacles to its implementation (Drescher et al. 2018), or promoting its adoption by jurisdictions to more effectively combat the impacts of climate

change and other forms of environmental degradation (ACT 2020)²; seldom has time been taken to critically delve into the core methodological and philosophical presuppositions that underpin natural assets methodology in particular or natural capital approaches more generally. This is, to be fair, in some part due to the only recent emergence of natural assets management as a possible, and practicable, strategy. Aside from studies created or commissioned by MNAI itself, no literature exists of which I am aware that assesses the effectivity of the MNAI's approach or that challenges its methods as conservation strategies. It is beyond the scope of this project to assess the effectiveness of MNAI's work, though I do hope such work is conducted in the future; but it does remain within my scope to consider some of the core presuppositions that animate the natural assets approach, and to ask some questions about the potential pitfalls--practical, philosophical, and ethical--of market-based approaches more generally. Given that the MNAI's project has the potential to make a dramatic impact on municipal asset management in Canada, and by extension on conservation in Canada, and given the MNAI's ambitions and prospects for growth³ in municipalities and in Indigenous communities, and its stated desire to make natural assets approaches "mainstream" (MNAI 2017) it is all the more worthwhile to engage in such an examination.

The most insightful and trenchant critiques of market-based conservation strategies (Sullivan 2013, 2017a, 2017c; Monbiot 2014; Harvey 1993, 2006; Rappel 2018) have focussed primarily on attempts to develop natural landscapes and ecosystems as fungible goods, tradeable on international financial markets; or they have focussed on attempts to value landscapes and ecosystems for the revenues they can generate through non-extractive means such as tourism. MNAI is explicitly uninterested in defining and constructing natural assets as such tradeable commodities, and restricts its purview, as noted already, to municipal natural assets insofar as they are incorporated into municipal asset management strategies. Some of natural capital's critics (Monbiot 2014; Rappel 2018), are open to natural assets

² The literature on natural assets accounting is primarily grey literature, consisting of reports by MNAI itself, or other reports commissioned to assess MNAI's projects or to foster the broader adoption of the method. My report could be seen to fall into this genre of literature, which as a form of scholarship itself merits critical attention for the role it plays in promoting and developing the project of natural capital.

³ See MNAI 2021 for a list of ongoing pilot projects and new projects in Canada.

approaches in municipal contexts as strategies for protecting natural features in municipal environments and saving funds otherwise spent on engineered assets. Given this, it might seem odd to include MNAI's work under the broader rubric of neoliberal, market-based conservation, but it is merited for two primary reasons.

For one, the motto of the MNAI--"making nature count"--clearly echoes the famous, or infamous, depending on your perspective, dictum that is a favourite (according to Sullivan 2017a) of the likes of Pavan Sukhdev, former head of the UN/EU programme on the Economics of Ecosystems and Biodiversity (TEEB), and Dieter Helm, who wrote one of the most influential texts in the literature of "natural capital" accounting (Helm 2015): *you cannot manage what you do not measure*. More importantly, in order to manage a natural asset, what one must measure is its *value*, specifically its economic value. Roy Brooke, the director of MNAI, and his co-authors conceive of MNAI's approach to natural capital in terms borrowed directly from Helm (though without citing him) (Helm 2015, 110): "while markets exist for food, fibre and biomass, other services from nature such as water regulation, habitat provision, pollination, disease and pest regulation, climatic regulation and hazard protection are not priced and are therefore ignored in most conventional decision-making processes. This often leads to a corresponding loss of natural environments and the vital ecosystem services they provide" (Brooke et al. 2017, 4). Thus, Brooke et al. acknowledge the implicit and inescapable link to market valuations of natural assets in MNAI's work, taking it as a given that such valuations are, if not the sole motivating factor in "conventional decision-making processes" then at least a primary one. This link exposes natural assets to the risks associated with market-based valuations, a point to which I will return below.

Secondly, as with other market-based approaches, the natural asset approach targets not ecosystems *per se*, but rather the services they provide to humans. For Douglas McCauley (2006), the re-calibration of nature as "ecosystem services" is the linchpin for market-based approaches, a presupposition in its methods that must be interrogated. McCauley has summarized natural capital approaches in compact fashion, noting the important function of ecosystem services in the overall natural capital scheme:

[Ecosystem services] form the basis of most market-oriented mechanisms for conservation. The underlying assumption is that if scientists can identify ecosystem services, quantify their economic value, and ultimately bring conservation more in

synchrony with market ideologies, then the decision-makers will recognize the folly of environmental destruction and work to safeguard nature (McCauley 2006, 27).

McCauley's succinct description captures the set of cascading assumptions that follow from the initial presupposition of ecosystem services in the natural capital framework, and which undergird the entire natural capital process, which McCauley parses out into four basic steps. First, nature must be re-defined, reified, or hypostasized in the form of ecosystem services, an object to which a quantitative value can be applied. Second, that value must be determined, and in the vast majority of such valuations the baseline reference is ultimately tied to economic markets, which are presumed to function efficiently, rationally, and without bias. Third, this ascription of value brings nature "in synchrony" with market ideologies (a point we have already touched upon), thus subsuming the natural world within the realm of the economic, rendering null and void nature's difference or otherness, long held as a source of inspiration for environmentalism and for anti-economic and anti-capitalist thinking, as well negating what values nature might hold beyond the economic. Finally, this ultimate rendering of the natural world in economic terms makes nature legible or recognizable to decision-making processes and value systems that are fully saturated with economic thinking, and whose overseers always have an eye on the bottom line. The ultimate assumption, then, which itself is quite dubious, is this: if "decision-makers" can recognize "nature", then they will take it into consideration in their decision-making. What remains unquestioned, as McCauley's brief narrative makes clear, is whether or not anything vaguely resembling "nature" remains to be recognized once it has been through this analytic wringer: what is recognized is merely the ecosystem service that is provided and its value. Nature, in other words, does not appear on balance sheets; only the monetary value of its services does, no matter how many images of lush forests and regal bald eagles grace the annual budget reports of Canadian municipalities.

It is worth expanding upon these four moments of the natural capital process to develop a critique of natural capital, and by extension, natural assets, as an approach.

First, the concept of ecosystem services reifies the natural world in a very specific way, abstracting from the rich multiplicity and variety of the biotic and abiotic elements of ecosystem and the relationships that exist amongst them, relationships that to this are far from fully understood by ecological science. The result, in the official version of ecosystem

services, is the reduction of this rich multiplicity to a set of four categories of ecosystem services, each conceived in its capacity to deliver services to human beings: provisioning, regulating, supporting, and cultural services. A number of critiques of this aspect of natural capital have been advanced so far. Sian Sullivan, in a Marxist-inspired vein that draws heavily on semiotics, has identified the phenomenon of "commensuration" that occurs in natural capital: the unique, distinct characteristics of individual ecosystems are rendered comparable (and, by extension, exchangeable or substitutable on a market) through natural capital's various categories, including those of ecosystem services. Such commensuration evacuates the uniqueness of the natural world, impacting the human comprehension of that world and the human capacity to perceive nature's qualitative richness, further subsuming our understanding of the world within the very logics and sensibilities that characterize contemporary capitalism. More important, perhaps, this conceptual transformation of the natural world also impacts the way that human beings treat nature. Having defined nature as a natural *asset* or as *capital*, humans go on to treat it as such⁴.

To understand the importance of this fact, a comparison can be of help. Marxists of various stripes⁵ have pointed to the way in which the expansion of wage-labour and the universalization of the commodity form that accompanied the rise of the capitalist mode of production profoundly transformed the way in which human beings thought about themselves and treated each other. Human beings became workers, their value measured in terms of their ability to generate surplus-value; they became, like other objects of exchange, commodities for sale on a market, whose value was measured in a wage. But this does not occur because workers think about themselves as commodities or as wage-labourers, but rather because they function as such within the set of social relations that exist under capitalism. Thus they are rendered abstract as "commodities" or "workers" not just in name, but in actual practice. This phenomenon, that abstraction occurs at the level of reality, primarily through the process of exchange, and not merely in the realm of language or thought, was termed "abstraction in the real" (*Realabstraktion*) by the sociologist and philosopher Alfred Sohn-Rethel (1978). As Theodor Adorno summarizes this basic point: "the abstraction lies not in the thought of the sociologist, but in society itself" (Adorno 1999,

⁴ Harvey 1993 is emphatic about this point.

⁵ See, for example, E.P. Thompson 1963 or Georg Lukács 1971.

31-2). While this might seem an overly abstract point to make here, it is nonetheless important, for it designates that impact of the project of natural asset accounting goes beyond its impact on municipal budgets and the protection of natural assets; it participates in expanding the scope of this sort of "real abstraction" of nature, in so far as it expands the realm in which the ideas of natural capital are applied to nature. With each further application of the ideas of the concepts of natural capital to nature, a further step in the transformation of nature--the abstraction of nature--is made. Moreover, the concepts of natural capital and natural assets are not merely abstract names or labels for real aspects of the natural world, but they indicate the degree to which nature itself has been abstracted through the process of exchange. Thus the language of natural capital is simultaneously an agent in the ongoing commodification and reification of nature, but also a reflection of the degree to which the natural world has already been transformed through human intervention.

At a less abstract level, McCauley has pointed out that market-based approaches tend to focus only on those services that are beneficial to human beings, either consciously ignoring or merely neglecting those ecosystem services--or rather those ecosystem relationships--that might benefit only non-human species or that might actually harm human beings. After all, floods can be as central to the functioning of a healthy ecosystem as moderate rainfall--think of nutrients deposited in floodplains or the ways in which cyclical flooding generates habitat for spawning fish in riverine ecosystems--but quite detrimental to the health of human communities built on a floodplain. As such then, as McCauley puts it, "ecosystem-service-based conservation rests on the implicit assumption that the biosphere is benevolent" and leaves open the very disturbing question: how are we to "protect those chunks of nature that conflict with our interests or preserve the perhaps far more numerous parts of nature that neither help nor harm us" (McCauley 2006, 27).

This is not a minor issue by any stretch of the imagination, as it presents several very specific challenges to conservation: one, if ecosystems are increasingly valued for their services, and that value is monetary, what possible value do those less benevolent "chunks of nature" of which McCauley speaks possibly have? Their value, in a natural capital approach, is clearly zero, if not negative, posing a threat as they do to the bottom line. Second, the restriction of ecosystem services to those provided to humans occludes our ability to perceive the benefits that various elements of ecosystems might provide to non-human organisms: that

value, unless somehow it contributes to a human-oriented ecosystem service, has no place in the balance sheets of natural capital accounting. And third, if ecosystem services are the precondition for the "legibility" (Sullivan 2017c) of nature in decision-making processes, what of those elements of nature that remain "illegible", so to speak? What prospects for "recognition", to use the language of Brooke et al. and Helm, do those elements of the natural world have in the balance sheets of natural capital accounting?

But what of those aspects of the biosphere that are "benevolent" in so far as they provide services of value to human beings? What might be wrong with pricing them so that they might be protected within municipal asset management strategies? One of the dangers that lurks within the abstractions of ecosystem services, within the ways in which the unique attributes of ecosystems and natural features are thereby rendered "commensurable" on the market, is that ecosystem services are thereby exposed to being replaced or substituted. Indeed, as McCauley cogently asks: if natural capital is valued for its ability to provide services, what happens to natural capital or assets when the services they provide can be provided more cheaply or efficiently by other means?⁶ For McCauley, such a threat lurks in two primary places. First, market-based conservation tends to presume that markets are efficient and rational; more importantly, natural asset valuations tend to rely on linear forecasting models that do not take into account market fluctuation. The second, and related, threat that McCauley sees is in human ingenuity. As he pithily puts it, "conservation based on ecosystem services commits the folly of betting against human ingenuity" (McCauley 2006, 28). In other words, technological development can make the services provided by "engineered assets" cheaper than the services provided by ecosystems. In both these scenarios, it almost goes without saying, a natural asset whose value is based in the market is exposed to all the risks inherent in the market. If protection is afforded to an asset based on its monetary value, such protection would be at risk if that value falls.

One can sense in the paper cited earlier by Brooke et al. an awareness of the critiques that have been levied against natural capital approaches, especially those that focus on the ethical, philosophical, and political issues involved in pricing nature. Without identifying any

⁶ Though outside the scope of this essay, it is worth pointing out that the MNAI's primary method of valuation of natural assets is by way of an asset's "replacement value" (see Brooke et al. 2017 and ACT 2000): the cost of providing an ecosystem service via a technological/human solution.

particular critique or critic, they assert that "the purpose of MNAI is not primarily to measure the value of natural assets, 'put a price on nature' or integrate environmental information into measures of economic activity. Rather, MNAI seeks to *apply* concepts related to the value of the services from natural assets in municipal decision-making. It does so by extending the application of existing municipal systems for asset management [to] municipally-valuable services from nature, and incorporating that value into asset management" (8; emphasis in original). To be clear, MNAI has no interest in participating in the broader markets for natural capital and ecosystem services; its efforts are not oriented, for example, toward creating fungible commodities to be traded on domestic and international natural capital and derivative markets. That said, MNAI nonetheless adopts the basic methodologies of natural capital frameworks and seeks to *apply* them, as they put it, in the context of municipal asset management. Recall my point above: that the application of these ideas is actually the means whereby the real abstraction of nature occurs. Moreover, it is very clear that MNAI not only wishes to apply these principles, but also promote its approach to municipalities across Canada and advocate for the recognition of natural assets approaches as a valid form of municipal asset management and municipal accounting.⁷ Given this, their work has the potential to dramatically increase the scope of natural capital thinking in Canada and the domains in which it functions. Thus, a significant concern that I have about MNAI is the way it will function to further the reach of natural capital approaches and, given that MNAI is closely affiliated with Canada's arguably most prominent conservation organization, the David Suzuki Foundation, further integrate it into mainstream conservation and lend it further public recognition and legitimacy. Furthermore, despite Brooke et al.'s claims about MNAI's role in the pricing of nature, pricing remains central to the MNAI's methods, because price or monetary value is the only language whereby natural assets or ecosystem services can be accounted for in municipal accounting practices.⁸ Those prices, of course, are intrinsically bound to the wider market, such that MNAI's approach, even if it does not create

⁷ This is made very clear in the promotional literature and other reports published by MNAI (see MNAI 2021 and 2017 as examples). A frequent statement in this literature is that MNAI "aims to make municipal natural asset management mainstream across Canada."

⁸ That said, it must be noted that Canadian and Provincial law prohibit the formal entry of natural assets into municipal accounting ledgers. Without a change to the laws that govern municipal accounting, natural assets accounting cannot be used, for example, to formally calculate the overall value of assets and so on in a municipality's operating budget or asset management plan.

commodities for markets, must still be conceived of as a form of market-based conservation. To make such critiques, of course, in no way implies that MNAI in any way intends to further the reach of neoliberal thought, or even to contribute to the further incorporation of natural systems into market dynamics; my point is simply that market-based approaches do this as a matter of course.

1b. Natural Asset Management and Indigenous Communities

As the terms of my contract with MNAI make clear, MNAI is interested in broadening the range of local governments with which it works to include Indigenous communities. I was specifically asked to make recommendations and provide guidance about including Indigenous Knowledge in the natural asset management process. Thus a significant portion of my report was devoted to exploring a range of issues in engaging Indigenous Knowledge and suggesting ways in which MNAI might best work with Indigenous communities in its goal of "supporting natural infrastructure." As the report shows, such a task is very challenging and faces at the very minimum a number of epistemological, political, methodological and ethical issues, not to mention the practical and methodological challenges that all cross-cultural work poses. Perhaps the most provocative suggestion I make in the report--and to my mind the most important one--is that MNAI needs to consider whether or not its overall framework is compatible or reconcilable with the philosophies and ways of living in the Indigenous communities with whom they wish to collaborate. It was beyond the scope of the report to make that assessment, and instead I attempted to provide MNAI and DSF some tools with which to make such an assessment on their own. It is, however, a matter I would like to consider here. I would like to do so by exploring some fundamental issues that arise when one imagines the natural assets approach, and natural capital or market-based approaches more generally, in the context of Indigenous communities in Canada.

As has already been made clear, MNAI's methodology is exemplary of market-based conservation approaches and neoliberal ideology more generally. At the same time, however, it is clear that MNAI, as a settler organization, wishes to incorporate features of Indigenous life--in the form of Indigenous Knowledge, above all--into its working methods. It has, I believe, adopted the terms of what Emma Battell Lowman and Adam J. Barker have described as the "liberal and progressive discourse" about Indigenous rights and issues. This

discourse, "intends to acknowledge Canada's colonial past, portrays Indigenous peoples as possessing sophisticated, vibrant societies and cultures" and recognizes the debt Canadian society owes to Indigenous peoples (Lowman and Barker 2015, 5). As Lowman and Barker describe it, liberal or progressive approaches to Indigenous rights often function within a paradigm of the appreciation and recognition (more on this concept in a moment) of the unique features of Indigenous life and the right of Indigenous communities to sustain those features.

At first glance it might seem quite paradoxical to describe MNAI as an institution that is essentially liberal or even progressive but which functions entirely within a set of neoliberal presuppositions. But it is precisely this combination of neoliberal economic politics and progressive social politics that has been identified by the political theorist Nancy Fraser as the hegemonic form of politics in North America prior to the recent rise of Trumpism. She has labeled this "hegemonic bloc" (2019, 11) "progressive neoliberalism." MNAI, it strikes me, as well as the DSF more broadly with its emerging embrace of market-based conservation, is exemplary of the characteristics of progressive neoliberalism as well as of the tensions inherent within it.

It is worth spending some time considering Fraser's account of progressive neoliberalism, since it will help shed light on the question of the relationship between market-based conservation and Indigenous politics, as well as to understand more fully how a natural assets approach functions politically.

In Fraser's analysis, progressive neoliberalism brings together what she calls a neoliberal politics of "distribution"--the set of rules and norms and practices whereby economic wealth is created, apportioned and accumulated in a society--with a progressive politics of "recognition," which Fraser understands to refer to how a society "apportions respect, esteem and belonging" (Fraser 2019, 10) as well as social status. For Fraser, these two components--distribution and recognition--"constitute the essential normative components out of which [contemporary] hegemonies are constructed" (10). The notion of "hegemony", which Fraser adopts from the Italian Marxist political theorist Antonio Gramsci (1986), is crucial for understanding how Fraser sees contemporary politics cohering and sustaining itself in relatively durable forms. Fraser compactly defines hegemony as "[Gramsci's] term for the process by which a ruling class makes its domination appear natural

by installing the presuppositions of its own worldview as the *common sense* of society as a whole" (my emphasis); the organizational complement of this properly ideological element of hegemony is the "hegemonic bloc", a stable set of social relations supported by a set of political forces (a party, party-class alliances, etc.) in which a particular "common sense" holds together and through which the ruling class "asserts its leadership" (9-10).

Consequently, "progressive neoliberalism" constitutes a hegemonic bloc--albeit one which has come under assault in recent from recent authoritarian and right wing movements and electoral success such as Trumpism.

This hegemony, exemplified by movements such as New Labour in Britain and the New Democrats in the United States that emerged under Bill and Hillary Clinton, is characterized by the full embrace of neo-liberal economic policy and thought, with only the mildest of redistributive ameliorations tacked on (slightly higher taxation, a marginally increased welfare state, market-based semi-universal healthcare, etc.) and a progressive stance on so-called "social issues" such as gender equality, racial equality and recognition, and LGBTQ rights. Fraser believes that the progressive-neoliberal emphasis on recognition politics and cultural issues displaces a focus on economic issues, thereby serving to thwart progressive or leftist action on issues of redistribution, economic exploitation, and wealth inequality. In Canada, Justin Trudeau's Liberal Party is an exemplary instance of progressive neoliberalism in its combination of his brand of "It's 2015" social politics, including promises of new "nation to nation" relationships with Indigenous peoples, with a fully neoliberal economic program marked by the promotion of public-private-partnerships, offloading of service provision to provinces and municipalities, and a generally liberal stance toward trade, among other things.

Compellingly, Glen Coulthard, a Yellowknives Dene intellectual and activist, has developed an analysis of the politics of recognition drawing primarily on the work of Frantz Fanon, but that also engages Fraser's work, albeit with a distinctive twist that accounts for the specificities of Indigenous-state relations in Canada (Coulthard 2014; see especially 18-24). For Coulthard, the intimate relationship between the land and culture in Indigenous life complicates Fraser's suggestion that an emphasis on cultural politics merely "displaces" economic issues. The separation of the cultural from the economic upon which the politics of recognition rests is an historical phenomenon, an effect of the original expropriation of

Indigenous lands (which Coulthard analyses as a form of what Marx called "primitive accumulation") and ongoing attempts to perpetuate and continue such expropriation. Moreover, it is a strategy of what Coulthard more specifically calls "the *colonial* politics of recognition" (my emphasis) to reduce Indigenous politics to discussions of rights, and to reduce Indigenous identities to cultural forms. Thus, a mythical understanding of Indigenous life arises, one which imagines that Indigenous life can somehow persist without the lands to which Indigenous life has historically been tied. But given that dispossession of Indigenous peoples of their lands is so central to the colonial project, and given the centrality of the land (see also Simpson 2017) to Indigenous culture, it is impossible to dis-entwine cultural and economic political struggles: "insofar as Indigenous cultural claims always involve demands for a more equitable distribution of land, political power, and economic resources, the left-materialist claim [i.e. Fraser's claims] regarding the displacement of economic concerns by cultural ones is misplaced when applied to settler-colonial contexts" (Coulthard 2014, 19). He believes, however, that the "*colonial* politics of recognition" attempts to do just this: "the politics of recognition refers to a shift in how the Canadian government deals with Indigenous claims to land and sovereignty. Instead of more overtly exclusionary and violent forms of rule, this politics operates through recognizing and including Aboriginal peoples' cultural rights within the framework of the Canadian state and its capitalist mode of production" (Coulthard 2017 n.p.). In other words, the politics of recognition aims to deny the entwinement of the cultural and economic and political in Indigenous lives, and to secure similar goals as overt forms of colonial domination: securing access to Indigenous lands for exploitation, assimilation of Indigenous peoples to the broader Canadian society, affirmation of the ultimate sovereignty of the Canadian state, etc. That this occurs in progressive guise, makes it all the more ideological.

This perspective helps further understand the implicit politics of MNAI's approach to conservation insofar as the Initiative wishes to engage with Indigenous communities. It makes complete sense that the task in my report for MNAI was to assist with developing strategies for incorporating or "integrating" Traditional Ecological Knowledge or Indigenous Knowledge into MNAI's process and natural asset management science, for such a project rests on the very separation of the cultural from the economic that Coulthard has identified in the colonial politics of recognition. As my report argues, the very notion of Traditional

Ecological Knowledge, as Indigenous Knowledge is frequently referred to in the literature of co-management and ecology, rests on a similar, foundational separation of such knowledge from the broader, holistic context of Indigenous life. Scholars such as Leanne Betasamosake Simpson (1999, 2004) have sharply criticized the reification of Indigenous knowledge as "Traditional Ecological Knowledge" and have critiqued attempts to incorporate or integrate such knowledge into essentially western and colonialist paradigms. I engage with Simpson's critique at some length in the report section of the thesis and will not repeat her critiques here. But a point merits emphasizing here: for writers like Simpson, settler uses of Indigenous Knowledge always runs the risk of repeating "the mistakes of the past" (2004, 374), not necessarily in the name of the colonial project of dispossession, extermination, assimilation and extraction, but in the name of reconciliation, acknowledgment of the validity of Indigenous Knowledge, and sympathy for Indigenous peoples. In other words, the "integration" of Indigenous Knowledge into research projects and conservation initiatives functions a lot like the colonial politics of recognition. From such a perspective, the use of Indigenous Knowledge by the MNAI faces significant risks, given that it could directly bind Indigenous Knowledge, implicitly separated from its life context, to a specifically capitalist way of thinking about and managing the land. In short, MNAI runs the risk of using Indigenous Knowledge in a manner that is not only incommensurable with Indigenous values, as Coulthard has suggested of capitalism more broadly (Coulthard 2014, 173 and passim), but also in a manner that perpetuates the debilitating features of the colonial politics of recognition.

As Coulthard has pointed out, a central feature and goal of the historical experience of colonialism, understood in part as a form "primitive accumulation," was the expropriation of land from Indigenous peoples. This was accompanied, though, by the "long term goal of indoctrinating the Indigenous population to [sic] the principles of private property, possessive individualism, and menial wage work" which also "constitute[d] an important feature of Canadian Indian policy." To demonstrate this latter point, Coulthard quotes the commissioner of Indian Affairs in 1890:

"The work of sub-dividing reserves has begun in earnest. The policy of destroying the tribal or communist system is assailed in every possible way and every effort [has been] made to implant a spirit of individual responsibility instead" (Coulthard 2014, 12-13).

Coulthard sees no reason to think that this project is of merely historical interest: "it is reasonable to conclude that disciplining Indigenous life to the *cold rationality of market principles* will remain on state and industry's agenda for some time to follow" (Coulthard 2014, 13, my emphasis). One has to understand the ambitions of the MNAI--or any other conservation group that wishes to use a market-based conservation approach in its work with First Nations--within this context: as a further "disciplining of Indigenous life" to the "cold rationality of the market", even if in the end its goals are to aid Indigenous people in managing their lands. For Coulthard, the primary instigator of this transformation in the relationship of Indigenous people to the land is dispossession, and rightly so; but we must point out as well that this sort of ideological work--the work of integrating and disciplining Indigenous life in the ways of the market--can happen without dispossession⁹. It is clear that this has already happened in many Indigenous communities in Canada who have found it impossible to resist what Marx called the near-universal and inescapable "silent compulsion of economic relations" (quoted in Coulthard 2014, 15).

Leanne Betasamosake Simpson speaks to this point in her book *As We Have Always Done*, an extended effort to articulate the principles of Nishnaabewin--the "grounded normativity" of Nishnaabeg life--in a contemporary historical context quite hostile to its principles. In a chapter on "Nishnaabeg Anticapitalism", Simpson recounts an interview she was asked to do with Naomi Klein, who focussed her critique of the Canadian colonial state through the terminology of "extractivism." Klein, Simpson thought, chose this term to avoid using the term "capitalism" and the "backlash" that the word entails (Simpson 2017, 76). But for Simpson it is crucial to name capitalism as the main culprit in the transformation of Nishnaabeg life. She makes her point by citing Glenna Beaucage, a Nishnaabeg elder, in conversation with Ryan McMahan, the host of the "Redman Laughing" podcast:

When the treaty came, it turned the word creation into resources, and resources are to be exploited. To me creation is to be respected, but when we say resources, now we can exploit them. We got mixed up. *I heard an old man tell me we've become*

⁹ As an aside: Coulthard emphasizes that enclosures--continued dispossession of land and expulsion of Indigenous peoples--continues apace in Canada and around the globe. Indeed it does, as he and scholars like Sylvia Federici (2004) have pointed out. This is clearly true. But my point is that dispossession is not the only way by which Indigenous social relations can be subsumed into capitalist relations, a view that is clearly supported by Federici as well. Marx terms such subsumption "real" subsumption.

capitalists. Even with our fishing and hunting we've become capitalist. We don't see the animals. *We see money* (Simpson 2017, 76; emphasis added¹⁰).

The point Simpson makes here is that even with control of their lands, Indigenous peoples will move away from traditional thought (or we could call it Indigenous Knowledge) the more they adopt a worldview attuned to the market and suffused with its principles. The consequences are significant. As Simpson goes on to argue:

Later on in that same conversation, another Nipissing elder talks about how the education system in Ontario is designed to move our people into the middle class, away from Nishnaabewin. Like these elders, I can't see or think of a system that is more counter to Nishnaabeg thought than capitalism, and over the past two decades I have heard elders and land users from many different Indigenous nations reiterate this, and it is part of the elders' analysis and thinking we ignore (76).

This passage from Simpson reinforces two important points. First, as Glenna Beaucage points out, her people "have become capitalists." They "don't see the animals" that they hunt. "They see money."¹¹ This is a beautiful and concise expression of the ideology of the market: prior relationships to the natural world are supplanted by the logic of money once the natural world is transformed into a "resource", an "asset", or a "service." Beaucage's remark gives the lie to any suggestion (such as Costanza et al. 2017) that somehow capitalist value and other values can exist side by side: capitalist value crowds out other values. Second, Indigenous thought--at least Nishnaabeg thought by Simpson's reading--is inherently incompatible with capitalism. As Simpson argues:

'Capital' in our reality isn't capital. We have no such thing as capital. We have relatives. We have clans. We have treaty partners. We do not have resources or capital. Resources and capital, in fact, are fundamental mistakes within Nishnaabeg thought, as Glenna Beaucage points out, and ones that come with serious consequences—not in a colonial superstitious way but in the way we have already seen: the collapse of local ecosystems, the loss of prairies and wild rice, the loss of salmon, eels, caribou, the loss of our weather (Simpson 2017, 77).

¹⁰ Simpson's quotation of Glenna Beaucage was inaccurate; the quote has been corrected here. It does not alter the meaning of the original text.

¹¹ Paul Nadasdy (2003), makes a similar point about the impacts of co-management and the spread of the language of state administered wildlife "management", a point which I discuss below, in the second section of this thesis, on pp. 50-56. But to reiterate: a Kluane elder took issue with the Yukon territorial wildlife managers who spoke of sheep "harvests." This elder said "We do not harvest sheep. We kill them." See my discussion there for a fuller account of how bureaucratization and the importation of the language of management and science into Indigenous communities transforms not only the worldviews but also the life practices of Indigenous people.

By extension then, at a practical, cognitive, and intellectual level the adoption of natural capital thinking presents a significant potential threat to Indigenous ways of knowing and living as well as efforts to protect the land and promote a politics of resurgence grounded in the land.

But as Simpson points out repeatedly in her work, the further penetration of capitalist thinking into Indigenous culture is also a threat to the collective imagination--of Indigenous peoples and settlers alike. As she believes and compellingly argues, the political and communal imagination of her people, the Nishnaabeg people, is already atrophied after years of colonial conquest and domination:

We hold a collective apathy around critiquing, organizing, and creating alternatives, despite the fact that Nishnaabeg people and our society are the alternative—we lived without capitalism for centuries. There is an assumption that socialism and communism are white and that Indigenous peoples don't have this kind of thinking. To me, the opposite is true. Watching hunters and ricers harvest and live is the epitome of not just anti-capitalism but societies where consent, empathy, caring, sharing, and individual self-determination are centered (Simpson 2017, 76-77).

This, to my mind, would constitute perhaps the most significant tragedy of the continued acceptance and expansion of the apparent common sense of natural capitalism: its threat to the utopian imagination that inheres in Indigenous life as a historical, living, and future alternative to capitalist social relations, an alternative which intellectuals like Alfred, Coulthard, and Simpson, and the activists, elders, and community members with whom they work, are in the process of articulating anew.

Conclusion to Part 1:

Throughout this project I have returned repeatedly to two passages from Taiaiake Alfred. They raised, for me, a couple of the "many red flags" that Cliff Atleo warned me I should watch out for as I began my undertaking. Both speak to the broad impacts that market-based approaches to conservation could well bring to Indigenous communities. The first passage comes from Alfred's *Wasáse: Indigenous Pathways of Action and Freedom*:

Native Nationalism took a solid core of undeniable truth—our collective existences as nations of peoples—and grafted onto it an ill-suited political analysis and program. Thirty years later, our nations have been coopted into movements of 'self-government' and 'land claims settlements,' which are goals defined by the colonial state and which are in stark opposition to our original objectives. Our concept of nationhood has been corrupted by placing it in an ideological framework, and, rather than reflecting an

authentic sense of Onkwehonwe collective being, the ideological framework itself has become the hijacked vehicle by which bureaucratization and corruption have been brought into our lives. Our people were promised that they would be recognized as nations and that their lands would be returned, but instead of realizing these goals we are left with a nasty case of metastasizing governmentalism (Alfred 2005, 225).

The second is from the foreword to Glen Coulthard's *Red Skin, White Masks*:

With the last stores of our patience, Native writers, musicians, and philosophers are trying to explain to settlers that their values and the true facts of their existence are at great odds, and that the Native can never be completely erased or totally assimilated. This New Indigenous Intelligentsia is trying to get settlers to understand that colonialism must and will be confronted and destroyed. It is not 1947; we're not talking about reforming the Indian Act so that we can become little municipalities (in Coulthard 2014, x).

I cannot help but feel that if the project of natural capitalism in its various guises is successful in fully colonizing Indigenous communities in Canada, those communities will be further trapped between the tedious poles of a "metastasizing governmentalism"--spending ever more time and energy and effort adopting the bureaucratic forms and languages so familiar to city managers and planning departments across the land--and a future collective life in the form of "little municipalities." To be little municipalities--this is hardly a vision even vaguely adequate to the ambitions of Indigenous resurgence.

I think it is worth keeping such thoughts in mind when one goes about one's work, writing a report such as the one I composed for the MNAI. Such reports are generally thought of as mundane matters, designed to offer practical guidance or a set of best practices for an organization to follow as it pursues its work. Of course such reports are precisely that, practical in nature; but the success of a program or the protection of a particular natural asset is not all that is at stake. At stake is also the ways in which people choose to live together and how they choose to value the natural world. And also at stake is how one imagines the future and the collective ambitions that a people might hold as they face that future.

PART 2: INDIGENOUS KNOWLEDGE, GOVERNANCE, and CAPACITY BUILDING: A REPORT for the MUNICIPAL NATURAL ASSETS INITIATIVE

Introduction:

The following report gives an overview of several important and overlapping issues of importance to MNAI's future engagement with Indigenous communities in Canada. It is divided into three sections. The first focusses on the topic of Indigenous Knowledge (IK) and how MNAI might best incorporate IK into its processes and working methods. This section is the main focus of the report. The second section looks at Indigenous governance models and other issues associated with governance, with an eye toward their impact on MNAI's work with Indigenous communities. The final section contains some reflections on capacity building in Indigenous communities.

In addition, I have appended a list of recommended resources, which I strongly encourage readers to explore.

Methods:

Each section of the report is grounded in surveys and study of academic and grey literature about the particular topic. The survey for the section on Indigenous Knowledge was the most extensive, as this section reflected most closely my training and study. The sections on governance and capacity building included literature surveys, but were less exhaustive, in part due to the specifics of my expertise. I have restricted my observations and recommendations in all three areas to topics about which I feel confident. In a number of instances I have referred readers to external sources for more detailed and authoritative information. Those resources are all listed in a Recommended Resources appendix at the end of the report.

Key Takeaways/Executive Summary:

I present here a number of key issues, recommendations and suggestions embedded within the larger report. I encourage readers and users of the report, however, to read the entire report or refer to the sections of the report that any particular takeaway of interest refers to. As this report demonstrates, the issues involved in engaging with Indigenous

Knowledge, as well as issues concerning capacity building and governance, are complicated and require nuanced understanding to work effectively, ethically and respectfully with Indigenous partners.

1: "Methodology" is as important as "method": I believe it wise to keep in mind a general distinction between *methods* and *methodology* that many social scientists make and that a number of important Indigenous scholars also maintain. This distinction between method--understood roughly as the set of techniques used to collect, analyze, evaluate, measure, and encode Indigenous Knowledge--and methodology--the broader interpretive, institutional and political contexts within which such methods might be used and within which an organization functions--can help reorient MNAI and DSF's thinking away from the specifics of methods to broader questions of their overall engagement with Indigenous peoples and Indigenous politics in Canada. There is a tendency in work with Indigenous peoples (which is identified in scholarly and grey literature) to focus on method and bracket the important issue of methodology.

Linda Tuhiwai Smith summarizes this shift nicely in her important book *Decolonizing Methodologies: Research and Indigenous Peoples*: "*Decolonizing Methodologies* is concerned not so much with the actual technique of selecting a method, but much more with the context in which research problems are conceptualized and designed, and with the implications of research for its participants and their communities."

2: Do your research: It is vitally important for organizations working with Indigenous communities to educate themselves as much as possible about the communities with which they are working. This means exploring their culture, governance structures, histories, treaty or land claim status, their prior engagements with other researchers and organizations, and so on. While some non-Indigenous organizations might think this constitutes yet another form of epistemological colonialism that denies communities the right to control the narratives and information about themselves, it is more likely to be understood by potential Indigenous collaborators as a sign of respect and authentic interest. Prior research also has deeply practical purposes as well: many Indigenous communities are contacted by numerous external organizations and researchers and do not have the capacity to educate each new organization interested in working with them. Oftentimes, much information that

organizations ask is readily available on websites and in scholarly and grey literature. This report offers some general guidance in this regard, but it cannot provide the specific sort of research that needs to be done for every unique community in Canada.

I strongly encourage MNAI to build time and capacity for this preliminary research into its budgets and timelines.

3: Time, in many senses: As MNAI has already learned in its project in the Comox Valley, its traditional timelines and working methods might not be compatible with the timelines and working styles of First Nations and other Indigenous communities with whom it hopes to engage. There are three main issues concerning time to highlight here:

--One, MNAI must realistically understand and discuss the capacity of a particular community to work within particular timelines. Even better, those timelines should be thoroughly discussed and mutually planned with partner communities. Many Indigenous communities struggle with capacity issues, and what might appear to be "normal" or "typical" timeframes for completing work might be well beyond the capacity of a particular community.

--Two, time is needed to develop the sort of relationships with Indigenous communities that are essential for ethical and respectful engagement. Given that some literature on co-management suggests that it can take many years to develop the sorts of relationships to foster successful co-management work (one report cites an average of 10 years), MNAI should consider strongly taking the time to develop strong and respectful relationships with Indigenous community partners.

--Three, one should recall the long history of what has been referred to as "drive-by" development projects in First Nations communities: these are projects that are short-term and leave little substantial, long-lasting desired impact in communities. As Jim Morrison, a consultant with long experience working in conservation in British Columbia has put it, communities are often left with binders of reports on shelves and software on the computers that no one really knows how to use. MNAI should consider ways to engage over longer periods of time, and to help with capacity development so that its projects are durable over time.

4: Openness and Clarity in Communication: In all of its communications with Indigenous partners, MNAI should strive to be as open and clear as possible and provide full disclosure about its plans. This is especially important in regard to any use of Indigenous Knowledge, community data, and resources. Such openness is a foundation of free, prior and informed consent, which should guide all of MNAI's work with Indigenous peoples, since only truly open communication can be the basis of consent. Such openness should apply as well in discussions of timelines, capacity requirements, funding needs and funding sources.

It is a recurrent theme in the literature on projects that use Indigenous Knowledge that openness in communication can help avoid many of the pitfalls that can occur in such projects; moreover, such openness--done of course within the protocols and conventions that apply within particular communities--is the only way to develop solid, collaborative, reciprocal and respectful working relationships.

5: Collaboration and co-generation of methods, goals, and knowledge as a goal: as the case studies in Indigenous Knowledge projects shows, the ideal of co-generation of knowledge, working methods and goals is increasingly seen as a standard of practice that can allow for a respectful engagement with Indigenous knowledge. This requires a rethinking of the standard role and self-understanding that outside organizations often adopt, namely that they are the bearers of expertise whose role is to impart such expertise to partner communities.

6: Differences and similarities between "Western science" and Indigenous Knowledge: a significant and recurrent theme in conservation work and scholarship that engages Indigenous Knowledge is the epistemological and cultural differences that exist between "western" and Indigenous approaches to the natural world. The issue can cause significant anxiety for non-Indigenous organizations who wish to engage with Indigenous Knowledge respectfully. The case studies offered in the report each engage with this issue in somewhat different ways, and I encourage readers to consult them closely. However, my research suggests a few basic takeaways worth highlighting:

--One, while differences clearly exist between IK and Western science, often the anxiety about these differences at an epistemological level is unwarranted. In no way do I wish to suggest that IK and science are simply two versions of the same knowledge, but there is research (see the bibliography) that claims to demonstrate that

there are significant compatibilities between local and Indigenous observations and scientific knowledge. Moreover, some Settler-Indigenous collaborations suggest that differences or conflicts over differing knowledge systems is comparatively rare. This does not mean, however, that MNAI does not need to be utterly mindful of working in ethically and culturally appropriate ways with IK, and excellent resources for doing so are included at the end of this report.

--Two, what issues may arise due to epistemological difference can be overcome through thoughtful project design that includes robust co-generation of knowledge. Some researchers have cited such an approach as key to producing new knowledge that ethically engages IK.

--Three, one should not necessarily seek the perfect "integration" or reconciliation of differing knowledge systems. As the report points out, there are multiple models and metaphors for bringing knowledge systems together that allow each system to "speak for itself" and maintain its integrity.

--Four, building on the prior point, strong examples of IK engagement seek out affinities between IK and "science" and ways in which they are accord, but are also open and honest about ways in which they are not. In fact, some researchers recommend making it a point of discussion between research partners to discuss how such differences will be dealt with as part of project planning. Again, this is where open communication and deeply collaborative work can help not only alleviate many conflicts that might arise around such differences, but also turn them to a project's advantage.

--Finally, as each of the case studies in the report suggests, an approach that seeks the strengths of each knowledge system and builds upon them will likely be more successful, both in terms of project outcomes as well as in the relationships that are formed throughout the project. Seek ways in which each system can supplement the other.

7: UNDRIP and OCAP: MNAI should strive to adhere to all principles enshrined within the United Nations Declaration on the Rights of Indigenous Peoples concerning Indigenous Knowledge and autonomy. In addition, the principles of OCAP--Ownership, Control,

Access, and Possession of Indigenous Knowledge and data--should be adhered to at all times. These are two sets of principles that are becoming de-facto standards for engagement with IK in co-management and academic research.

8: Capacity building: the Capacity Building section of this report is already structured as a set of bullet-point style takeaways, but I will emphasize five matters here:

--One, realistically assess--through prior research, consultation and conversation with a community, etc.--the capacity of a potential partner community and plan accordingly. While this might seem obvious, it requires a frank assessment of other important takeaways, especially those concerning the amount of time needed to realize a project.

--Two, by extension, realistically assess the demands that an MNAI project may place upon the capacity of a partner community. A recurrent theme in capacity-building literature is that development or conservation projects often *create* capacity deficits by generating new requirements for assessment, observation, monitoring, data collection, management and so on.

--Three, assess MNAI's own capacity to assist with capacity building. Oftentimes capacity building is treated by Settler organizations as an afterthought, a secondary or tertiary goal, or an obligation required to secure funding. As such, organizations often do not devote the resources necessary to foster successful capacity building.

--Four, time: a recurrent issue, spoken to by the literature on capacity building as well as by Indigenous participants in MNAI's workshops, is that capacity building projects are often too short-term to generate any lasting benefit.

--Five, "bottom up" or "community-oriented" approaches are recommended over top-down approaches. Indigenous communities themselves should determine their capacity building needs.

SECTION 1: ENGAGING WITH INDIGENOUS KNOWLEDGE AND KNOWLEDGE HOLDERS

General Issues and Overview

"Decolonizing Methodologies is concerned not so much with the actual technique of selecting a method, but much more with the context in which research problems are conceptualized and designed, and with the implications of research for its participants and their communities."

Linda Tuhiwai Smith (2012, ix)

In the past several decades, in Canada and around the globe, there has been a dramatic increase in interest in incorporating the values and knowledge held by Indigenous peoples into environmental resource management planning and practices. A growing consensus exists amongst Indigenous and non-Indigenous scholars and practitioners on the value of Indigenous knowledge (IK) of the natural world. This is knowledge often held by individuals and communities with long experience "on the land," and often handed down in multiple and continually evolving ways--through oral culture, imitation, storytelling, film and video, and more--across generations. Many Indigenous scholars, including Tuhiwai Smith, believe that the careful and ethical use of Indigenous Knowledge can contribute to overcoming the legacies of colonialism by promoting Indigenous perspectives, strengthening Indigenous self-governance, and countering the dominance of "western" "science" in the fields of conservation and resource management. Three key moments that have enshrined the accepted importance of IK in conservation and resource management contexts around the world include: the extensive discussions of traditional ecological knowledge (TEK) in the Millennium Ecosystem Assessment (MEA) (see Reid et al. 2006); the centrality of IK in the United Nations Declaration on the Rights of Indigenous Peoples, adopted by the UN in 2007; and the formal acknowledgement of the importance of "Indigenous and local knowledge" systems in the objectives of the initial Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) 2014 Work Programme and its 2018 update.

Despite this growing interest, and the growing consensus in the merits of engaging IK in conservation and management contexts, it is difficult to create a set of recommendations or "best practices" for doing so, since the field is the site of significant debate--even contention-

-and in a state of constant development and change. These debates are not only occurring within the academic literature on IK, dominated primarily by non-Indigenous scholars, and within the organizations that work in the fields of conservation and management, similarly dominated by non-Indigenous people; they are also part of a much larger debate that is going on in Canada about the status of "Aboriginal-state" relations, as well as within Indigenous communities and amongst Indigenous intellectuals. Thus, while the question of "integrating" IK with so-called "western" or "scientific" approaches might, on the surface, appear to be a fairly technical or epistemological question--how compatible are the two approaches? to what end is an agreement between them possible? how can their different vocabularies, points of reference, and methods be reconciled or bridged? does TEK integration improve conservation outcomes, social-cultural outcomes? etc.--these questions are also deeply political and ethical, enmeshed within the ongoing and continually unfolding struggles over Indigenous-settler relations in Canada. Thus, any approach to conservation in Canada on Indigenous lands or with Indigenous communities--and by some arguments this means the entirety of the Canadian territory--entails an implicit or explicit stance toward Indigenous politics.

Furthermore, in its work MNAI should be aware that not only will its non-Indigenous partners have differing views of IK and its merits, so too might different First Nations and other Indigenous community partners have differing views on how IK is to be valued, protected, fostered, shared and used. Such differences of opinion also exist within individual communities as well. So it is wise, from the outset, to be aware that when one engages with IK, one is also engaging with ongoing debates and that any methodological option that MNAI might choose will be provisional and only imperfectly fit within an evolving set of social forces.

As the eminent theoretician of Indigenous methodologies Linda Tuhiwai Smith suggests in the epigraph above, the most important questions about research and management work with Indigenous peoples are not necessarily those about the particular techniques or methods employed (though of course they are very important); instead, the broader issues of the contexts within which research and other works is designed and the impact that such work has upon the Indigenous communities involved is of even greater importance.

Assessing that impact is a challenging and complex issue, and cannot be reduced easily to a set of compact recommendations or best practices.

Indeed, in the academic and grey literature I have surveyed for this report, a common theme has emerged: yes, method is important, but more important by far is the degree to which an organization or researcher understands the cultural, social, political, and institutional contexts in which research is conducted and in which it is put to use. Such an understanding requires a reflection on the part of an organization about its mission and goals, and the overall use to which its work will be put. And it requires thorough knowledge of the Indigenous community or communities with which it is working. A recurrent recommendation in the literature about research and conservation work in Indigenous communities, is that any organization take the time and effort to learn as much about the communities with which they will work before work begins, if not before any initial engagement commences. Such understanding is not only a gesture of respect toward Indigenous communities, but it is also important for understanding more deeply the meaning of IK, and the social, cultural, and spiritual contexts of which it is a part. Only with such understanding can IK be effectively put to use and can IK be used in a manner that is of lasting benefit to the Indigenous communities to which it belongs.

Along similar lines, a second very important, general theme emerged from my research: namely, that every First Nation or Indigenous community is unique, be it in its culture and social habits, its forms of governance, its history, its relations with other levels of government, and so on. Thus the generalizations that are contained in this report must be taken with a grain of salt, and effort and care must be taken to understand the unique attributes of any community with which MNAI works.

Definitions:

Indigenous Knowledge, Traditional Ecological Knowledge, Local Knowledge

Multiple definitions of IK exist, but the following definition of "Traditional Knowledge" (TK), taken from a study of the Inuvialuit in Yukon, captures the spirit of IK well, though it is not exhaustive by any stretch:

[A] cumulative body of knowledge, know-how, practices and presentations maintained and developed by the peoples over a long period of time. This encompasses spiritual relationships, historical and present relationships with the

natural environment, and the use of natural resources. It is generally expressed in oral form, and passed on from generation to generation by storytelling and practical teaching. (Smith 2006; cited in Armitage and Kilburn.)

In this report I will use several terms to refer to the knowledge held in Indigenous communities in Canada. Generally, however, I will resort to the term "Indigenous Knowledge" (IK) in preference to various other terms that are often used roughly synonymously.¹² This choice reflects choices made in official Canadian government documents--for example in its policies concerning the use of Indigenous knowledge in recent environmental assessment legislation (Bill C-69, 2019, which enacted the Impact Assessment Act and the Canadian Energy Regulator Act and amended the Canadian Navigable Waters Act, and Bill C-68, 2019, which amended the Fisheries Act, for example). It also reflects the usage of some Canadian First Nations intellectuals such as Mississauga scholar and writer Leanne Betasamosake Simpson. It should be noted, however, that Indigenous communities often have preferred terminology that is advised to use when working with them. For example, the Inuvialuit in Yukon prefer the term "Traditional Knowledge" (capitalized), while Inuit in Nunavut speak of Inuit Qaujimaqatigiit (IQ, roughly translated as Inuit "Knowledge", "Institutions", or even "Technology"), which is enshrined in governing documents, management plans, and protocols. Some First Nations may refer to Indigenous Knowledge in their communities by the First Nation's name: the Syilx people in the BC interior will at times refer to Syilx Knowledge, for example. It is worth considering some of the debates about this terminology, as they highlight some of the core issues involved in settler organizations working with IK.¹³ If there is a fundamental lesson to be learned from a consideration of this terminology it is that naming such knowledge in any manner will always impose a form of order upon it that does not exist in reality; one must always keep in mind that such knowledge changes and evolves over time, that it is highly situational, but also not reducible to immediate experience.

¹² In doing so I follow Bohensky and Maru (2011) in their broad survey of Indigenous Knowledge integration as well as Leanne Betasamosake Simpson's extensive work on IK.

¹³ As is clear, I will also use acronyms for IK (and related terminology), even though some critics see in the use of such acronyms a tendency to simplification and codification of bodies of knowledge that are highly diverse and continuously evolving. However, there is significant precedent in Indigenous scholarship and grey literature for the continued use of acronyms, and in a report such as this, their use is very convenient. I ask simply that the questioned nature of such acronyms always be kept in mind. In conversation, acronyms should not be used, however.

The term "Traditional Ecological Knowledge" (TEK), is perhaps the most commonly used term to refer to the ways of knowing addressed by this report. As critics such as the Betasamosake Simpson and the anthropologist Paul Nadasdy (amongst others) have pointed out, each word in this term is open to critique. The word "traditional" tends to reinforce a broader tendency in settler culture to think of Indigenous culture as static, stuck in the past, and incapable of achieving the status of "modern"; such a notion is not only widely culturally held in Canada, but actually underlies Canadian case law interpretation of Aboriginal right, which has, since the Van der Peet decision (1996), tended to restrict the definition of Indigenous cultural practices to those that existed prior to contact with Europeans. I think it is imperative that any engagement with IK must dispense with such atavistic attitudes toward Indigenous cultures and practices, and understand that IK, while often grounded in long-standing traditions, is utterly contemporary. As the Inuit scholar Jaypeetee Arnakak notes, the working definition of Inuit IQ includes "*the past, present and future knowledge, experience and values of Inuit society*" (35; my emphasis). As he argues, in fact, a value inherent in the principles of Inuit culture that underlie the functioning of the Nunavut government is that of adaptability and the ability to work with what lies to hand: this includes the capacity for the Inuit--and I would argue by extension Indigenous peoples more generally--to work with and incorporate non-Indigenous ideas, practices, tools, and materials in a manner that accords with Inuit values and in a way that does not undermine the integrity of Inuit culture. "Ecological" is a similarly contentious term, for it tends to reproduce several unfortunate tendencies in settler conceptions of Indigenous peoples as well as to extract the specifically "ecological" element of Indigenous knowledge from its imbrication within a holistic, entwined set of beliefs, values, and practices. Given the centrality of "the Earth" or "the land" to many, if not all, Canadian Indigenous cultures, to extract the "ecological" aspect of knowledge from broader knowledge is to do a kind of symbolic violence to its spiritual roots (see Simpson). In addition, the term tends to also bracket those elements of IK that are not specifically ecological and which can include the knowledges and practices that engage with the human-created world in which all peoples now live. Finally, the term "knowledge", while less contested than the other two terms in TEK, can also seem reductive in so far as it tends to define IK as a received and static set of ideas. Moreover, the singular form of the term, for some critics, asserts a homogeneity to IK that simply does not exist; instead, some

prefer to speak of Indigenous *Knowledges*. And finally, IK, as Betasamosake Simpson has argued, includes practices, attitudes, beliefs, and general dispositions toward the land and toward other humans, elements of human capacity that are not so easily labelled as knowledge. She goes so far as to argue that IK *includes the land* itself.

Another common term, "Local Knowledge," is often used as a synonym for IK or TEK. I would encourage, however, that its use be restricted to forms of IK, or any practitioner's knowledge, that are specific to a particular locale or site, or to situations in which the specific scale of knowledge is to be designated, and that it not be used as a general moniker for all Indigenous Knowledge. The reason for this is quite simple: just as TEK tends to reduce Indigenous Knowledge to "merely" ecological knowledge, so too does local knowledge tend to exclude the possibility that an Indigenous person or community's knowledge can extend beyond the local. This is clearly incorrect, as Indigenous communities are as aware of their places within a global environment and community as anyone is, and are aware of the way in which broader social, political, economic, and environmental forces shape the conditions of the lands and waters of their territories. That said, this is not to deny that the experience of individuals and groups in their territories should also be valued: that experience does, indeed, provide the foundation for a deep knowledge of specific locales, and in collaborative conservation contexts can very importantly supplement the often larger scales at which scientific knowledge tends to operate.

Finally, some scholarship and much grey literature (Armitage and Kilburn, for example) insist on sustaining a distinction between IK and the use of western or scientific approaches by Indigenous people working as researchers or co-investigators. For example, the use of quadrant surveys to determine species prevalence is generally not considered IK; but the experiential knowledge of a particular species' presence in a locale would be. Nevertheless, training Indigenous partners in the methods of science can be part of an approach that incorporate IK, as well an important form of capacity building. In fact, the training of Indigenous partners in the methods of science or western management is seen by some as a powerful method for productively bridging or weaving together western and Indigenous knowledges.

Knowledge Integration, Bridging, Weaving

The literature on IK is full of attempts to find an appropriate metaphor to name an ethical and respectful method of incorporating IK into research, conservation, assessment, and resource management projects. It seems that many new metaphors sprang into existence in the wake of Paul Nadasdy's influential (1999) critique of the "integration" of TEK in co-management situations. In his account, integration tends to mean the effective assimilation of Indigenous ways of knowing into western or scientific knowledge systems that simply reproduces colonialist relations at the level of epistemology, language, and management practice--even in supposedly progressive co-management scenarios. In the process of integration, the richness and Indigenous specificity of IK is lost, and IK is made to articulate itself in the language of science or state-led management. Perhaps most importantly (and often overlooked in receptions of Nadasdy's body of work) is the fact that such integration tends to implicitly reinforce the presumed priority or superiority of science or western management methodologies: science comes first, and IK needs to conform to science's standards, be validated in its terms, and generally only function as a weak supplement to the fundamental insights that science provides.

Other metaphors--two common ones being "bridging knowledge" and "weaving knowledges"--try to reinforce the distinctiveness of differing knowledge systems and to sustain the integrity of IK. More than one author has taken the original Two Row Wampum Treaty, or Guesweñta, of 1613 as a model for an agreement between two ways of knowing and living that respects the dignity and integrity of each. The existence of these metaphors is instructive, as they, much like the debates about terminology noted above, point toward the important epistemological and ethical debates that cannot be avoided in collaborative contexts where IK is being engaged. One recommendation that can be made, however, is that the term "integration" is perhaps best avoided in collaborative contexts, because of its connotations and history (see Tengö et al. for a brief discussion). In the case studies discussion below, I will return to the alternatives to "integration" as a framework of IK engagement.

Issues of Concern; Ethical Issues in Engaging IK

Almost all scholarly and grey literature on IK acknowledges that incorporating IK into western or non-Indigenous research and management projects can present a number of

practical, political, and ethical issues. Increasingly, in Canada First Nations, Métis, and Inuit individuals and communities and national- or provincial/territorial level Indigenous organizations (such as the AFN and the Wildlife Management Advisory Council in Yukon) have begun developing literature about the topic. These include very useful and insightful IK research guides, ethical guidelines, and protocols for working with IK. Prior to embarking on any project with an Indigenous community, MNAI should determine if any community-specific IK or research guidelines exist. While many of the principal features of such guidelines are common from one document or community to another, there can be important variations. Many Indigenous communities' research agreement templates will also include sections regarding IK, intellectual property (IP) requirements, and other issues of importance. Consulting these guidelines early in a process can save MNAI significant work and eliminate confusion.

In addition, multiple agencies, academic institutions, NGOs, and inter-governmental bodies have begun developing guidelines for working with and protecting IK in research and management scenarios. These include, importantly, detailed sets of standards adopted by the Canadian Tri-Council granting bodies (CIHR, NSERC, and SSHRC), the Aurora Research Institute in Yukon, as well as standards set out in recent Canadian federal legislation including the Impact Assessment Act (Bill C-69, 2019) and the amendment to the Fisheries Act (Bill C-68, 2019). The "Tri-Council Statement on working with Aboriginal Peoples" (included in the Recommended Resources appendix) has achieved something of the level of "standard of practice" for working with Indigenous communities in Canada, and adherence to its guidelines is required of any Indigenous research projects receiving Tri-Council funds. It is increasingly recommended, often in combination with OCAP™ (see below), by Indigenous groups as a guide for ethics protocols to be followed in Indigenous research. Though targeted to specifically academic research, its guidelines and standards of practice are useful for environmental management and assessment projects such as those of MNAI.

Free, Prior and Informed Consent

Adherence to the principle of free, prior and informed consent, notably enshrined in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), should be assumed in all collaborations with Indigenous peoples in Canada. In the majority of cases,

such consent is secured through formal work or research agreements, signed between external organizations and the representative body of a particular Indigenous community. Consent for work with a community, however, should not be understood to imply consent on the part of individuals, and individual consent for any collaboration, interviews, or other research activities should be secured before any work begins.

**Confidentiality and Protection of Indigenous Knowledge:
Ownership, Control, Access, and Possession of Indigenous Knowledge, Data, and
Information (OCAP™)**

OCAP™ is a codified set of principles designed to strengthen First Nations and Indigenous control of data collection and management in their communities. It emerged from the First Nations and Inuit Regional Longitudinal Health Survey in 1998 and has expanded beyond the realm of health research to include all research and data collection activity--including IK--in Indigenous communities. It is endorsed by multiple First Nations organizations, including the Assembly of First Nations (AFN) and the First Nations Information Governance Centre (who actually owns the trademark and requests that the trademark always be respected), and has been adopted by numerous First Nations communities across Canada. Even if not explicitly required by a particular community's ethics protocols or standard research agreements, it is generally considered a good idea to adhere to its principles, unless they explicitly contradict a community's instructions. Furthermore, its principles are encouraged by the Tri-Council: it is an increasingly common practice for non-Indigenous academic researchers conducting Aboriginal/Indigenous research to employ the principles of OCAP™ to ensure ethical research practices and to ground their community engagement. If, for some reason, the principles of OCAP™ contradict the data management, confidentiality, or data management requirements of MNAI's partners or funders, care will need to be taken to reconcile these differences with any Indigenous community with which MNAI is working.

OCAP™ principles are designed and employed to address the accumulated concerns of Indigenous communities in Canada have had with "externally driven research" (First Nations Centre, 2007), many of which are touched upon in this report. It is increasingly understood to be a primary, important method for outside researchers to implement respectful

protocols for their work with First Nations and other Indigenous people in Canada. Moreover, it is understood as one method to aid in ensuring free, prior and informed consent, protecting privacy, and the protecting intellectual property in Indigenous communities.

I recommend fully reviewing the guide to OCAP™ published by the National Aboriginal Health Organization (NAHO; First Nations Centre 2007; included in the Recommended Resources appendix). In addition, OCAP™ training is available through¹⁴ FNIGC. Here, however, I will provide a brief overview of its basic principles, cited from the NAHO guide:

--Ownership: Ownership refers to the relationship of a First Nations community to its cultural knowledge/data/information. The principle states that a community or group owns information collectively in the same way that an individual owns their personal information. It is distinct from stewardship [or possession].

--Control: The principle of control asserts that First Nations Peoples, their communities and representative bodies are within their rights in seeking to control all aspects of research and information management processes which impact them. First Nations control of research can include all stages of a particular research project – from conception to completion. The principle extends to the control of resources and review processes, the formulation of conceptual frameworks, data management and so on.

--Access: First Nations people must have access to information and data about themselves and their communities, regardless of where it is currently held. The principle also refers to the right of First Nations communities and organizations to manage and make decisions regarding access to their collective information. This may be achieved, in practice, through standardized, formal protocols.

--Possession: While ownership identifies the relationship between a people and their data in principle, possession or stewardship is more literal. Although not a condition of ownership per se, possession (of data) is a mechanism by which ownership can be asserted and protected. When data owned by one party is in the possession of another,

¹⁴ As of the time of this writing, OCAP™ certification is only available to Indigenous communities. My understanding is that there are plans to make training available to non-Indigenous individuals and groups in the future.

there is a risk of breach or misuse. This is particularly important when trust is lacking between the owner and possessor.

The application of OCAP™ specifically, or the protection of Indigenous data and information more broadly, is both a technical matter and a more general matter of project goals and design. The FNIGC suggests specific protocols for the technical management of data to protect Indigenous data--the use of isolated servers, rules for governing data storage and communication, etc.--and some First Nations have such protocols in place already. OCAP™ principles, however, should influence each stage of project design and implementation.

In addition to the core principles of OCAP™, a number of other important issues concerning the protection and use of IK should be noted.

An important principle in working with Indigenous Knowledge, especially knowledge that is confidential, private, culturally sensitive, or otherwise protected, is the maintenance of confidentiality and protection of that knowledge. This fundamental principle informs virtually every government, academic, or private sector policy on working with Indigenous communities consulted for this report. It currently forms an important pillar in federal environmental legislation (Bills C-68 and C-69, for example). Canadian government policy¹⁵ governing its own activities in environmental assessment stipulates "that any Indigenous knowledge shared in confidence" be treated as confidential and "not disclosed without written consent, unless:

- 1: it is publicly available;
- 2: its disclosure is necessary for the purposes of procedural fairness and natural justice or for use in legal proceedings;
- 3: its disclosure is authorized in the circumstances set out in regulations.

It should be noted as well, that principles of confidentiality, and care in knowledge sharing more generally, applies not only to the way in which an organization such as MNAI would use knowledge internally or in its publications, but also to how it might share information or knowledge with other First Nations. As more than one interviewee told me, no knowledge or

¹⁵ See, for example, "Let's Talk Indigenous Knowledge" at <https://www.canada.ca/en/services/environment/conservation/assessments/environmental-reviews/environmental-assessment-processes/discussion-paper-development-indigenous-knowledge-policy-framework.html>

information should be shared with other First Nations without explicit consent to do so. These principles seem easily transferable to MNAI's operations and could form the foundation of an MNAI policy for handling Indigenous knowledge and other information, as well as be the cornerstone of any research or work agreement with a First Nation. As with IK more generally, many First Nations have confidentiality policies with which MNAI should make themselves familiar before embarking on any projects.

Intellectual Property

While beyond the scope of this report and its author's expertise, I do want to point toward the significant issue of intellectual property (IP) as it relates to IK so that MNAI is aware of it and can pursue it further as required. As the AFN points out in its *Aboriginal Traditional Knowledge and Intellectual Property Rights* discussion paper, intellectual property law in Canada is often not seen to apply to IK for numerous reasons, not the least of which is that the collective nature of IK does not align well with IP law, which presumes IP to be possessable only by individuals. There exist significant gaps in IP law and protections that many Indigenous peoples would like to see for IK, much of which OCAP™ attempts to address. It thus becomes incumbent upon organizations and researchers working with IK to act ethically and proactively in implementing protections of the integrity and security of IK.

The legal context of intellectual property is changing in Canada: in 2018, the Government of Canada implemented a new Intellectual Property Strategy, which includes a number of initiatives to improve protections for traditional knowledge and to reconcile IP frameworks and TEK. A summary of these initiatives can be found on websites listed in the Recommended Resources appendix to this report under "Intellectual Property." In addition, the AFN discussion paper *Aboriginal Traditional Knowledge and Intellectual Property Rights* contains an extensive discussion of the issues around IP and IK. The document suggests that basic principles outlined in the Convention on Biological Diversity (CBD) and UNDRIP be applied in First Nations contexts. These include the following:

To “respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge.” This combines with the CBD guideline to “protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or

sustainable use requirements." Thus, Aboriginal Traditional Knowledge (ATK) should be "respected and maintained when the knowledge is used for conservation or sustainable use, and... should be shared in the public domain if the Indigenous or local community freely grants consent." In short, CBD and UNDRIP assert "that Indigenous peoples are the owners and controllers of ATK and that ATK can only be shared on mutually agreed terms with prior informed consent."

The AFN discussion paper also asserts that when taken together the CBD and UNDRIP suggest an IP system for ATK that:

- Recognizes Indigenous ownership of ATK
- Does not mandate commercial/business/entrepreneurial uses as a condition of protection
- Applies to tangible and intangible forms and applications of ATK
- Mandates free and prior informed consent for third party ATK use
- Rejects colonization of Indigenous knowledge by allowing only Indigenous Peoples to control the form and content of ATK.

Indigenous Knowledge "vs" Science: Epistemological, Philosophical, Ethical Questions

As the discussion of terminology above indicates, there have been long running debates about the relationship between "western" science and methods and Indigenous Knowledge and its methods. A fundamental question that MNAI has posed in its request to me is how one can go about reconciling these potentially distinct systems of knowledge or ways of knowing in a manner that is useful and respectful. MNAI has also asked: to what degree is reconciliation or compatibility between these two systems possible? How, in other words, can two ways of knowing that are irreducible to each other, work in concert?

These valid concerns echo throughout the literature on IK and is acknowledged with varying degrees of explicitness. Every solution found so far is provisional and imperfect. This is to be expected and, perhaps, simply unavoidable: overcoming significant differences in belief, or in the foundations of a knowledge system, will always require some form of translation, compromise, or accommodation. Overcoming such differences in the context of the long, painful and exploitative history of colonization is all the more difficult. This is not, of course, a reason to abandon attempts to do so, since the political and economic situation of Canada today, and for the long foreseeable future, has brought these two systems together. Any process of Aboriginal Reconciliation in Canada will have to contend, somehow, with

profound cultural difference. At the risk of simplification, I believe that the most compelling practical solutions to this challenge that I have seen in my research involve four primary features:

--One, a respect for the cultural and epistemological differences between science and IK that informs project design so that there is no attempt to reduce one knowledge system to the other. This is characterized as a "parallel" approach below in the section on examples of IK engagement.

--Two, non-Indigenous researchers treat IK, its insights, and its knowledge holders as equally valid to science or western methods. Science or western methods are not granted implicit or explicit priority.

--Three, projects are designed to foster the co-production of problem definition, knowledge production, solution designs, and project implementation.

--Four, there is extensive communication between external researchers and Indigenous partners about the use of IK and its analysis and interpretation. This includes offering extensive opportunities for Indigenous partners and IKHs to offer feedback, corrections, and re-interpretations of the data and information that external partners have collected.

Though this topic is broad, I will attempt to condense the debates around it with an eye toward the practical work that MNAI wishes to do in the future with First Nations in Canada.

First, many scholars (see, i.a., Nadasdy 1999, 2003, 2005; Simpson 1999, 2004) have pointed to the long history of colonial oppression and exploitation in which science and management have played instrumental parts. It is difficult, in a contemporary context, to simply ignore or set aside this history, not only because it has rightfully engendered deep suspicion on the part of Indigenous people toward science and management (NAHO 2007), but also because this history has become embedded in the very worldviews of science and management themselves (Walter and Andersen). From this perspective, the issue is not so much whether science is at an epistemological or ontological level incompatible with Indigenous methods and ways of knowing, but rather whether science itself has become so deeply colonialist in its methodologies that it is in need of decolonization. How science might do this is a complex and deep debate, and literature on the topic is included in the Recommended Resources at the end of this report.

As already noted, some scholars, both Indigenous and non-Indigenous, believe the real concern about the "integration" of IK into management and research has less to do with the incommensurability of differing worldviews, and more to do with the institutional, historical, and political contexts within which IK tends to be used. One way to think about this aspect of the problem, and a way to resolve it, has been proposed by Maggie Walter and Chris Andersen in *Indigenous Statistics: A Quantitative Research Methodology*. They employ a classic distinction from social science between *method* and *methodology*. Method refers to the technical, analytic, and quantitative techniques employed in scientific and sociological study. Methodology refers to the interpretive contexts in which such methods are understood--for example, a "natural assets approach"--as well as the institutional contexts--academic, management, government, legal, social-administrative, health scientific, etc.--in which such methods and the data they produce get used. This distinction echoes the point made by Tuhiwai Smith in the epigraph to this section of this report: that the greater concern is the "*context in which research problems are conceptualized and designed, and with the implications of research for its participants and their communities.*" Walter and Andersen argue, essentially, that quantitative/statistical methods can be used in ways that are beneficial to Indigenous communities and that are not inherently deleterious. Their critique of colonialist *methodology*, however, compels researchers and managers to think deeply about the contexts in which their work gets conceptualized and used, and to take responsibility for that. This strikes me as an eminently useful insight for MNAI, for it reframes the debate about the apparently inherent incompatibility of western and Indigenous knowledge systems, to one about the social and political contexts in which they are employed.

Along similar lines to Walter and Andersen's thinking, Nadasdy (2003) points to the ways in which science and management might unwittingly perpetuate colonial relations, and, even in contexts of co-management, might lead to negative impacts on Indigenous communities. For Nadasdy, a central, unfortunate feature of management practices is their inclination toward *bureaucratization*; that is, the tendency to create additional and more refined institutional structures to carry out management, and the tendency for these structures to take on powerful lives of their own. This has three main consequences in Nadasdy's view: one, the needs of a bureaucracy tend to overpower the needs of a particular management

situation. In other words, bureaucracies tend to worry more about their continued existence than they do about the problems they are supposed to solve. Two, bureaucracies tend to demand that data, information, and knowledge be expressed in forms that it can understand; much IK is oral or articulated in forms such as storytelling, image-making, performance, and so on, that is incompatible with the forms of knowledge that bureaucracy demands. Finally, management and scientific study can lead to the creation of new bureaucracies in Indigenous communities, with knock-on consequences that can be hard to predict. These include, for example, the exacerbation of already-existing capacity deficits or the creation of new ones; the increase in activities such as office-work, data entry and management and analysis and so on that keep Indigenous individuals from being on the land and living the types of lives they wish to lead. Furthermore, this can have dire consequences for the maintenance and transmission of IK, as more time is spent "doing" the bureaucratic tasks of management and less time is spent developing and transmitting IK. As Nadasdy's fieldwork makes patently clear, many Indigenous people engaged in the bureaucracy of management spend more time involved in the mundane tasks such management requires--data entry and analysis, tech support, etc.--than they do on the land, with significant consequences for their knowledge of the land. MNAI may wish to consider the degree to which a natural assets approach might lead to such downsides and consider, perhaps, ways of ameliorating any such effects. This might be one place, for example, to target capacity-building efforts. At the very minimum, MNAI should be clear with partner communities about what capacity demands its work will entail, both during the active project phases and down the line.

To return to the issue of the compatibility of western methods with Indigenous knowledge and lifeways: While Nadasdy articulates very well the ways in which science gets "institutionalized" in management practices that threaten the ways of life they purport to protect, he also sees potential contradictions between the basic assumptions of western science and Indigenous worldviews. Two examples from his work make these contradictions concrete, but also suggest how they can be productively overcome. One is an anecdote about a Kluane elder in the Yukon who took issue with the scientific language used to describe the relationship between people and the mountain sheep that form an important part of Kluane diet and culture. Criticizing the language of wildlife management that speaks of the "harvest" of the sheep, this elder said: "We do not *harvest* animals. We kill them"(Nadasdy 2011, 135;

my emphasis). This example illustrates very well how a "methodology"--in this case the blind adherence to a particular view of human-animal relations--can impede the bridging of knowledge. Another example speaks to this problem as well. In the Yukon, territorial managers established a rule against the harvest of younger rams, insisting that only so-called "full-curl" rams (with large, fully-curved horns) be "harvested." Kluane hunters opposed this rule. The territorial managers insisted it was a biologically sound principle, designed to increase the number of males of reproductive age and thus to help expand sheep populations. Hunters insisted that this damaged the herds because older, full-curl rams played an important part in educating younger males into breeding, foraging, and survival techniques. In this situation the Kluane view was simply excluded from consideration in the design of a management program, since the scientific standpoint held firm priority.

While both of these examples illustrate the potential deep incompatibilities between science/management and Indigenous knowledge, they also speak to ways to overcome the seeming contradictions between the two forms of knowledge. It is clear from both examples that such conflicts could have been overcome had the scientists involved had open minds and, more importantly, been able, within the institutional contexts in which they work, to accommodate the Kluane view in their methodology. A deeply collaborative process from the beginning of the project could have permitted learning on the part of scientists: "harvesting" as a term appears properly scientific, because it seems abstract and devoid of emotional or cultural content, but it clearly excludes an important cultural and spiritual dimension of Kluane belief. Moreover, as numerous historians of science (see, for example, Latour) have pointed out, the apparent "objectivity" that derives from scientific abstraction is itself the embodiment of a particular worldview. That is, objectivity itself must be understood to be a form of "bias." Similarly, if biologists had taken seriously the Kluane hunters' insistence on the role that older rams play in herd health, they could have expanded their own "scientific" understanding of sheep life histories. But to do so would have required, at a minimum, a willingness and a forum in which to listen and collaborate, as well as a willingness to be open to the accuracy--or "validity"--of Indigenous knowledge. Such learning would not have "reconciled" IK with science, but rather opened scientists to being taught by the Kluane. However, the institutional constraints on such learning were enormous: a large, state-run bureaucracy stood behind these scientists, employing terminology and

management practices that can only accommodate certain forms of knowledge. As such, any good will on the part of a single researcher or manager can only do so much.

IK Data Collection, "Translation," and Use; Research Standards and Data Quality

Virtually any work involving IK will at some point involve data collection, analysis, and use. After surveying a selection of literature that deals with IK collection either directly or tangentially, it is difficult to offer compact recommendations of specific methods or techniques that MNAI might use in any particular context. Not only are the contexts in which MNAI will work potentially varied, but the forms of IK, its collection and use vary enormously as well, ranging from historical reconstructions based on archival records and oral histories, to interviews with knowledge holders and other experts, to archaeological and field-biological study, to gathering of spatial knowledge, and more. Each form of knowledge requires attention to its specificity when deciding on the most appropriate methods. Working with consultants or experts with experience in the field, and whose outlook on IK is in accord with that of MNAI, is potentially a good strategy. Numerous consulting firms, some run by First Nations, have anthropologists, archaeologists, sociologists, mapping experts, and other relevantly trained professionals on staff who can facilitate work with IK. Whatever methods MNAI eventually employs, the distinction drawn above between *method* and *methodology* should be kept in mind. Moreover, as the Wildlife Management Advisory Council North Slope Yukon (WMAC) reference guide to the *Conduct of Traditional Knowledge Research* (Armitage and Kilburn 2015) emphasizes: "Flexibility is required in research design to account for subject matter, location, research objectives, Traditional Knowledge Holder (TKH) sample, budgets, time and other factors, and that research methodologies can evolve. At the same time, some matters, that if neglected, severely affect the value of research products, *primarily require extra awareness and attention from the research team rather than a great deal of time or money* (xii-xiii; my emphasis)."

My review of research on IK in Canada accords with the assertion by the WMAC that standards for IK research in Canada vary greatly and that IK research is falling under increasing scrutiny and academic study. The WMAC also noted that a "significant amount of the TK [Traditional Knowledge] research does not meet minimal data quality standards." It is unfortunately a common tendency in past use of IK in management and academic contexts to

ignore standards of rigour and consistency that normally characterize the collection and use of scientific data; often, especially in assessment scenarios, IK is treated as a minor supplement or onerous obligation to be fulfilled on top of seemingly more important work. The oral, holistic, variable and relational nature of IK is not an excuse or legitimation for avoiding high-quality and thorough collection of data and knowledge, nor for avoiding rigour in its analysis, interpretation, and reporting. In fact, the opposite is true: given the challenges Indigenous communities face in sustaining the intergenerational transmission and learning of IK, the records of IK established in academic research and conservation work may often be the only physical, written, or durable record of such knowledge. As such they can have a profound impact on the future understanding, transmission, and use of IK. Moreover, the data/information collected can be a significant reciprocal contribution of MNAI's work to Indigenous communities; the higher the quality of that data/information, the greater that contribution and likely its impact in the future will be. The WMAC guide contains excellent suggestions for ways to sustain high quality and integrity of data.

Research standards and criteria used to assess the validity, reliability, and quality of IK research may differ between partner Indigenous communities and MNAI and other community partners such as municipalities, regional governments, private resource companies, and so on. In addition, the uses to which such knowledge is put might differ significantly as well. MNAI, for example, may wish to use IK to help with asset inventory and assessment, whereas the partner First Nation may use such knowledge to designate areas for protection, exploitation, or other uses. WMAC strongly suggests that such differences in standards and uses be acknowledged from the outset and openly discussed, and IK research must be designed with these different end-users in mind. In this regard the principles of OCAP™ should be kept in mind as well, and Indigenous partner communities should be closely involved in discussions over use, knowledge translation, and research standards. IK should not be translated into other forms--such as quantitative data, maps, etc.--or put to any use without explicit consent from the body with the authority to provide such consent.

Timelines

As noted above, MNAI may well need to adapt its timelines to the pace and needs of the First Nations communities with which it works. As the MEA report *Bridging Scales*

suggests, the development of strong working relationships with Indigenous communities and deep knowledge about their worldviews can take significant time. That report suggests that such efforts can take "typically on the order of ten years based on the co-management literature" (320-21, citing Berkes 2002). While such a timescale might not, and perhaps cannot, be implemented in the scenarios in which MNAI will work, it does point to the challenge that MNAI might face in working with Indigenous communities (as experience in the Comox Valley project has already indicated). This challenge is not unique to MNAI, and much literature on IK integration acknowledges that the ideal of long-term engagement cannot always be achieved. Again, solutions to these issues are always provisional and include elements of compromise.

Recommendations for working with compressed timelines include:

--Realistically assess required timelines in consultation with partner communities, the project team, and other involved groups from the outset and develop a timeline in close consultation with all involved.

--At a minimum, a project timeline should include adequate time for rigorous IK collection and data management and protection, robust consultation, and proper carrying out of measures to ensure ethical, responsible use of IK.

--If available, work with "bridging institutions" where appropriate, or internal departments in partner communities, to help facilitate not only knowledge bridging, but relationship building. For example, the Stó:lō Research and Resource Management Centre that handles land use, development, and assessment matters for the Stó:lō Nation has experience with IK engagement and extensive contacts within the Stó:lō community. Similarly, some consultancies have long-standing relationships with First Nations communities, and these relationships can be leveraged to make work more time efficient.

--Consider a process that is continuously consultative and adaptive and that permits ongoing revision and updating as relationships with partner communities continue to develop.

--Consider scoping projects appropriately so that they might expand, if desired and appropriate, over time. Some of the most successful co-management and cooperative

research programs have started small and grown over time as relationships develop, trust accrues, and knowledge grows.

--A frequent refrain in IK literature, and a common critique from Indigenous critics, is that contact with researchers and managers ends with the project end-date.

Consider, in project design and funding plans, open-ended timelines that permit continued engagement. Seek funding opportunities that extend beyond the conventional 2 and 3-year windows. Avoid project design that leads to a project "sitting on a shelf" when capacity and/or available resources prevent meaningful continuation of a project.

Characteristics of Successful IK Research Engagement:

While IK research programs and management projects that incorporate an IK dimension vary widely, I have identified some characteristics that seem common to successful projects in addition to the four main common attributes identified above. I have organized them here following in large part the WMAC reference guide's list of "essential ingredients of quality TK research", supplementing them with insights from other resources. Due to the limitations of my expertise, I have refrained from providing information that is particularly technical or specialized, such as methods of spatial knowledge collection and analysis. For such information, consultation of the Recommended Resources is highly recommended, with the WMAC guide being an excellent starting point.

1: Solid Project Foundations:

Scope, Constraints, Goals, and Objectives: The holistic, interdisciplinary, and collective nature of IK might suggest that IK projects should be broad in scope and goals. On the contrary, WMAC suggests (and the Tri-Council guides and other research guides support this), that projects be carefully scoped and focussed, staying within the capacities of the sponsoring organization (i.e. MNAI) and the partner community. WMAC strongly suggests having clearly defined knowledge domains in which researchers are seeking data and information. Furthermore, WMAC also recommends linking research goals and objectives to their practical uses, both for the partner community and the sponsoring entity. It strikes me, however, that MNAI should be open to goals and objectives on the part of any partner community that

might not be directly in line with its own objectives. The coordination of the K'ómoks cultural mapping project with the Comox watershed project may be an example of such a productive expansion of scope.

Research team: effective projects that incorporate IK often have highly interdisciplinary research teams, incorporating planners, economists, biologists, ethnographers, spatial information specialists, and so on. On the one hand, this is a way to practically and responsibly address the interdisciplinary and holistic nature of IK; on the other hand, IK collection methods will likely require expertise beyond that available "in-house" in MNAI. Moreover, evidence from ethnographers and other field researchers suggests that in some cases IK experts/knowledge holders are more comfortable sharing knowledge with experts in topics being investigated. As McGoodwin et al. note, "Existing research suggests that the quality of data provided by informants, particularly those considered to be local experts, partly reflects their sense of the knowledgeability of the interviewers. If the interviewer is believed to be lacking knowledge regarding fisheries or fisheries ecology, respondents will tend to be less willing to participate and will tend to provide poorer information" (2000, 254; cited in WMAC 3-4).

Prior knowledge: as noted elsewhere in this report, thorough prior research on a community and its culture, worldview, and knowledge is essential to quality data collection, establishing good relationships, saving time, and showing respect. In addition, access to good background materials is an essential part of planning projects. This can include anything from cultural or linguistic information about a particular community, pre-existing datasets, and dictionaries and glossaries of place-names and animal names.

Training and Supervision of "Community Co-researchers": If MNAI wishes to engage community researchers in order to provide employment and gain assistance with its work, proper training and supervision is essential if quality information and data is to be collected. This can also be a crucial element of capacity building with which MNAI can assist. Frequent critiques, however, of the use of community co-

researchers are inadequate training for the task at hand, assignment of menial responsibilities so that the training and the work are relatively meaningless and unrewarding, and insufficient training to permit skills to be used outside of the immediate research context.

Commitment to data quality standards and rigorous, systematic research design: this is discussed above in the section on Research Quality and Data Standards.

Solid, clear, thorough research or work agreements: it is standard practice (and often required by a community's regulations or by-laws, provincial or federal law, or by funding bodies) to sign a research/work agreement between an Indigenous community's representative body or bodies and an external partner such as MNAI. MNAI is already familiar with this from its work with the K'ómoks First Nation. It should be noted, however, that such agreements generally cover the details of the collection, analysis, dissemination, storage, management and handling of IK, and are important elements in securing free, prior, and informed consent. OCAP™ is often a central feature of these agreements as well. The stronger and more clearly defined the agreements, the better the chances that a project will be successful and avoid conflict or grey areas as the project progresses.

2: Community Engagement and the Culture of Research:

The understanding and support on the part of the partner community should be the foundation of any research and resource project involving First Nations and their territories. This is an abiding theme of this report, but I will add several things here on this topic. In addition, I highly recommend consulting the Tri-Council Statement on Ethical Conduct for Research Involving Humans, Chapter 9, for excellent guide to standards for community engagement.

It is increasingly expected within funding bodies, within the broader research and conservation community, and amongst Indigenous communities, that research involving Indigenous communities will be designed and conducted with community participation from the outset (Armitage and Kilburn; Joseph and Joseph). As Armitage and Kilburn put it, "preferably, research should be formulated in

consideration of expressed community needs rather than presented to the community as well-packaged proposals" that have had little community involvement (10). Moreover, the process should be as consultative and engaged as possible, and, as with all elements of the project, community engagement activities should be coordinated with the responsible governing body or bodies of any First Nation. Despite this, it should be said that in many cases when collecting IK or engaging with Knowledge Holders, certain individuals or groups (for example a hunters' organization, or the Guardian Watchmen in the case of the K'ómoks First Nation) would most likely make up the most important elements of the community with whom to engage; often, as well, focussed engagement--usually mediated by the governing council or other responsible body--will yield more useful and higher quality IK data and information.

MNAI should familiarize itself with a particular community's "research culture," a term that refers to both the history of research within a community as well as to any current research conventions, protocols, projects, and so on that the community maintains. Often communities have serious "research fatigue," which can impact the success of new projects as well as make new projects untenable, burdensome, or unwelcome. Furthermore, MNAI should be aware of other current research burdens to avoid exacerbating or creating capacity issues. Such issues may require cancellation or deferral of a project or the slowing of its pace to spread research interactions over a more manageable period of time.

Multiple IK research guides recommend that materials used to engage the community be expressed in forms that are accessible to community members, avoiding opaque jargon and specialized language, unless, of course, one can assume familiarity with that language. It is also often recommended that community engagement activities--such as workshops, consultation sessions, interviews, presentations, and so on--occur in places and fora in which community members will be comfortable. As more than one guide to working with First Nations notes, lengthy PowerPoint presentations in sterile seminar rooms can be alienating and, frankly, boring. More importantly, they suggest what the style of community engagement will be down the line, and will not encourage participation if broad participation is needed.

Furthermore, community engagement should not be construed as one-sided: it is not merely a chance for MNAI to present its information, but should, as far as possible, be deeply consultative. One reason for the success of projects such as the "Democratizing Conservation" and the MEB processes outlined below is that the projects engaged communities in the co-design and co-production of knowledge and management plans. Such genuinely collaborative work is far more "engaging" than presentations of pre-conceived plans and ideas.

While methods must be chosen for the quality of data they will yield, MNAI should also consider adopting methods of IK research that reinforce community engagement. Often increased community involvement also improves quality of data. The WMAC *Conduct of TK Research Guide* includes an excellent, detailed summary of an exemplary project (the Inuvialuit Polar Bear Traditional Knowledge study) where methods of data collection and validation/confirmation were central features of the community engagement strategy. (See pp. 11-13 of Chapter 1 of the WMAC guide.) In short, a series of 1-2 daylong events with TKHs and co-researchers shared detailed summaries of data for review and revision and discussion; similar workshops with less detailed data were shared in more open community meetings. Not only did these workshops permit the principal investigators to reflect on the draft results and conclusions of the study and make corrections to errors of fact, omission and interpretation, they also led to a greater community confidence in the validity, credibility and trustworthiness of the process. They also served as learning opportunities within the community as well. Such processes have affiliated costs--in time, resources, personnel--and should be anticipated early in the process. An additional advantage of such extensive processes is that they are highly valued by funders as evidence of well-thought-out community engagement and outreach, elements that are increasingly required in funding applications.

3: Sound Methods

The methods of IK research are varied and extensive, and will vary from project to project. I would again emphasize that if MNAI lacks experience and expertise in the field, that outside help or additional staffing be relied upon. It is crucial that research methods ensure high-quality data for reasons outlined above. While informal conversation and non-

directive socializing are important elements of trust and relationship building, they do not constitute reliable method.

Armitage and Kilburn summarize the six primary methods "available to the IK researcher, four of which involve interviewing" (15):

1: Structured interviews: questionnaires, interviews with pre-determined questions, etc.

2: Semi-structured interviews: questionnaires with additional, optional questions depending on context and prior answers.

3: Semi-directive interviews: more open interviews, often with no time limit, in which "the direction and scope of the interview are allowed to follow the associations identified by the participant.

4: Opinion surveys

5: Focus groups (or workshops): these can vary from standard presentations to group interviews that are structured, semi-structured, etc.

6: Ethnography (including participant observation) conducted by trained ethnographers, either external or from the community.

I would add to these six basic methods three further methods drawn from the fields of co-management and community-based ecological research:

7: Knowledge co-creation, in which the goal is not merely to "extract" knowledge or information from participants, but to collaboratively generate knowledge about a particular place, phenomenon, etc.

8: Historical reconstruction (including archaeological and oral-historical methods) of ecological and demographic information, including the establishment of historical ecological baselines.

9: Field-trips: on-the-land visits that incorporate semi-structured or semi-directive interviews with Indigenous Knowledge Holders.

Other methods exist, of course, and may be appropriate in a given circumstance.

Consultation with persons knowledgeable in such methods is recommended.

Strengths and Weakness of Methods:

While the extensive knowledge that can be gleaned and documented from ethnographic research (method 6) might be ideal, in many (if not most) management scenarios time and resources do not permit such methods to be practically employed. Thus researchers often resort to more efficient methods, mostly adopting the use of interviews or focus groups or semi-structured group interviews.

In the extensive literature on qualitative methods, some common issues with interviews recur. (Again, the WMAC guide has a good summary of these issues.)

1: Sample size: often the number of IKH in a community can be rather small, leaving researchers with small sample sizes that impact the quality of data gathered. This is, however, a fact of contemporary Indigenous life that is often a given, due to the small size of some communities, impacts on IK transmission as a result of colonialist policies, and more. In some cases, certain knowledge is by default held by very few people--about certain ceremonies or sacred places, for example. This fact cannot necessarily be rectified through the adoption of other methods. In such cases, the limited sample size should be taken into account in data analysis and other sources of corroboration may be sought (in oral histories, for example). That said, given the nature of IK, in that it increases with age and experience, a small sample of experienced IKH can be more informative than a large population of younger individuals. This is an example of how IK standards can differ markedly from those of scientific or sociological standards, which emphasize the importance of sample size and random sampling.

2: Selection of participants: often participants will be selected for researchers by community group or organization, such as the Band Council, hereditary chiefs, a hunters' organization, etc. This is usually indicated in a research agreement with a First Nation or other Indigenous community. This too (as the example summarized below from Alaska shows) can lead to small sample sizes, inconsistent attendance at interviews or workshops, and so on. Often times researchers are at the mercy of the situation and have little influence over selection of participants.

3: Questionnaires and pre-determined questions often impose a "western" or scientific view upon IK resulting in superficial, inaccurate, or incorrect

information that does not necessarily reflect the true views of participants.

Similarly, in formal interviews, answers are often short, rote, or otherwise less fulsome than rich data standards would demand.

4: Formal interview situations are often incompatible with Indigenous lifeways, habits, expectations, and norms. Many researchers will seek to remedy this by interviewing people at home, on the land, during field trips, or in comfortable community settings. Interviewees often tire in formal interviews.

5: Similarly, structured interviews, questionnaires, and the like can give the impression that researchers are imposing their standards upon Indigenous people. A form of conversation or interview needs to be established that respects the standards of the community and the individuals with whom one is working.

6: Sometimes interviews are couched in language that is inaccessible; at the same time, sometimes interviews can seem infantilizing or patronizing. Care in construction of questions needs to be taken.

7: Research standards often dictate that semi-directed or free-form interviews cannot be used where quantitative or comparative data is required. Directed interviews are more suited to such situations. Target groups and group interviews can be joined with quantitative methods, as in the Alaska study discussed below. In such cases, participants are often asked to assign quantitative scores to qualitative judgments or assessments. For example, wildlife abundance can be scored on a scale of 1 to 5.

8: Semi-directed interviews can lead to overly-long interviews, failure to get through all questions, and superficial responses.

9: Focus groups can be efficient and cost-effective, as they bring together multiple participants at once. However, they are potentially exposed to multiple issues and are often considered poor methods for systematic IK documentation. In addition, focus groups run the risk of "opinion leadership" (domination of a group by one person; others merely affirming what has been said), power dynamics within the group, vagaries of the skill of the facilitator, hesitation to share because of privacy, confidentiality or other concerns. Individual or paired interviews can be much more successful in certain contexts.

Quantitative Analysis of TK Data:

Increasingly, examples exist of research programs that perform quantitative analysis on IK data, though this remains difficult to do with statistical precision and reliability. As noted, certain methods do not lend themselves to quantitative analysis, and even those interview methods that do (such as structured questionnaires) are fraught with issues as noted above including small sample sizes and the poor overlap between the survey and its phrasing of questions/answers and Indigenous languages and knowledge categories. The use of IK to quantify populations of animals or prevalence of species can be especially challenging, as can attempts to quantify observations of change over time, as such quantifications can oversimplify complex, nuanced, and sometimes contradictory observations and judgments.

In some circumstances, IK may not produce data that is immediately "usable" in the form that MNAI may like or need. In such a case, MNAI may wish to revise its own methods (and methodology) to incorporate IK into its projects. I see this as perhaps being analogous to the larger, ongoing effort to make Natural Assets accounting methodologies acceptable within municipal accounting requirements: just as communities such as Gibsons, and groups such as MNAI, are encouraging a revision of approved public accounting practices to permit "nature to count" on a municipality's books, so too might MNAI wish to push for reforms in the type of data and knowledge that are "officially" permissible in its operations.

Some models for IK use in collaborative situations:

This section of the report includes brief discussions of several models for use of IK in management and research situations involving collaborations between Indigenous communities and non-Indigenous researchers, organizations, and managers. Obviously not exhaustive, the list has been chosen to provide an array of differing approaches. Further documentation of each model is included in the Recommended Resources appendix.

Model 1: "Democratizing Conservation Science and Practice": Resilience Thinking and the Co-production of Knowledge

This approach was pioneered by a group of researchers, scholars and students affiliated with Simon Fraser University's Resource and Environmental Management Program

and the Hakai Institute, under the guidance of Professor Anne Salomon (REM), as well as local First Nations in the Great Bear Rain Forest on the central coast of British Columbia. The interdisciplinary project, which engaged in a number of different documentation and conservation initiatives, is documented in Salomon et al. 2018. It is grounded in the principle of "democratizing conservation science and practice," which the authors summarize as follows: "In the context of conservation science and practice, [democratization] is the process of ensuring that all knowledge holders have the right and opportunity to participate in scientific endeavors, voice their conservation objectives, and for their knowledge, values, and information sharing protocols to be equally considered. The democratization of conservation science implies a transition from what is often a top-down, authoritarian endeavor toward a more egalitarian one. Consequently, it demands that we broaden the definition of science to include multiple knowledge systems (e.g., traditional and local knowledge) and expand the practice of conservation science to include the participation and objectives of all those who wish to act collectively to support the stewardship of the biosphere."

To overcome the inevitable barriers to such democratization--barriers that are essentially the same as those involved in any IK bridging--the research team made the "coproduction, collaborative dissemination, and application of knowledge" a central feature of the project design. They relied on a model of "resilience thinking," grounded in the seven principles of resilience elaborated by Biggs et al. (2012), and which have become principles increasingly adopted in conservation practice, community planning, and even institutional management.¹⁶ These principles have significant echoes with the principles that underlie MNAI's work as well, it should be noted.

A notable element of the project design is that collaboration and co-creation occurred at every stage of the project, from conception and design, through knowledge production, analysis, and interpretation, and knowledge application. This particular feature is most striking to me, as it appears to have been an effective method for overcoming many of the major hurdles to IK integration. In addition, as Salomon et al.

¹⁶ These principles include: maintaining diversity and redundancy; managing connectivity; managing 'slow' variable and feedbacks; fostering complex and adaptive thinking; encouraging learning; broadening participation; promoting polycentric governance.

note, the principles of resilience at the foundation of their work resonate deeply with many coastal First Nations environmental stewardship principles, which provided a solid foundation of shared values between the Indigenous community and non-Indigenous research team members. Moreover, the seven principles of resilience, as Salomon et al. convincingly argue, provide an excellent model for "remedying" the "pathology" of "Western scientific imperialism" and overcoming the seemingly intractable divide between science and IK. I strongly encourage MNAI to examine the extensive table (Table 2 in Salomon et al. 2018) of "barriers and catalysts to the democratization of conservation science and practice" for a detailed, and extensive, list of practical techniques and conceptual strategies for reconciling IK and science. Many of these principles echo those outlined above in this report and those found in major IK guides such as the WMAC and MEA guides.

Model 2: "Multiple Evidence Base Approach": Parallel Knowledge Creation

The Multiple Evidence Base Approach (MEB) to "connecting diverse knowledge systems" (Tengö et al. 2014) is a synthesis by international researchers, many affiliated with the Stockholm Resilience Centre at Stockholm University, intended to help meet the "great need within emerging global assessment programs, such as the IPBES and other international efforts, to develop functioning mechanisms for legitimate, transparent, and constructive ways of creating synergies across knowledge systems." It draws on insights from multiple management contexts around the globe that have incorporated scientific/western epistemologies and practitioner, local, or Indigenous epistemologies.

In their essay, Tengö et al. usefully define a spectrum of approaches to "knowledge bridging," defining three primary approaches: 1: integration approaches, which tend to subordinate IK to western methods, translating IK into and validating it in terms of "science"; 2: parallel approaches, which sustain the distinctiveness of each knowledge system; 3: co-production approaches, in which the co-generation of a synthesis or provisional set of solutions to the IK-Science tension are provided.

The key feature of the MEB approach is the belief that each knowledge system should "speak for itself" and that no knowledge system is designated as or assumed to be

dominant, capable of playing the role of "external validator"--essentially the knowledge system against which others are assessed to be correct. As such, they conceive of their method as an example of a distinctly "parallel" approach to knowledge bridging. Also central to this model is the assumption that differences between knowledge systems can actually be productive or generative: instead of seeing the irreconcilable differences between IK and science as a limitation, they are potentially a source of enriched insight and innovation, if researchers and managers are willing to learn from differences. A fundamental presupposition in this approach is that while complementarities and synergies between knowledge systems exist, and indeed must be sought, "evaluation of knowledge occurs primarily within rather than across knowledge systems." A key feature of the MEB approach is that it considers IK, local, and practitioner knowledge not only as other sources of evidence, but also as sources of validation and legitimation of knowledge more broadly. As the authors note, most "evidence-based" conservation has built "primarily on western scientific knowledge systems," but MEB wants to build upon IK as well. MEB thus usefully inverts the standard view in IK "integration" literature that suggests that IK must be "validated" by western science; instead, IK can be seen as a source of its own validation, as well as a validation of scientific knowledge. A potential advantage of MEB is that it can "enhance the legitimacy and relevance of...assessment outcomes for a wide range of actors." In other words, MEB--and I would add IK engagement more generally--can make results of MNAI's work more legitimate for the Indigenous communities with whom MNAI collaborates.

A stumbling block to any approach to incorporating IK and western approaches is the question of the validity and evaluation of knowledge. I recommend reading Tengö et al.'s extensive discussion of the evaluation of knowledge (582-584) for a nuanced explanation of these matters, especially when taken in concert with similar reflections in the WMAC guide. Though they describe their approach as "parallel," their conclusion resembles in many ways a method of knowledge co-production. Keeping in mind the different cultural contexts and worldviews which underpin different forms of knowledge, they assert: "[V]alidity is interpreted here not only as the extent to which our observations reflect the phenomena we are interested in (which implies continually checking, questioning and theoretically interpreting findings), but the collective

judgment we can derive from such interpretations. For example, one can use different data sources to triangulate, checking the meaning of extreme cases, looking for contrary examples, checking for rival explanations, and obtaining feedback from collaborators. This 'intersubjective' approach to collaboration across knowledge systems should be complemented by 'communicative validity,' in which the validity of knowledge claims is tested in a dialogue with informants and peers" (584).

It is important to understand what the Tengö et al. mean by "complementarities" between knowledge systems in order to grasp the advantages of the MEB approach. As their summary of case studies from around the world (581, 585) shows, this refers on the one hand to ways in which differing knowledge systems can reinforce the findings or judgments of other knowledge systems. Thus, for example, Indigenous observations of climate change and data from remote sensing techniques may mutually confirm each other (as in Savo 2016). On the other hand, differing knowledge systems can bring different strengths to the table: thus local knowledge can demonstrate how macro drivers interact with local drivers, or local knowledge can generate relevant hypotheses for solutions at local scales, scales which may be invisible to western methods such as satellite-based mapping.

At the same time, the MEB approach acknowledges the potential for the emergence of conflicting or contradictory evidence. Such disagreements should not be neglected or concealed, but openly acknowledged. Productive exploration of these differences could lead to underlying causes that had not been anticipated. In such situations, the existence of a solid, collaborative process, in which no form of knowledge is privileged over another, is crucial to the outcome: instead of being a source of conflict, such differing evidence can lead to mutual learning and generation of new knowledge.

Tengö et al. propose a three-stage process for implementing an MEB approach (586). Though developed specifically for initiatives such as IPBES, it could be adapted to MNAI's multi-stage process comparatively easily, I imagine.

Stage 1 involves the "co-production of problem or goal definition" as a foundation for mutually rewarding work and as a "collaborative platform for synergies across knowledge systems."

Stage 2 sets forth an enriched picture of the problems and goals of stage 1, "drawing on an agreed upon diversity of knowledge." This is a stage of knowledge gathering and analysis.

In Stage 3, project partners "consider and reflect upon the *social and environmental* [my emphasis] implications of results, including a re-assessment of knowledge gaps and new opportunities for collaboration."

While space precludes more detail in this summary, I strongly encourage MNAI to consult the conclusions section of the essay for suggestions for practical methods for realizing such a model of IK engagement.

Model 3: Structured Decision Analysis (SDA) and IK Incorporation

This model is not as comprehensive as the prior two examples in its engagement with IK, insofar as it does not rethink the IK engagement process from top to bottom. Instead, it opts to incorporate local expert knowledge into a management decision-making process using the method of SDA. The example I use for this model is drawn from Christie et al.'s 2018 case study of a project designed to enhance adaptive capacity in subsistence activities in the Iñupiat community of Wainwright, Alaska, in the face of the impacts of climate change. While SDA is not a method that necessarily engages IK, in this study it was an effective tool for doing so, as its core methods provide a well-established framework for community consultation.

As Christie et al. describe the SDA framework in the context of climate change adaptation, it consists of seven interlinked steps: "(1) define the climate change related problems to be addressed, (2) have stakeholders set objectives, (3) identify alternative adaptation strategies, (4) predict the effectiveness of each adaptation strategy (this is often done by eliciting Indigenous expert opinion), (5) choose a strategy that achieves an acceptable balance among objectives, (6) implement the decision and monitor the effectiveness of strategies, and (7) modify the adaptation strategy if the chosen alternative does not adequately meet the objectives."¹⁷ (A thorough introduction to

¹⁷ Please note the language of "stakeholders" used within the Christie et al. article is generally considered unacceptably in Indigenous contexts in Canada. See Joseph and Joseph (146-7, 2017) for a discussion of the term.

SDA is *Structured Decision Making: A Practical Guide to Environmental Management Choices* by Gregory et al. and is included in the Recommended Resources appendix.)

As Christie et al. employed SDA, all seven stages of the process involved significant engagement with local Iñupiat hunters, whom the study's authors treated as experts. Thus there was local involvement not only in the provision of knowledge or data, but in project design, goal setting, analysis, implementation, and project revision as well. Interestingly, the participants also provided feedback on the process as it unfolded, allowing the academic researchers to modify their methods as they went along in adaptive fashion.

The primary method for community engagement in this project consisted of a series of workshops to "elicit experts"--expert elicitation is a foundational element of SDA more broadly--on a series of topics including the project objectives, game availability, hunter safety, and vulnerability assessments, solution proposals, as well as feedback on results and a draft report. Qualitative data was collected and individual expert assessments were quantified into simple numerical scales by participants. For example, changes in game availability were assessed on a scale from 1 to 5 (and unknown), ranging from strong decline to strong increase respectively. Workshops also incorporated assessment of possible management alternatives to address the issues that arose during discussions.

In general, the researchers found SDA to be an effective method of community engagement and decision making, allowing them to help generate and record local knowledge (and share it with the community). SDA permitted a clear and comprehensive definition of the problems to be addressed and allowed a set of management proposals to emerge that had significant community buy-in. The long duration of the project, over a series of five workshops, permitted the development of continuity and trust amongst researchers and community participants, and this continued engagement seems like a real strength of this model.

They acknowledge, however, confronting a number of challenges in implementing the method, and their observations are instructive. These challenges included:

--Difficulty in sustaining attendance at all workshops: participants would be away hunting, working, and so on, and miss workshops. Given the multiple roles that

people often fill in Indigenous communities, this concern should be anticipated in MNAI's own project design.

--Selection of participants: due to the governance structure of the Iñupiat community, the Trilateral Committee of Wainwright--the central governing forum--had to select all participants. Thus the researchers had limited input into the number and gender distribution of potential participants, and smaller groups dominated by men resulted. This restriction also constrained the number of viewpoints available to the study. This, too, is a difficulty that MNAI should keep in mind, as First Nations communities in BC often have governance structures where individual participation (and potentially consent) is contingent upon approval of a central governing body.

--The researchers also felt hampered by their choice to make all feedback non-anonymous. They feel this might have enabled more open contributions. While MNAI should keep this in mind, other researchers have indicated that anonymous participation can be at odds with established customs and protocols, and actually reduce the level of community trust in a project and the validity of the information.

My sense is that SDA can be an effective method of engagement, especially for projects that do not have the time required by more "comprehensive" models outlined above. I think, however, any project employing SDA as a method would do well to keep in mind all of the various caveats and challenges identified in this report about the engagement with TEK in conservation and management contexts. One would also need to assess if the method is applicable in a particular context, and avoid presenting the process as complete or predetermined in its design. First Nations and other Indigenous communities may well have their own decision-making processes that conflict with this model.

Conclusion to Section on Indigenous Knowledge:

Given the complexities and challenges associated with working with IK that have been outlined above, it might seem that such a task is daunting. Whatever challenges the task might present, I believe that this should not deter MNAI from actively trying to incorporate a robust and ethical engagement with IK in its future work. The benefits for MNAI's projects are potentially great; but more importantly, I believe that the incorporation of IK into its work has the potential to benefit its Indigenous partner communities even more so, if the

work is done responsibly and with an eye toward fostering a deep engagement with the worldviews and knowledge of those communities. I think it offers a potential avenue for a more authentically reciprocal relationship between MNAI and the communities with which it may work.

SECTION 2: INDIGENOUS GOVERNANCE

As has been emphasized elsewhere in this report, each Indigenous community in Canada is unique. This fact applies to principles and structures of governance in these communities as well. In addition to this variation, the overall legal and political context of Indigenous governance is changing rapidly in Canada. Political movements are influencing relationships between the state and Indigenous communities, as well as the relationships between elected and hereditary leadership within Indigenous communities, as the current situation in many BC First Nations along the route of the Trans Mountain Pipeline shows. Treaties (above all in BC) and self-government agreements between the federal government and Indigenous communities continue to be negotiated and signed, and Canadian federal and provincial case law continues to evolve. All of these events impact the situation of Indigenous governance throughout Canada. Thus, as has already been recommended in the first section of this report, preliminary research is essential before beginning work with an Indigenous community. MNAI should research a community's governance principles, and understand how they relate to a community's broader values, culture, and protocols. In addition, MNAI should research each community's governance structure, including its treaty status, the existence of any territorial claims or land claim processes, and whether or not it has negotiated a self-government agreement. MNAI should also research the relationship between a community's official governing bodies--elected band councils, "Indian Act" band councils, etc.--and any traditional or hereditary leadership that exists. In First Nations communities, this relationship can vary widely: in some cases (e.g. the Squamish Nation), there is overlap between the elected council and the hereditary chiefs; in others there can be little overlap, and relationships that range from the very amicable and supportive to the strained. In addition, a number of First Nations are amalgamations of multiple "Indian Act Bands," and often the legacies of pre-amalgamation relationships can persist. In each case, MNAI should be aware of these relationships, as they can impact its work in multiple ways:

they can dictate avenues for securing project approval and community consent, impact community engagement methods, shape proper communication protocols, make consensus challenging, and more.

Forms of Governance

Given the variation in governance structures in the hundreds of First Nations, Métis, and Inuit communities in Canada, it is difficult to provide a detailed summary of the governance arrangements in First Nations in British Columbia, let alone for all communities in Canada. However, I have provided here some general overviews of different governance arrangements in Canada, with a particular emphasis on First Nations governance in British Columbia. Indigenous governments in Canada include a number of different forms:

- What are often referred to as "Indian Act" Band Councils or Band Administrations, are on-reserve First Nation governments set up according to the dictates of the Indian Act. In many cases these councils are the first point of contact for an organization wishing to work with or do research with a community.
- Hereditary or traditional leadership exists in many Indigenous communities, with varying degrees of authority, varying relationships to the elected councils, and varying relationships to provincial and state governments.
- Indigenous governments exist that were formed as part of the establishment of a modern treaty or the result of a land claim negotiation. Colloquially these are often referred to as "modern treaty governments." These include, for example, the Territorial Government of Nunavut, the government of the Inuvialuit Settlement Region in Yukon, the Nunatsiavut Government in Labrador, and the Nisga'a First Nation in British Columbia. In British Columbia, these treaties are negotiated under a tripartite comprehensive claims negotiation process and are handled by the independent BC Treaty Commission. Currently, 40 First Nations (representing 76 Indian Act bands or 38 percent of all such bands in BC) have either completed this process or are currently engaged in treaty negotiations. An updated list of

negotiations and an archive of agreements can be found at:

<http://www.bctreaty.ca/>

- Other First Nations have secured self-government agreements in negotiation with the federal government. These agreements, distinct from treaties, establish varying degrees of self-governance. Since 1995 the negotiation process has unfolded under the Canadian government's "Inherent Right Policy." In British Columbia, the federal Sechelt First Nation Self-Government Act established self-governance for the Sechelt First Nation in 1986 (prior to the "Inherent Right Policy), and in 2003 the federal Westbank First Nation Self-Government Agreement established self-governance for that First Nation. It should be emphasized that each such agreement is unique, and the powers exercised under such agreements can vary. See below for a discussion.

In addition, there are countless of Indigenous organizations across Canada that aid with or help administer economic development, Indigenous healthcare, governance principles, state-Indigenous relations, and more. Some of these organizations have a para- or quasi-governmental authority, such as the First Nations Health Authority in BC, which bears responsibility for healthcare delivery to First Nations in BC, or the Assembly of First Nations, a national level organization that advocates for First Nations throughout Canada.

Indigenous Law

Increasingly, Indigenous communities are resurrecting or re-implementing traditional legal traditions that had generally been suppressed under the general weight of colonization and specifically by the imposition of governance structures and protocols through the Indian Act. Some First Nations in BC, for example, have begun incorporating these traditions into their governance documents and into their community plans and land-use plans. The principles of *snoweyelh*--the "laws of the land"--ground and pervade the governance documents, land-use plan, and cultural heritage policies of the Stó:lō Nation, for example. MNAI should be aware of the existence of these legal traditions and research the degree to which they apply in any particular community and expect to abide by them.

Respect for Indigenous Governing Authorities

In general--though see exceptions noted below--"organizations conducting research or other work on lands under the jurisdiction of a First Nations, Métis, or Inuit authority should engage with the leaders of a community" (CIHR 2018), who generally have the authority to approve a project and grant consent. This authority may well be delegated to another body, such as a First Nation's resource and research management office or ethics review board. This is a standard of engagement expected, for example, in Tri-Council-funded research. The Tri-Council also advises that "engagement with formal leadership is not a substitute for seeking consent from individual participants," a principle that should apply to non-Tri-Council work as well.

"Complex Authority Structures": Relationships Between Elected and Hereditary/Customary Leadership; Inter-Community Relationships

The Tri-Council Policy Statement chapter "Research Involving the First Nations, Inuit and Métis Peoples of Canada" has excellent advice regarding what they term "complex authority structures" in Indigenous communities in Canada. It merits citing in full, as it applies to MNAI's work as well as it does to academic research:

Researchers and REBs [research ethics boards] should not assume that approval of a project by formal leaders is the only avenue for endorsing a project. In some communities and some domains of knowledge, authority to permit and monitor research rests with knowledge keepers designated by custom rather than by election or appointment. In First Nations settings, a confederacy council spanning several communities may be recognized as having authority over its members' traditional knowledge. In an Inuit community, the hamlet council, an Elders' circle, and a hunters and trappers' organization may have overlapping responsibility and expertise with respect to the knowledge being sought. Métis Elders dedicated to conserving Michif language may assert their autonomy from political leaders, but choose to collaborate with educational or cultural agencies.

The preferred course is to secure approval for research from both formal leaders of a community and customary authority. This is especially important for outsiders to communities, whose presence or intentions might be challenged as inappropriate.

Researchers should engage community processes, including the guidance of moral authorities such as Elders, to avert potential conflict. These measures should be documented to assist the REB in considering the community engagement processes proposed... Where no agreement exists between formal community leadership and customary authority regarding the conduct of the proposed research, researchers should inform the REB. When alternative community engagement processes are followed to endorse a project, all other ethical safeguards set out in this chapter remain applicable (CIHR 2018; emphasis added).

The passage highlights the importance of securing elected and customary leadership approval of projects where appropriate. In addition, it points to the crucial matter of negotiating between multiple communities in situations that involve more than one community. For example in situations that involve overlapping traditional territories or competing land claims, it is crucial to clarify relationships between communities, understand any historical partnerships or enmities that may exist, determine if governance structures exist such as confederacy councils or regional bodies that regulate community interactions, and clearly establish a work agreement that specifies how inter-community participation will occur. (Salomon et al. 2018, cited in the IK section of this report, remark on the importance of establishing clear working relationships between the communities in their research. Interestingly, their research built upon "ancient" agreements between the Nations involved in the research into their working methods.) In addition, as the Tri Council Statement suggests (and other research supports), one should be aware of patriarchal governance structures that might "pose challenges to women's full participation" in one's work.

Local Governments and First Nations

While the province has a constitutional duty to consult with First Nations on potential impacts to Indigenous interests, local communities are not bound by the same legal requirements. Many First Nations and local communities engage in various ways and have formalized these engagements with various service agreements, protocol agreements, and memoranda of understanding to achieve mutual interests. The Province of British Columbia

maintains a website¹⁸ with information about local community engagement that may be worth consulting. Each First Nation, however, should maintain a record of these agreements, as would local municipalities. These agreements could impact MNAI work with First Nations, especially if that work involves surrounding communities and local governments.

Land Management and the Indian Act and the First Nations Land Management Act

The Indian Act generally regulates lands or individuals in or on a reserve, and does not regulate activities or lands in off-reserve traditional territories. The degree to which a First Nation can control or regulate activities on its traditional territory depends on the good will of the government or private landholders, political pressure a First Nation can exert, any agreements that have been signed (for example with local governments), and any treaties or land claims settlements that have been achieved.

In addition to the Indian Act, the 1999 First Nations Land Management Act (FNLMA) has regulated First Nation management of reserve lands. Under the FNLMA, a First Nation can adopt a land code in accordance with the act. As Schulze summarizes, "[t]he code sets out the general rules and procedures for use and occupancy of reserve lands, including leases and licences or the transfer of lands through inheritance, and for governing collection and management of revenues derived from natural resources obtained from reserve land. It also allows the band to adopt laws concerning details of its land management, including zoning, environmental assessment and protection, and the collection of fees for local services" (18). While the code and laws adopted under the FNLMA take precedence over much other federal legislation, it does not do so in the areas of environmental protection and expropriations. The federal government maintains a registry of First Nations that have adopted land codes under the FNLMA at <https://laws.justice.gc.ca/eng/acts/F-11.8/FullText.html>.

¹⁸ (<https://www2.gov.bc.ca/gov/content/governments/local-governments/governance-powers/collaborating-building-relationships/relations/local-government-first-nations-engagement>)

Self-government Agreements and the Status of Lands

As noted, self-government agreements between the Government of Canada and individual Indigenous communities are each unique. The federal government has reached self-governance agreements with more than 30 First Nations, Métis and Innu communities in Canada, in addition to the agreements in Nunavut, Northwest Territories, and Yukon. If working with a First Nation with a self-government agreement, MNAI should familiarize itself with the parameters of the agreement, as this might impact a Nation's ability to implement natural asset management strategies on their lands. A database of completed self-government agreements and agreements under negotiation is maintained by the Government of Canada at <https://www.rcaanc-cirnac.gc.ca/eng/1100100030583/1529420498350> and at <https://www.rcaanc-cirnac.gc.ca/eng/1100100031846/1529416092300>. I will discuss here two cases of self-government arrangements in British Columbia to give a sense of the differences that exist between agreements as well as to broadly point to issues concerning the status of lands, as that status would likely impact natural asset management. (Citations and most information in this section are all drawn from Schulze, 27-35.)

Sechelt Indian Band

The Sechelt controls 33 reserves making up 1,000 hectares on the Sunshine Coast. Key elements of the agreement that affect lands and resources include:

- The lands on the Sechelt reserves are no longer Indian Act reserves, but are the property of the Sechelt Band in fee simple.
- Nevertheless these lands remain under federal jurisdiction and thus federal environmental laws
- The Band has the broad power to dispose of the lands and any rights or interests therein so long as such actions are consistent with the Band constitution.
- The Band has broad legislative powers (broader than Indian Act bands) and can make laws concerning: the use of Sechelt lands, including zoning, residences, and so on; and natural resources and wildlife on Sechelt lands

Westbank First Nation

The Westbank First Nation's lands are proximate to the City of Kelowna in the BC interior. Westbank does not have fee simple ownership of its lands, but has the "rights, powers, responsibilities and privileges of an owner in relation to Westbank Lands and may grant Licenses and interests in Westbank lands." The Westbank First Nation has limited powers to dispose of its lands and may only do so in exchange for land, which must be "of greater or equivalent size or value." Furthermore, the First Nation has law-making jurisdiction concerning the transfer of lands, zoning, land use, and the management of most renewable resources (wildlife, and timber, but not fish or fish habitat) and non-renewable resources (except for minerals). In addition, Westbank First Nation has jurisdiction over areas "such as traditional medicine, and the 'preservation, promotion and development of Okanagan culture and language on Westbank Lands,' including heritage sites, objects of cultural significance." As Schulze points out--and what is of great relevance for MNAI--is that "Westbank law generally takes precedence over federal legislation in relation to lands and resource management, except in agriculture, environmental protection, and assessment. Westbank can conduct its own environmental assessment process, but it must meet or exceed" federal requirements for environmental assessment.

Governance under Modern Treaties

A number of First Nations in Canada have signed treaties since the 1970s. This is the era of "modern" treaties in Canada, with the first being the James Bay and Northern Quebec Agreement and the Northeastern Quebec Agreement. In BC, the first modern treaty was the Nisga'a Final Agreement reached in 1995. In such agreements, the Indian Act ceases to apply to the lands included in the agreements. The agreements are also struck between the government and a designated representative body, which becomes, effectively, the governing body of the First Nation. Again, the principle of preliminary research applies: when working with First Nations with modern treaty agreements, it would benefit MNAI to familiarize itself with the basic outlines of the treaty agreements, especially as they concern governance structures, rights to title, land use rights, and resource management. Some First Nations with modern treaties will have summaries of their treaties available on their websites, as well as relevant documents that concern land-use referrals and research protocols. In addition, the

BC government makes the documentation of treaties with BC First Nations available on its websites (see above) as well.

To give a sense of how treaties determine governance and land-use regulations in First Nations, I will briefly discuss the Nisga'a Final Agreement here. (Citations and most information in this section all come from Schulze, 41-46.)

The Nisga'a Final Agreement recognizes the Nisga'a Lisims Government as the governing body of the Nisga'a Nation. Individual villages are governed by village governments, which replaced Indian Act band councils. Both levels of government enact laws in accordance with the Nisga'a constitution, and that constitution sets out terms for significant areas of Nisga'a administration, including the terms by which Nisga'a lands may be alienated. It is my understanding that research or work agreements with the Nisga'a Nation would need approval from both the Lisims Government and the village government where work might take place.

Unlike the self-government models outlined above, the Nisga'a Final Agreement establishes as freely held by the First Nation; they are not "lands reserved for the Indians" (as designated by the Indian Act), and thus not under exclusive federal jurisdiction. Furthermore, they are shielded from or subject to provincial jurisdiction only by the terms of the treaty itself. As Schulze points out, for example, provincial environmental and assessment laws apply on Nisga'a lands.

SECTION 3: CAPACITY BUILDING

In the past several decades, community capacity building has been seen as a key strategy to increase the autonomy and sovereignty of Indigenous communities in Canada, as well as a key mechanism to reduce disparities of wealth and health between Indigenous communities and non-Indigenous communities. Moreover, there is an increased expectation that academic research, development projects, and community planning projects include a focus on capacity building, as reflected in increased funding initiatives from public and private sector funders, the creation of a national-level Indigenous Community Development Strategy with capacity building at its core, as well as numerous other Indigenous and non-Indigenous capacity building frameworks and initiatives. Though the term is definitely a

"buzzword" in development (Chino and Debruyne), it also has an increasing amount of money, infrastructure, and institutional force behind it.

Perhaps more interestingly for this report, some academic literature suggests that capacity-building initiatives, in addition to creating reciprocal benefits for Indigenous communities, can lead to better outcomes in research and project design and implementation. As noted, for example, in the IK section of this report, the training of co-researchers and the development of local research and IK capacity can contribute to the quality of IK research and collection. Clearly, increased community capacity will also contribute to the long-term effectiveness of natural asset management, as it can help develop the skills and capabilities for long-term monitoring and management, as well as the ability to develop new management and research initiatives within a partner community.

The information in this section is based on a limited survey of academic and grey literature on capacity building in Indigenous communities and in community-based research, and consultation with faculty conversant in issues concerning capacity building. In contrast to the IK section of this report, I have condensed this information into a series of bullet-points.

--There is a sense that "top-down" capacity building initiatives are less effective than those that are community-driven. Not only should capacity needs or "deficits" be identified by communities themselves, but the very nature and meaning of "capacity" itself should be defined by communities. Chino and Debruyne point out that often "western definitions of success and the expected benefits to the community differ greatly from tribal expectations and definitions," and a mismatch between community expectations and the realities of a capacity building program can lead to failure. Following from this is the perhaps obvious point that capacity building initiatives should be appropriate to a community: they should not be imposed upon a community in any way and should reflect the needs and wishes of that community.

--Sue Kenny and Matthew Clarke, in the introduction to *Challenging Capacity Building*, note the degree to which capacity building is often framed "within the restricted parameters of neoliberalism," and thus promote a form of "new managerialism." This new managerialism not only focusses on the development and enhancement of "new managerial leadership and initiative," but also tends to "focus

on output and outcomes rather than process." In Indigenous contexts in Canada, where values of collective stewardship of resources, the importance of social ties, and the more holistic view of the relationship between humans and the natural world may be dominant, such managerialism can be out of place and even detrimental to the forms of social life that exist in Indigenous communities. It is crucial to ask whether or not capacity building initiatives are furthering the sorts of "new managerialism" that Kenny and Clarke point to, or if they are properly attuned to the expectations and values of the partner community.

--Along similar lines, Nadasdy has pointed out that co-management ventures can put the cart before the horse, so to speak, in so far as they actually create capacity deficits by creating new needs for administration and management within Indigenous communities. Thus, for example, a co-management initiative can create the need for scientific monitoring, which in turn creates the need for community capacity to carry out that monitoring. In a resource-scarce environment, this can take people away from other activities that might be more useful or meaningful to a community.

--Multiple synergies may potentially exist, I believe, between MNAI's hope to incorporate IK into its processes and their interest in the reciprocal benefits of capacity building. As noted in the IK section of this report, opportunities to build IK capacity may be identified. MNAI may wish to seek ways to strengthen IK transmission and learning and to expand IK documentation and protection. In addition, MNAI may be able to assist with the development of "bridging capacity" by training individuals capable of bridging IK and western knowledge, both to be able to interface better with external organizations and government, as well as to permit Indigenous communities to better represent and advocate for resource management practices based on their values, traditions, and ways of knowing.

--As Chino and Debruyne point out, "There is still much talk by funding agencies of the need for program sustainability but limited support for the time needed to build and evaluate a foundation for long-term program success." This resonates with feedback from virtually every interview conducted for this report. It points to the related issues of time and funding: sufficient time must be allowed to properly build relationships and assess community needs and interests in capacity building, as well

as to carry out any capacity building initiatives. Moreover, funding calendars, often restricted to one to three years of funding, are often incompatible with need for the long-term investments in money and time to develop sustainable capacity development initiatives. The first thing that nearly every interviewee told me when asked about capacity building was that more funding over longer time periods is needed to make capacity building successful. Too often projects end before any meaningful capacity building occurs, or capacity building is cut short.

--Scepticism and cynicism on the part of Indigenous people exist about capacity building, similar to that expressed toward external research initiatives. MNAI should be aware that it takes time and effort to overcome such historically entrenched, and legitimate, attitudes. Much of this cynicism comes from experience with external organizations who seem more interested in ticking off a "community engagement" box on funding applications than in any sort of authentic capacity building. This sort of self-serving "assistance" is explicitly discouraged by major funding bodies such as the Tri-Council (FN).

--Sonya Atalay, a well-respected archaeologist who has worked extensively in the field of community-based participatory research (CBPR) and capacity building, argues that a distinct benefit of CBPR projects is their ability to contribute to community capacity. This capacity includes not only formal training in employable and transferable skills, but includes "increasing people's archaeological knowledge base as well as enhanced research literacy and community development skills that can then be applied to other situations outside archaeology" (Atalay 2010). This suggests that more participatory versions of IK engagement can align well with MNAI's desire to assist in capacity building in First Nations contexts. Moreover, it suggests that meaningful capacity can be developed in areas adjacent to the focus of a particular project: for example, "research literacy" in the methods and methodologies of natural assets management and assessment could well translate into effective capacity in the form of literacy/knowledge of other forms of asset management, environmental assessment, and community planning. Again, the key to such "capacity co-benefits" is deep participation.

--In *Doing Community Based Research*, Halseth et al. identify several core challenges around capacity issues in CBPR that translate well into more practical realms.

One, they advise that organizations need to familiarize themselves with the capacity of potential partner communities in advance of beginning any work with them. Not only does this permit an organization to identify the capacity strengths and needs of a community, it can help define the parameters for possible engagement. Furthermore, such a capacity assessment can also help understand what I have referred to as the "research culture" in the IK section of this report, and, specifically, assess the "receptor capacity", as Halseth et al. call it, of a particular community.

Two, Halseth et al. advise being aware of the impacts of "rurality" on a community's capacity. This would apply to many First Nations communities in BC and Canada more generally. In particular, he points to the very practical limitations of access, travel time, and lack of local physical infrastructure such as research spaces, libraries, and so on. One impact of rurality is that it generally requires more time to work in rural areas.

Three, rurality also often implies that people are busy, something which clearly applies to First Nations contexts where capacity is limited: oftentimes people fill many roles in a rural or First Nations communities.

Four, Halseth et al. point to the need to identify the capacity of a community as "consumers of research," a point that is often overlooked in discussions of capacity assessment and capacity building. Thus one element of capacity building can be education and training in the methods and forms of "western" science and community planning. Increased capacity in this area can help communities engage with the state, private corporations, and outside organizations more effectively and without having to resort to the use of consultants and other outside experts who may not be familiar with community culture and priorities, and who may not have the community's best interests in mind in their work.

--MNAI would seem well positioned to assist partner communities in seeking funds for capacity building from relevant funding bodies, such as the Indigenous Capacity Support Program, which funds capacity building in a number areas of relevance to MNAI's core activities such as land use inventories, environmental assessment, identifying valued

components of the environment, current use, or documenting cultural or traditional knowledge or values, and monitoring activities. In addition, MNAI seems like it might also be well positioned to facilitate connections between Indigenous communities and university partners/researchers interested in related fields and community-based research.

--Stevenson and Perreault, in an extensive review of Indigenous capacity building in the forestry sector, concluded that a lot of capacity building in Indigenous communities yielded benefits in terms of "gains in individual skill sets that further personal aspirations of economic self-sufficiency." They also suggest that capacity building in that sector often did not yield much community benefit. They highly recommend supplementing "capacity deficit" and "top-down" approaches to capacity building with "bottom up" approaches that put Indigenous communities "at the centre of determining their capacity needs." In addition to orienting capacity building to existing employment opportunities, they strongly encourage "new institutional approaches to building capacity in Aboriginal communities that supports their efforts to plan and realize a sustainable future from their lands and resources based on their goals and priorities." In short, communities themselves should have "ownership of the processes of determining their capacity needs and implementing their existing capacity strengths."

--It strikes me that MNAI would be well served by assessing its *own* capacity to support capacity building in Indigenous communities and to assess whether or not its own interests might mesh well with existing capacity building initiatives in the communities where they wish to work. I suggest this for several reasons. One, my impression from conversations during my research is that efforts that are spread thin tend to yield few results. This suggests that focussed or targeted capacity building might be more effective. (I have not confirmed this suspicion via any academic studies or grey literature studies, however.) Two, it seems that capacity building specifically oriented toward the activities that MNAI will pursue with Indigenous communities would enhance the chances for long-term sustainability of those initiatives and their success by building-in, so to speak, "in-house" capacity to carry out initiatives.

Recommended Resources:

Included below is a lightly annotated list of recommended resources on working with Indigenous communities in Canada, scholarly and practical literature on Indigenous Knowledge/Traditional Ecological Knowledge, Indigenous governance in Canada, and scholarly literature on Indigenous and decolonized methodologies. The goal is to provide a selection from an already vast, and rapidly growing, literature on these topics, with an eye toward those resources that I imagine will be of most use to a practical, management-oriented enterprise such as MNAI.

I have organized the list according to major topics referenced in the report. Out of the list, I have also identified several resources that are particularly highly recommended for their quality, concision, and reputation. They are an excellent starting point for further research on these matters.

Top Five Recommended Resources (annotations follow below in appropriate section):

Conduct of Traditional Knowledge Research: A Reference Guide. Armitage, Peter and Stephen Kilburn. 2015. Whitehorse [YT]: Wildlife Management Advisory Council (North Slope).

Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. Canadian Institutes of Health Research (CIHR), Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council. 2018.

BC Treaty Commission. <http://www.bctreaty.ca/> (Record of treaties with BC First Nations)

Implementation of Modern Treaties and Self-government Agreements. Crown-Indigenous Relations and Northern Affairs Canada. <https://www.rcaanc-cirnac.gc.ca/eng/1573225148041/1573225175098> (Documentation of Self-government Agreements in Canada.)

Working Effectively with Indigenous Peoples. Bob Joseph and Cynthia Joseph. 2017. Port Coquitlam, BC: Indigenous Relations Press.

Indigenous Knowledge and Traditional Ecological Knowledge:

Assembly of First Nations. n.d. First Nations Ethics Guide on Research and Aboriginal Knowledge. (Discussion paper.)
https://www.afn.ca/uploads/files/fn_ethics_guide_on_research_and_atk.pdf

Note re: publication date: No publication date is provided on the document or website, but it appears to have been composed in 2008 based on the cited scholarship and other data in the document.

This is a discussion paper freely available on the AFN website that does not reflect the official views of the AFN or any particular First Nation. However, it is available as a guide for researchers, managers, and planners to assist in developing sound, ethical policies and procedures for working with TEK in FN contexts. In addition to concisely summarizing a number of issues surrounding TEK that also appear elsewhere in academic and grey literature, it also provides a useful and thorough template for generating research agreements with First Nations. Though now over a decade old, it still seems to provide a solid foundation for generating a research agreement, especially if considered in combination with the Tri-Council Statement listed elsewhere in this bibliography.

Atleo, E. Richard. *Tsawalk: A Nuu-chah-nulth Worldview*. 2007. Vancouver: UBC Press.

Perhaps the most extensive articulation of an Indigenous people's worldview and philosophy written by an Indigenous person. Though specifically about the Nuu-chah-nulth people, the book gives significant insight into questions of Indigenous Knowledge more generally.

Armitage, Peter and Stephen Kilburn, and Wildlife Management Advisory Council (North Slope, Yukon). *Conduct of Traditional Knowledge Research—A Reference Guide*. 2015. Available at: <https://wmacns.ca/resources/conduct-traditional-knowledge-research-reference-guide/>

This is an excellent guide--simply one of the best I encountered in my research--to issues surrounding the collection and use of TEK in Indigenous contexts. Though

specifically focussed on the North Slope of the Yukon and the territories of the Inuvialuit Settlement Region, it is an enormously useful guide to the ethical, epistemological, and political issues involved in working with TEK and Indigenous communities more generally, as well as to practical and technical issues concerning the collection and storage of TEK. There is an extensive discussion of data collection, management and storage, mapping techniques, and spatial knowledge. It is exemplary for its very intelligent blending of conceptual reflection and practical recommendations. Very highly recommended.

Berkes, Fikret. *Sacred Ecology*, 4th ed. 2018. New York: Routledge.

In many ways the foundational settler-written text on the topic of Traditional or Indigenous Ecological Knowledge. Though composed as a textbook for university instruction, it is nonetheless a crucial, massive survey of issues in the field.

Bohensky, E. L. and Y. Maru. 2011. Indigenous Knowledge, Science, and Resilience: What Have We Learned from a Decade of International Literature on "Integration"? *Ecology and Society*, 16(4).

A lengthy--but nevertheless concise--synthesis article of major literature on TEK/IEK in the decade after Paul Nadasdy's foundational critique of the topic from 1999, a critique which forms a touchstone for the article. This might provide some interesting directions for further investigation. Of particular use is its listing of various methods of gathering and "integrating" TEK, as well as its synthesis of significant issues and critical features in TEK "integration." To a degree, insights from this essay have been incorporated into this report, but in condensed and selected form. Despite being a decade old at this point, the article is still very salient. Excellent bibliography that covers up to 2011.

Grenier, L. 1998. *Working with Indigenous Knowledge: A Guide for Researchers*. Ottawa: International Development Research Centre.

A more technical guide oriented toward working with IK in the field.

Nadasdy, Paul. 2005. The Anti-politics of TEK: The Institutionalization of Co-management Discourse and Practice. *Anthropologica*: 47 (2): 215-232.

--- *Hunters and Bureaucrats: Power, Knowledge, and Aboriginal-State Relations in the Southwest Yukon*. Vancouver: UBC Press, 2003.

---1999 The Politics of TEK: Power and the "Integration" of Knowledge." *Arctic Anthropology* 36(1-2): 1-18. 1999.

These three works (as well as his other writings from the period) constitute perhaps the most important, and trenchant, critique of co-management as a means whereby colonial dispositions are implanted in Indigenous communities in Canada. While many advocates of co-management take issue with Nadasdy's often damning critique, his work is rigorously grounded in extensive fieldwork and interesting social and political theory and merits the attention of anyone working in conservation and resource management in Indigenous communities. His critique of the bureaucratization of First Nations as they embrace scientific management and conventional forms of state-led management is particularly important.

Reid, Walter v., Fikret Berkes, Thomas Wilbanks, and Doris Capistrano, eds. 2006. *Bridging Scales and Knowledge Systems: Concepts and Applications in Ecosystem Assessment*. Washington, D.C.: Island Press.

Produced as part of the Millennium Ecosystem Assessment, this book contains multiple chapters with case-studies of management projects that bridge scientific and traditional knowledge systems. Now 15 years old, it still holds relevance for a contemporary context and, given its abiding concern with the notion of ecosystem services, is particularly relevant for MNAI's work. The majority of chapters focus on particular case studies with particular problematics and solutions and offers an assessment of the successes and failures various strategies of "bridging" knowledge systems. A number of the publication's general recommendations have been incorporated into the report. The report includes an extensive checklist for IK projects, which I have appended below on a separate page.

Models of IK Engagement:

Co-production:

Salomon, A. K., K. Lertzman, K. Brown, K. B. Wilson, D. Secord, and I. McKechnie. 2018. Democratizing Conservation Science and Practice. *Ecology and Society*, 23(1):44.

Parallel methods:

Tengö, M., E. S. Brondizio, T. Elmqvist, P. Malmer, and M. Spierenburg. 2014. Connecting Diverse Knowledge Systems for Enhanced Ecosystem Governance: The Multiple Evidence Base Approach. *Ambio* 43(5):579-591.

Structured Decision Analysis (SDA)

Christie, K. S., T. E. Hollmen, H. P. Huntington, and J. R. Lovvorn. 2018. Structured decision analysis informed by traditional ecological knowledge as a tool to strengthen subsistence systems in a changing Arctic. *Ecology and Society* 23(4).

On Structure Decision Making and Analysis, see also:

R. Gregory L. Failing M. Harstone G. Long T. McDaniels D. Ohlson. 2012. *Structured Decision Making: A Practical Guide to Environmental Management Choices*. Oxford, UK: Wiley-Blackwell.

Working with Indigenous Communities, General Guides:

Bob Joseph and Cynthia Joseph. 2017. *Working Effectively with Indigenous Peoples*. Port Coquitlam, BC: Indigenous Relations Press.

This book has become something of a bible for many non-Indigenous people working with Indigenous communities in Canada. It has been recommended to me by a number of people and has an excellent reputation. While its orientation is toward private companies wishing to pursue work in Indigenous communities, it is still extremely valuable for advice about negotiating the nuances of Indigenous culture, protocols, customs and expectations. I highly recommend this book as well. In addition, the website for the Josephs' company is an excellent resource for guides and advice about numerous topics relating to Indigenous Traditional Knowledge, governance, legal issues, community engagement, and more: www.ictinc.ca. Their guide to the Indian Act is essential reading as well.

Indigenous/Decolonized Methodologies:

Smith, Linda Tuhiwai. 2012. *Decolonizing Methodologies: Research and Indigenous Peoples*, 2nd ed. London: Zed Books.

In many ways a pioneering book about methods and approaches for decolonizing research. Though its emphasis is primarily on academic research, it remains an important touchstone for any work that relies on research methodologies as part of its program.

Walter, Maggie and Chris Andersen. 2013. *Indigenous Statistics: A Quantitative Research Methodology*. Walnut Creek, CA: Left Coast Press.

This book attempts to develop decolonized statistical and quantitative methodologies, arguing that the historic use of such methods to create Indigenous peoples as the object of an inherently colonial research enterprise should not blind us to the possibilities of using statistics and quantitative methods when working with Indigenous communities. The argue for a basic distinction (common in social sciences) between method and methodology. "Method" refers to the specific techniques of quantitative analysis and research, and "methodology" refers to the broader frame in which such analysis/research is interpreted.

OCAP™:

A summary of OCAP can be found at: <http://www.fnigc.ca/ocap.html>

In addition, an online training course for OCAP can be found at:

<https://fnigc.ca/training/fundamentals-ocap.html> This is a paid course and leads to OCAP certification. I have not done this course, and make no recommendation as to its value or merit, but include it here as a potential resource.

The First Nations Information Governance Centre. 2014. OCAP: Ownership, Control, Access and Possession. The Path to First Nations Information Governance. Ottawa: The First Nations Information Governance Centre. Available at: https://fnigc.ca/sites/default/files/docs/ocap_path_to_fn_information_governance_en_final.pdf

This is a fairly extensive guide to the principles of OCAP™ and highly recommended reading.

Assembly of First Nations. *First Nations Ethics First Nations Ethics Guide on Research and Aboriginal Traditional Knowledge and Aboriginal Traditional Knowledge*.

INTELLECTUAL PROPERTY:

Assembly of First Nations, *Aboriginal Traditional Knowledge and Intellectual Property Rights*. Discussion paper. n.d. Available at: <https://www.afn.ca/atk-intellectual-property-rights/> (Accessed June 18, 2020.)

Similar to the AFN *Ethics Guide* in purpose and intended audience, this discussion paper is available to the public on the AFN website and does not reflect the views of the AFN or any particular First Nation. However, it is an excellent guide for questions concerning TEK and intellectual property.

Government of Canada. n.d. Introduction to Intellectual Property Rights and the Protection of Indigenous Knowledge and Cultural Expressions in Canada. Innovation, Science and Economic Development Canada. Available at: <http://www.ic.gc.ca/eic/site/108.nsf/eng/00007.html> (Accessed June 18, 2020.)

Overview of IP and IK from the perspective of the Canadian government. A useful starting point to understand IP and TEK in the Canadian context.

Government of Canada. n.d. Indigenous Peoples and Intellectual Property. Innovation, Science and Economic Development Canada. Available at: <http://www.ic.gc.ca/eic/site/108.nsf/eng/00004.html> (Accessed June 18, 2020.)

A useful webpage with links to programs and resources concerning IP and TEK, including some funding and capacity-building programs.

Indigenous Governance

Schulze, David. 2008. Comparative Governance Structures Among Aboriginal Peoples in Canada. The Scow Institute. (Report.)

A report on different governance systems in Canada. I relied heavily on this for the governance section of the report.

Canada. Royal Commission on Aboriginal Peoples. 1996. *Report of the Royal Commission on Aboriginal Peoples*.

Volume 2 of this massive study has been described as the most exhaustive cataloguing of Indigenous governance systems in Canada. Volume 5, Appendix E: Ethical Guidelines for Research includes guidelines for ethical research in Indigenous communities, though it is now dated.

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