

Biopiracy Flashpoints and Increasing Tensions over ABS in Canada

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Abstract

This chapter uses selected Canadian case studies to explore the use and exploitation of genetic resources and associated Indigenous or traditional knowledge in Canada; first, to demonstrate that biopiracy is a felt and increasing reality in Canada, and second, to interrogate the potentials and pitfalls of existing Canadian access and benefit-sharing (ABS) policy, especially with regard to its failure to incorporate Indigenous peoples. It argues that a combination of progressive research and entrepreneurship on the one hand, and the opening up of Canada's Arctic region and its bounty of marine genetic resources on the other, will only produce new tensions over ABS. This wealth of genetic resources, the policy imperative of reconciliation with Canada's Indigenous peoples, and the urgent need to sustain biodiversity and combat climate change will heighten existing tensions between Indigenous peoples and local communities and other potential ABS stakeholders in the Canadian context. Canada's position as both a producer and user of genetic resources will therefore become more pronounced. Consequently, the dynamic between researchers, industry and Indigenous peoples will become increasingly fraught and problematic unless urgent steps are taken to implement an Indigenous-sensitive ABS policy in close partnership with Indigenous peoples across Canada.

INTRODUCTION

Canada is the second largest country on Earth, spanning the continent of North America and encompassing some 10 million square kilometres of varied terrain, ecosystems and geo-ecological regions. These include a large number of distinct forest biomes – boreal, mountain, temperate – and parklands; freshwater lakes, and

diverse tundra ecosystems (arctic coastal, foothills and Baffin coastal, to name just a few). With the world's longest coastline – nearly 250,000 kilometres – Canada touches three oceans; the Pacific Ocean on its west coast, the Atlantic Ocean on its east, and the Arctic ocean in the north.

Due to its size and latitudinal breadth, Canada's forests, prairies, wetlands, tundra, freshwaters and marine areas are rich in biological diversity, and house plant and animal genetic resources (GR) with novel applications in commercial, industrial, pharmacological, cosmetic and conservation contexts (Environment Canada [1], 2010). Canada's incredibly rich and varied repository of GR across its complex ecological regions makes it a key player in the growing international marketplace for the supply of GR. In addition, Canada's diverse Indigenous peoples and their equally diverse traditional knowledge systems makes the country a key repository of not only GR but also of associated traditional knowledge (Oguamanam, 2011). Canada is already one of the world's leading biotechnology countries (CBAC, 2002; Biotech around the World, 2008), a situation that underscores its status as both user and provider of important GR.

Through much of the literature on access and benefit-sharing (ABS), countries tend to be categorized as either 'providers' or 'users' of genetic resources. This simplistic binary actually enjoys little or no empirical justification (Hodges & Langford, Chapter 2) and obscures the status of biodiverse countries like Canada which ought to naturally act as *both* provider and user of GR and associated traditional knowledge (Oguamanam, 2011). Like Indonesia, Brazil, Australia, South Africa, India and several other biodiverse countries, Canada's reality as both user and provider of GR demands particular legal and policy responses to the challenge of sustainable management and use of GR and associated traditional knowledge. By positioning itself as only a user, Canada ignores these realities and undermines the need for a balanced and urgent policy decision on domestic ABS implementation (*ibid.*).

Canada's inclination to cast itself solely as a *user* rather than a provider of GR means Canada fails to consider its own vulnerabilities when it comes to biopiracy. By ignoring this possibility, Canada also conveniently ignores the very real and growing problem of biopiracy across Indigenous lands which involves associated traditional knowledge in the quest for new drugs, cosmetics, natural products and other R&D applications and opportunities. Acknowledging this truth is a critical first step; as indicated by Oguamanam and Hunka in Chapter 3 of this volume, Indigenous peoples in Canada have much in common with their counterparts in the global South, where biopiracy of genetic resources is widespread and well documented. (Oguamanam, 2004). Canada seems willing to acknowledge this reality so long as it is occurring somewhere else, investing substantial sums of money in capacity-building and development assistance in the global south, while ignoring the similar plights and development deficits of Indigenous peoples within its own borders (Oguamanam & Hunka, Chapter 3).

This attitude, which reflects Canada's colonial relationship with its Indigenous peoples, is currently relevant courtesy of the Justin Trudeau administration, which has committed to reconciliation and the renewal of a nation-to-nation relationship with Indigenous peoples based on their inherent rights of self-governance and self-determination. Canada now finds itself at an inflection point; will it recast itself as both a user and provider of GR, and truly grapple with the problem of biopiracy as it applies to its Indigenous peoples and their traditional knowledge? Is Canada truly ready to implement a domestic ABS regime, and support the grass-roots efforts of Indigenous communities in Canada to exchange knowledge and best practices with their counterpart communities in the global south (Oguamanam & Hunka, Chapter 3)? Can all of these be accomplished before melting sea ice and other manifestations of a warming climate open Canada's Arctic to further exploitation?

This chapter maps out this important conversation, exploring the lacklustre efforts in Canada over biopiracy and ABS and current realities on the subject and suggests possible routes the country might take in implementing ABS in a manner consistent with reconciliation. Through a selection of recent examples, we examine where biopiracy is currently taking place in Canada, where it is likely to take place in the near future, and how the uncertain legal environment is exacerbating these trends. In doing so, we observe that while research ethics may play a role in constraining instances of biopiracy, they alone are insufficient to combat this phenomenon in Canada; rather, along with other practical policy measures, including Indigenous self-governance premised on truly nation-to-nation relationships, Canada can and must pursue an Indigenous-friendly ABS policy as a way of enhancing biodiversity conservation and stemming abuses of Indigenous knowledge in Canada.

Throughout the chapter, we illustrate how the continuing failure to work with Indigenous communities could undermine Canada's efficacy in fostering biodiversity conservation and combatting climate change, while also undermining the prospect of reconciliation with Indigenous peoples. Relying on the outcome of recent ABS Canada field work, we briefly sketch out a possible path forward should Canada decide to accede to the Nagoya Protocol and implement ABS into domestic law in a manner consistent with reconciliation.

CANADA'S CONTEMPORARY REALITY: FLASHPOINTS OF BIOPIRACY AND THE MITIGATING ROLE OF RESEARCH ETHICS

In the absence of a pan-Canadian ABS regime and federal and provincial laws that incorporate Indigenous sensitivities or Indigenous community protocols on ABS, it is unsurprising that biopiracy is occurring on Indigenous lands across Canada. Spruce gum, long used as a medicine and considered sacred by many Canadian Indigenous communities (Kuhnlein & Turner, 1996; Johnson, 2008) like the Dene, has become a mass-produced consumer product that sells online for as little as five

dollars per jar (CBC, 2017). Companies like Laughing Lichen Wildcrafted Herb & Tea and Canadian Outdoor Equipment retail various salves and ointments made from spruce pitch that, at best, offer cursory acknowledgements of its traditional uses amongst Indigenous communities. In Thunder Bay, Ontario, two hunters started a company called Gruntz which manufactures lozenges made using balsam fir – an ingredient long used by Indigenous healers for its antiseptic properties (Kuhnlein & Turner, 1996). Gruntz appears to harvest the materials for this product from the traditional territory of the Fort William First Nation south of Thunder Bay and makes no mention of balsam fir's traditional uses in their marketing materials (CBC, 2016).

Aside from raising the alarm through media, it appears that the only force at work constraining biopiracy are researchers who approach bioprospecting in an ethical and transparent way. In Northern Quebec, researchers have long been interested in the antidiabetic properties of a few medicinal plants traditionally used by the James Bay Cree. In 2003, a group called the Canadian Institutes of Health Research Team in Antidiabetic Medicines (TAAM) was formed in an effort to unite university researchers and local communities to confront a double-edged epidemic: extremely high rates of diabetes, and Indigenous patients whose physiology rendered conventional medical interventions less effective (Currie et al., 2012). The lead researchers involved in the project were aware of the CBD and Canada's obligations to ensure 'the fair and equitable sharing of benefits arising out of the utilization of genetic resources.' Given the lack of any regulatory framework or policy guidance, these researchers took it upon themselves to develop a comprehensive research agreement, including an ABS component. As explained by several contributors to this volume (Burelli, Chapter 13; Dylan, Chapter 5; Oguamanam, Chapter 11), there is no shortage of initiatives on the part of Indigenous peoples to hold researchers and bioprospectors accountable in their dealings with GR and associated traditional knowledge. For example, researchers like TAAM have essentially developed them on an ad-hoc basis, as is often the situation in other cases.

Pursuant to TAAM's agreement with the Cree, the Cree Board of Health would help identify participant communities, and Cree elders would assist researchers in identifying and locating samples of the plant material with antidiabetic properties. The agreement also included an extensive review process, allowing Cree participants to screen research findings prior to publication. The agreement also allows for the withdrawal of any Cree participants from the research process at any time and specified that no pharmaceutical companies could be involved in the research (Currie et al., 2012). In addition, the entire project would not be profit driven, but oriented around the goal of culturally relevant therapeutic interventions for Cree suffering from diabetes. The Cree would retain ultimate control over how their TK would be presented to the public at the conclusion of the project, in a manner consistent with the OCAP¹ principles (Oguamanam & Jain, 2017). Finally, if the researchers developed any novel therapy through use of Cree TK, the Cree Board of

Health (via monitoring teams made up of traditional Cree healers and Western physicians) would share responsibility for administering the therapy to members of the community.

The TAAM team was wary of accusations of biopiracy and had a strong understanding of the level of mistrust felt in many Indigenous communities towards outside researchers claiming to act in their best interests. These fears are not misplaced – it is well documented that research conducted with Indigenous peoples has historically failed to benefit them (Canadian National Collaborating Centre for Aboriginal Health, 2012). In fact, research has often been ‘harmful or . . . counter-productive to improving health, and [is] insensitive, intrusive, and exploitative’ to Indigenous participants (Geary et al., 2013, 1; Oguamanam, Chapter 11). Accordingly, TAAM placed trust at the very centre of their interactions with the Cree. Researchers made a point of personally interacting with community members in order to build familiarity and a sense of common purpose. Skepticism expressed by Cree elders that their traditional medicines would be stolen or misused was addressed directly, including explicit oral promises by the project leaders to the elders to respect their traditional knowledge. After elders had identified 17 promising plant species and helped the researchers to locate viable samples for clinical study, researchers collected them in accordance with Cree customs and traditions, including the performance of tobacco rituals and the saying of prayers to thank the Creator.

Another issue encountered and addressed effectively by TAAM was the fundamental difference in worldview between Cree healers and Western scientists, a divide echoed in other Canadian ABS literature and the field work conducted by ABS Canada (ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017). For the Cree, all knowledge is considered a gift from the Creator, which imbues it with a sacred quality that requires the Cree to act as its fiduciary guardians. The notion that their traditional medicines could ever be turned into commercial products directly challenged this worldview, and acknowledgement of the Cree understanding of the origins, value, and purpose of knowledge had to be central to any arrangement with the TAAM researchers.

To address these concerns, an ABS agreement was concluded. It acknowledged the Cree as the guardians of knowledge gifted from the Creator; pursuant to which there is an express ban on any non-authorized commercialization of research and derivative innovations, including a prohibition against commercializing any resulting intellectual property associated with the project. No intellectual property protection could be sought without the express prior and informed consent of the Cree participants. All Cree traditional knowledge was kept confidential by default, with disclosure limited to that which was expressly authorized by participating Cree communities, and only after those communities had received approval from their Elders.

The benefit-sharing arrangement between TAAM and the Cree included the creation of a not-for-profit corporation to be run by the Cree that would administer

any potential monetary benefits derived from the research project. A commitment was made that a portion of any monetary benefits would be set aside to fund scholarships to train Cree youth to learn about TK from their elders, and to create and distribute educational materials promoting the benefits of preserving TK. In addition, the reanimation of the Cree language through the use of Cree terminology for medicinal plants used in the study was seen by all parties as an important non-monetary benefit derived from the research, as it led Cree youth and Western researchers to adopt traditional Cree vocabulary (Currie et al., 2012).

ARCTIC AND MARINE AREAS: EMERGING BIOPROSPECTING HOTSPOT AND ABS FLASHPOINTS

Canada's expansive Arctic territory is perhaps one of the largest 'untapped' sources of GR in North America. Its low population density (the north is home to approximately 120,000 people spread over 40% of Canada's entire landmass) and extreme weather is contrasted with the region's incredible biodiversity, which includes 140,000 unidentified plant and animal species, and over 68,000 species that have been identified but not described in the scientific literature (Environment Canada [2], 2006). In addition to the sheer number of species in this diverse biome, it is the inherent resilience of these plants and animals that is drawing increasing scientific curiosity and attention. Life able to withstand the harsh weather in the North will naturally possess interesting genetic characteristics with wide-ranging commercial applications (Geary et al., 2013).

Marine GR have attracted considerable attention and are a growing focus of corporate research investment in Arctic jurisdictions such as Greenland, Russia and the Nordic countries (UNU-IAS, 2008). Over 40 companies are currently engaged in research, development and sale of products derived from GR sourced in the Arctic and surrounding waters. (UNU-IAS, 2008). This large-scale bioprospecting has not been similarly documented in Canada's Arctic, where little is presently known about the pharmacological potential of Arctic plants and animals. This is due, in large part, to the lack of tracking and monitoring in Canada, which has been done in other jurisdictions to gain a sense of the scale of bioprospecting, biotechnology development and research into possible GR (UNU-IAS, 2008). As of this writing, no patents have been issued for any product or process derived from Arctic GR in Canada.

This lack of patent activity belies the rapidly growing interest in GR in Canada's North. Arctic seaweed species have recently generated significant research activity both because of their relative abundance along Arctic shorelines and because of the diversity of possible commercial applications, ranging from food products to pharmaceuticals (Environment Canada [2], 2006). Over 2,000 species of seaweed have been identified in Canada's North alone, of which 184 are used by the local Inuit peoples for food and medicine. *Rhodiola rosea*, known locally by its Inuit

names *Tullirunaq* or *Utsuqammat*, has been used for thousands of years as a tonic. This is just one example of seaweed that is drawing increasing interest from the biotechnology and pharmaceutical industries interested in refining and commercializing *Rhodiola rosea* into an easy-to-produce consumer product (Environment Canada [2], 2006).

The limited reporting that is available suggest that *in situ* bioprospecting in the Canadian Arctic is currently narrow in scope. For example, the University of Prince Edward Island's Marine Natural Products Lab recently conducted small-scale research projects examining marine mud in search of microbes with commercial applications for the pharmaceutical and cosmetics industries (Kerr, 2012). Some other examples include Neuronascent Inc., an American biotechnology company that is seeking to develop therapeutic products for Alzheimer's patients through research conducted on the Arctic ground squirrel (*Spermophilus parryii*), a species whose habitat range includes the Yukon, Northern BC, and portions of the Northwest Territories. Also active in Canada is A/F Protein Canada Inc., another American firm with a processing facility in Newfoundland and Labrador that is developing advanced anti-freeze proteins for use in the food processing industry that were developed from a variety of Arctic fish (UNU-IAS, 2008).

Intense research interest in GR in other Arctic jurisdictions, and the anecdotal reporting on current bioprospecting projects in Canada's north show that bioprospecting is a policy problem that is already here, and growing more pressing with time (Dylan, Chapter 5). As climate change contributes to melting permafrost and sea ice, Canada's Arctic will only become a more inviting and accessible environment for bioprospecting in the coming years, particularly if *in situ* GR collected in other Arctic jurisdictions continue to be successfully commercialized and protected through intellectual property rights (IPRs). While this is occurring, the Government of Canada remains equivocal on the Nagoya Protocol and the legal status of these resources; the regimes governing their access remain unclear (*ibid.*).

As noted, a paucity of information regarding the scale of ongoing bioprospecting in Canada's Arctic region is one possible factor contributing to our limited understanding of the scope of GR and research involving the region. Another factor is the nascent but nonetheless fairly sophisticated, albeit inchoate, access regimes that have been developed in parts of some of the northern territories, particularly Nunavut (*ibid.*). While Canada lacks an overarching ABS policy for the entire country, Nunavut has a framework of sorts already in place that is derived from that territory's constitutive document, the 1993 *Nunavut Land Claims Agreement* (NCLA) and other laws. Unfortunately, as Daniel Dylan (Chapter 5) has noted, the Nunavut regime neither includes benefit-sharing nor cover genetic resources-related research.

Nonetheless, the landmark agreement between the Government of Canada, the Government of the Northwest Territories and the Tunngavik Federation of Nunavut (an organization representing the interests of the Inuit) recognized Inuit control

of a large swath of eastern Northwest Territories as their own self-governing territory. This represents the largest single land claims agreement between Canada and Indigenous peoples in Canada's history. Nunavut, which formally came into existence on 1 April 1999, includes over 1.8 million square kilometres of land and more than 160,000 square kilometres of the Arctic ocean, a combined area larger than Western Europe and comprising 21% of Canada's total land mass.

The NLCA grants the Inuit a right of first refusal on the commercial use of wildlife, which includes organisms like microbes (1993). The NCLA further prioritizes Inuit access to fish stocks and Inuit ownership interest in harvested marine resources (Greer & Harvey, 2004). The Government of Nunavut has also established the Nunavut Research Institute, which operates a permitting system for researchers hoping to conduct field work in the territory and which requires licences for studies involving terrestrial and marine mammals, birds, and vegetation. The Institute also requires researchers to apply for permits to collect samples of any aquatic organisms (including plants, fish and marine mammals) for scientific purposes, and under certain circumstances, requires research to undergo environmental impact screening (Nunavut Research Institute, 2017). This access regime, described in greater detail by Dylan in Chapter 5 is the reason the Inuit were able to effectively deny a major research company access to Inuit fish stocks for the purposes of genetic research in 2001.

After the NCLA came into force, Canada's federal Department of Fisheries and Oceans (DFO) issued new restrictions requiring the consent of local communities before it would issue any fishing, harvesting, or farming permits. In response to these new restrictions, a major char fishing company called Icy Waters Ltd. partnered with local Inuit communities and an Ontario university (Greer & Harvey, 2004) to take advantage of the increasing popularity of Arctic char in the diets of southern Canadians and create an enhanced revenue stream for local Inuit fishers. In the resulting joint venture, each of the 7 participating Inuit communities were given a 5% equity stake, and in exchange Icy Waters Inc. would gain access to the reproductive material of male Arctic char found in nearby waters. While each Inuit community would retain 'ownership' over the fish contributed to the research, the joint venture would be the exclusive owner of any intellectual property in the hybrid lines developed from their proprietary cross-breeding technique. In addition, the participating Inuit communities would be permitted to use the 'genetically improved' final product and would ostensibly enjoy non-monetary benefits in the form of experience and transfer of technology in 'modern' fish farming techniques (Greer & Harvey, 2004).

Ultimately, the Inuit communities involved in the joint venture withdrew their consent; they felt that Icy Waters' approach to the project showed a major lack of respect for the Arctic char, and expressed their belief that the spirit of the fish would return to take revenge on the local Inuit people for allowing the char to be taken from its home and subject to genetic experimentation and manipulation (Greer & Harvey, 2004). In addition, the particular genetic subpopulation of Arctic char

that interested Icy Waters happens to grow extremely slowly and is highly susceptible to overfishing, another significant concern to the local community that relied in part on the Arctic char for sustenance. The fact that the local Indigenous community had a substantial degree of control over their resources, and a say in how the GR on their traditional territory could be accessed and used – including the legal authority to deny their consent to Icy Waters – provides an essential case study in the story of ABS implementation in Canada (Greer & Harvey, 2004).

Nunavut is not alone in having developed nascent access regimes that *de facto* regulate bioprospecting for *in situ* GR. In Canada's Yukon territory, for example, settlement agreements with local Indigenous nations emphasize Indigenous peoples' primary control over settlement lands, which has typically been construed to include rights to legislate for themselves in areas related to culture and resource management (Environment Canada [2], 2006). Laws passed by Indigenous communities therefore take precedent over territorial laws, ensuring that *de jure* legislative competence in these areas is manifested concretely in the day-to-day management of natural resources. The territorial Government of Yukon also requires any non-resident researchers to apply for access permits before conducting any research in the territory. The government's practice is to consult with Indigenous communities whenever out-of-jurisdiction researchers wish to obtain permits that encroach on Indigenous settlement lands (Environment Canada [2], 2006).

An example of an Indigenous community in the Yukon effectively exercising their jurisdictional competence in the areas of resource management are the Gwich'in people, whose traditional lands span approximately 20,000 square kilometres in the northern portions of the Yukon and Northwest Territories. According to the terms of the 1992 *Gwich'in Comprehensive Land Claims Agreement*, the Gwich'in were granted preferential hunting and fishing rights across the whole of the settlement area, and an extensive say in land use planning (Gwich'in Tribal Council, 2017). In 1998, the Gwich'in annual assembly passed a motion authorizing the Gwich'in Tribal Council to develop an official policy on traditional knowledge, both to clarify the Gwich'in peoples' role as guardians of that knowledge and to spell out precisely how outside parties would be able to access and use their TK in the future.

The policy specifies that anyone seeking to use or access Gwich'in traditional knowledge may only do so with the full, prior, and informed consent of the community. The policy also spells out, in granular detail, the processes to be followed in seeking out consent, conducting research, reviewing findings and providing compensation to TK holders and Elders in the community (Gwich'in Social and Cultural Institute, 2004). The Gwich'in mandate that their social and cultural bodies be given an opportunity to examine data before it is published, and to comment and make corrections before any findings are made public. The Gwich'in TK policy also includes template agreements, and a 17-point guide on what elements must be incorporated in an informed consent statement, including clauses allowing Gwich'in traditional knowledge holders to opt out of research at

any time, and a requirement that agreements be concluded in the traditional Gwich'in language where the use of English may generate misunderstanding (Gwich'in Social and Cultural Institute, 2004).

The Gwich'in in the Yukon and Northwest Territories remain one of the few Canadian Indigenous communities that have developed complete or substantially complete guidelines for ABS in relation to genetic resources and associated Indigenous TK in Canada. As Daniel Dylan (Chapter 5) has demonstrated, the extent to which the Inuit in Nunavut could be included in that category is tenuous. The common thread linking these communities is the relatively advanced status of their comprehensive land claims and self-governance agreements with the territorial governments and the Government of Canada. Indigenous self-governance and fully settled land claims remain the exception rather than the rule throughout the remainder of the country.

CANADA'S OFFICIAL APPROACH TO ABS IMPLEMENTATION: A CRITICAL ASSESSMENT

Canada's record on ABS is decidedly mixed and can be characterized by an early period of proactive movement followed by a decline in federal activity over time (Hodges & Longford, Chapter 2; Mason & Brodeur, 2013). Canada was an early ratifier of the 1992 CBD and was actively involved in the negotiation of the subsequent Nagoya Protocol. However, it then failed to build on this critical early momentum after the Nagoya Protocol was concluded, creating a policy vacuum as bureaucratic resources were shifted elsewhere (Hodges & Langford, Chapter 2). The fieldwork conducted by ABS Canada has revealed that many Indigenous communities across Canada have never even heard of ABS, the CBD, and the Nagoya Protocol. (ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017). This is not to suggest that Indigenous communities need to develop specific expertise in order to protect their lands and their knowledge. Rather, it suggests a compelling case for capacity-building and capacity development that the federal or any other cadre of government has so far failed to facilitate or deliver (Oguamanam & Hunka, Chapter 3).

The Trudeau government's commitments to combatting climate change, preserving biodiversity and rebuilding Canada's relationship with Indigenous peoples on a nation-to-nation basis pursuant to national reconciliation will not succeed unless it revisits the ABS file especially through the lens of reconciliation and nation-to-nation relationships. This will require a fundamental policy rethink. Canada's current policy guidance on domestic ABS implementation makes it clear that its overriding objective is to position itself as a global player in biotechnology (Environment Canada [3], 2009; Government of Canada [2], 2010). While the importance of biodiversity conservation and preservation of Indigenous TK are acknowledged, the underlying policy objectives make clear that these are seen as obstacles to be

managed rather than foundational principles to be encouraged. Indigenous knowledge is essential to biodiversity conservation, and biotechnology growth will be stunted without access to Indigenous traditional knowledge of plants and animals (Oguamanam, 2005, 2006a, 2012; Gillespie, 2011).

Given the lack of ABS policies across the country, the relative disinterest (at best) of some provincial government stakeholders, the absence of broad corporate awareness, and the lack of knowledge and capacity among many Indigenous communities, the federal government stands to play a central role. Yet Canada's proposals for domestic implementation reflect a disconcerting tendency to ignore or marginalize Indigenous perspectives or the role to be played by Indigenous orders of government (Perron-Welch & Oguamanam, Chapter 6).

As of this writing, Canada proposes three possible ABS implementation strategies. The first involves developing a national ABS regime built upon 'common principles and core elements.' Implementation would be jurisdiction specific, but the focus would be on creating as much clarity and consistency across the country as possible – this is similar to the Australian approach (Wright, 2017; Phillips, Chapter 9).

The benefits of a harmonized national regime are fairly obvious. It will create a consistent regulatory environment, facilitating access for out-of-country interests, and thus help drive the twin goals of promoting Canadian competitiveness in the bio-based economy and supporting scientific research and development. Second, a national approach would provide some clarity with regards to transboundary GR, which as their name implies straddle or transcend the legal and political entities that regulate them. Third, this approach would help fill in some of the gaps in the Canadian landscape by helping jurisdictions that currently lack their own ABS policy or whose policies are currently underdeveloped. In this formulation, the Gwich'in and other communities or nations that have already developed licensing regimes or ABS-like regulatory schema would be able to maintain their existing systems provided they meet or exceed national criteria and a set of common standards.

A significant drawback of this approach is that it fundamentally underestimates the challenges of negotiating a harmonized set of standards amongst over a dozen different jurisdictions with very different economies, resource profiles, and political cultures. The notable failure to include Indigenous perspectives in this approach will also create fundamental issues of mistrust and suspicion. Indigenous communities will (rightly) perceive a national framework as an 'imposition' of federal standards in contravention of their own inherent rights to control the GR on their traditional lands (ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017). While striving for a national or unified framework, the incredible diversity of Indigenous nations (73 in all) in Canada and their varied perspectives on sharing traditional knowledge requires the balancing of such a framework with local sensitivities. Any approach developed by Ottawa and the provinces that excludes Indigenous orders of government fails to do so.

The second approach explored by the Government would accept the challenges of differing interests and perspectives by forgoing a national set of standards altogether in favour of an independent approach in each jurisdiction (again, here narrowly construed as provincial and territorial governments only). This would allow each province and territory to develop ABS policies that accord with their particular contexts and needs, which has the obvious benefit of accelerating implementation. However, it could result in a widely divergent patchwork of policies, creating an uncertain regulatory environment that would be costly and time consuming for researchers to understand and navigate, and it also fails to respond to the challenge posed by transboundary GR.

The final approach considered is by far the most centralized: a single, unified federal policy equally applicable in all Canadian provinces and territories. The federal government would do all of the heavy lifting in terms of policy scoping and development, which would accelerate the implementation process and create the greatest certainty for researchers and other stakeholders seeking to extract or use *in situ* GR on Canadian territory. Given the constitutional division of powers in the Canadian federation, however, this policy would necessarily be incomplete – conceivably, federal jurisdiction over GR only extends to those found on federal Crown lands or stored at federal research, recreational or conservation facilities, whereas provinces and territories have jurisdiction over GR on provincial/territorial Crown lands, in addition to their constitutional competence over property law and natural resources writ large. Since these lands (federal, provincial and territorial) have actually been Indigenous lands from time immemorial, *in situ* GR on those lands that are associated with Indigenous TK also engage an exclusive Indigenous claim to jurisdiction and control, and current proposals simply do not contemplate these complex legal issues.

Perhaps aware of these jurisdictional and legal hurdles, Environment Canada has concluded that *not including* Indigenous TK in a Canadian ABS policy would ‘simplify the development and implementation’ of such a policy (2009, 15). While technically true, this would surely undermine whatever trust is left between Indigenous peoples and the federal government, compromising other good faith efforts to reconcile Crown sovereignty with pre-existing Indigenous cultural and legal orders. The federal government has already driven a rift between itself and Indigenous communities by consulting so poorly on ABS to date, and by failing to meaningfully include Indigenous perspectives and worldviews as it participated or participates in the negotiation of international instruments like the CBD, Nagoya Protocol and ongoing WIPO-IGC.² Given the centrality of Indigenous traditional knowledge to the policy debate on ABS over GRs, this approach is frankly a non-starter in the debate over the appropriate method of implementing ABS into domestic law.

If the government is truly committed to a process of equity, justice and reconciliation with Indigenous peoples, the inclusion of their perspectives on ABS must be

one of the starting points. This will require deep and meaningful consultation, and perhaps a much broader reconceptualization of the way intellectual property, traditional knowledge, biodiversity conservation and Canada's goal of economic opportunity through biotechnology innovation meet and interact in law, justice and social policy. Such is, however, the promise of reconciliation – a rethinking of the relationship and an even deeper critiquing of the social and legal arrangements that animate, constrain and perpetuate it.

At a practical level, inclusion of Indigenous perspectives and involving Indigenous orders of government mean that domestic implementation of ABS will resemble a national set of minimum standards governed by best practices and extensive consultation. This policy must be implemented in accordance with jurisdiction-specific realities – including, especially, the reality of Indigenous rights as guaranteed under s.35 of the *Constitution Act, 1867* at the minimum and true self-governance in the context of reconciliation and meaningful nation-to-nation relationship. The choice is Canada's to make, but the bioprospecting drive in the Arctic, in marine ecosystems, and in other biodiverse parts of the country illustrate the imperative of embarking on this conversation sooner rather than later.

THE SELF-GOVERNANCE IMPERATIVE FOR ABS

In conducting the field work in advance of this volume, ABS Canada has extensively documented the extent to which Indigenous communities believe the threshold issues in Canadian conversation on ABS is the *conclusion* of land claims agreements, the faithful execution of historical treaties, formal recognition of their inherent rights as guaranteed under Section 35 of the *Constitution Act, 1982*, and the overarching reconciliation of Crown sovereignty with the Indigenous occupation of Canada prior to European contact (ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017). Without Indigenous control over resources and a say in how external stakeholders access these resources, the notion of an ABS policy that is sensitive to Indigenous interests remains a hollow promise.

Since control over resources necessarily flows from recognition of Indigenous 'title' (although Indigenous worldviews categorically reject this framing of their relationship with the land in terms of ownership and control)³ – Canada must uphold the original treaties, complete the comprehensive land claims process, and recast its interactions with Indigenous peoples as truly nation-to-nation conversations (Perron-Welch & Oguamanam, Chapter 6; Nichols, Chapter 4). Given the obvious financial, legal and logistical hurdles implicated in this urgent national project, Canada is under a heightened obligation to seek out Indigenous perspectives on what ABS should look like in the domestic context, and to provide meaningful support for the kinds of capacity building required at the community level (Oguamanam & Hunka, Chapter 3). Such organizational and governance preparedness as an incidence of self-governance would enable the Indigenous peoples of

Canada to establish the culturally relevant ABS regimes essential to preserving TK and ways of life, while balancing the economic ramifications of ABS (ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017).

There has been some early recognition of the importance of Indigenous self-governance over traditional lands and marine areas. The federal government recently announced an ambitious cooperative marine-management agenda under which the Inuit of Labrador will ‘use their traditional knowledge to develop a marine-management plan that would cover 380,000 square kilometers of coastal waters on the far eastern end of the Northwest Passage’ (Galloway, 2017). This scheme would see the Inuit play a key role in regulating ‘shipping, resource extraction, water quality, species management, conservation of historical sites, and other matters of [local] importance . . . as climate change and the decline of Arctic sea [opens] the passage to an increasing amount of ship traffic’ (ibid.). This cooperative marine-management plan is timely and symbolic in several different ways. First, it is an agreement between the federal government and the Nunatsiavut; the first Inuit self-governing region recognized by the Government of Canada. This reflects the importance of self-determination as a framework for ABS, reconciliation and justice. Second, the cooperative management plan highlights the disruptive effect of climate change on Indigenous lifestyles and the need for a proactive policy response in partnership with the Indigenous peoples who are directly impacted. Third, the arrangement recognizes that Indigenous knowledge provides key insights for climate change adaption and mitigations strategies, and in regard to cognate areas including, for example, the development of polar data infrastructure (Scassa & Taylor, 2017) and for resulting economic opportunities.

DRAWBACKS OF NON-RECOGNITION OF INDIGENOUS SELF-GOVERNANCE

Through the current situation in which, save for few cases, there is no robust Indigenous self-governance agreements, Indigenous communities have remained pragmatic, forging different forms of ABS-related arrangements and protocols in partnership with researchers (Burelli, Chapter 13). However, since there is no extant ABS regime, (in particular, one sensitive to Indigenous interests) Indigenous communities remain at the mercy of Canada and the provinces and territories to protect their rights over traditional knowledge. This situation urgently requires those levels of government to enact ABS regimes, as well as environmental laws and regulations that embody and reflect Indigenous interests and perspectives.

Unfortunately, Canada has failed to meet this obligation to enact environmental laws and regulations that reflect Indigenous perspectives and further Indigenous interests (McDermott & Wilson, 2010). One example is the federal Species at Risk Act (SARA). SARA was legislated to meet Canada’s commitments to the Convention on Biological Diversity by providing protection for endangered organisms and their

habitat within federal jurisdiction. Section 8.1 of SARA called for the creation of the National Aboriginal Council on Species at Risk (NACOSAR) to advise the federal Minister of the Environment and Climate Change on the implementation of the Act and provide advice and recommendations to the Canadian Endangered Species Conservation Council (CESCC), a federal/provincial/territorial Ministerial body (Government of Canada, 2017). The advisory status of the NACOSAR, despite the vast and expansive TK held by Indigenous peoples who have lived sustainably on the land throughout Canada for millennia, is suggestive of the low esteem the government actually attaches to Indigenous TK. The failure to rely on Indigenous perspectives in conservation and species at risk protection does not bode well for the development of a Canadian ABS regime.

Environmental assessments, to cite another example, are one of the few legal means Canada's Indigenous peoples have to effect environmental policy through formal processes. However, the *Canadian Environmental Assessment Act* does not currently require the consideration of Indigenous traditional knowledge in the assessment process (McDermott & Wilson, 2010). CEAA, 2012 merely gives responsible authorities the discretion to consider 'Aboriginal traditional knowledge' in any EA (Government of Canada, 2016). The Trudeau government's review of the environmental assessment and regulation-making process suggests some recognition of this problem, with proposals for requiring more Indigenous input in future assessments (Government of Canada, 2017). However, even this fairly comprehensive review is totally silent on the incorporation of ABS as an environmental assessment and regulatory consideration (Oguamanam, Koziol, Lesperance & Morales, 2017). Presently, Indigenous knowledge, practices and associated customary laws over sustainable living in and with the natural world have yet to factor into Canadian policymaking. Without self-governance, self-determination and respect for the sanctity of constitutionally affirmed treaty rights, it will remain challenging to integrate traditional knowledge and practices of Indigenous peoples into Canada's colonial legal regime.

Arguably, Canada's web of statutory and regulatory protections for the environment would be strengthened and better able to accomplish their conservation goals by meaningfully considering Indigenous perspectives. For most Indigenous communities, the relationship between human beings and the natural world is one of interconnectivity and mutual interdependence. The Algonquin people of Eastern Ontario use the term *Ginawaydaganuk* to describe this worldview. More than merely a descriptive phrase, *Ginawaydaganuk* is a principle of Algonquin law which outlines the responsibilities of human beings to one another and to the Earth; similar to the African philosophy of interdependence and interconnectedness, *Ubuntu*.⁴ It stresses the importance of considering the cumulative impact of actions on the entire web of life, and reflects an Algonquin understanding of 'sustainability' that sees human beings and nature as a singular whole (McDermott & Wilson, 2010).

This perspective on humanity's relationship with the natural order can be found across Indigenous cultures, not only in Canada, but around the world, and was repeatedly emphasized to researchers from ABS Canada throughout our focus groups in Moncton (home of the Maliseet & Mi'kmaq), Ottawa (home of the Algonquin), and Saskatoon (home of the Cree and homeland of the Métis peoples) (Oguamanam, 2010; ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017).

Not only are Indigenous perspectives, customs, laws and protocols generally not reflected in Canadian law, Canada has failed to follow through on its (laudable) initial efforts to engage Indigenous peoples on the subject of ABS (Hodges & Langford, Chapter 2). Canada has not held any formal ABS consultations with Indigenous peoples since 2010, and those limited, ad-hoc consultations were generally considered inadequate by many of those communities who were able to participate (ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017). Canada does not support the attendance of Indigenous participants to global fora engaged in negotiating international legal instruments on the subject of TK and IPRs and has refused to ratify the Nagoya Protocol and implement any form of ABS into domestic law (Mason & Brodeur, 2013), ironically citing its own lack of appropriate and meaningful consultation with Indigenous peoples.

The result is untenable for Indigenous peoples. Canada has failed in its obligations to protect Indigenous rights over their traditional knowledge through implementation of ABS into domestic law, and/or the reconciliation of its own laws (e.g. environmental assessment regimes, IPR framework, and climate change initiatives) with Indigenous worldviews and customary laws. Since many Indigenous communities have yet to develop their own ABS frameworks, the end result is that Canada's Indigenous peoples have little influence and limited or tenuous legal recourse when confronted with the rising tide of bioprospecting on their ancestral lands.

The real tool available for Indigenous communities hoping to mitigate biopiracy is to work with one another, collectively building and reinforcing their own capacity with the help of NGOs such as the ABS Capacity Development Initiative, the ETC Group, the Union for Ethical Biotrade and related others to drum up public outrage and condemnation. The faint hope is that negative media attention will constrain researchers and corporate interests from unduly exploiting Indigenous peoples' GR and associated traditional knowledge in the interim.⁵ Unfortunately, the value of genetic resources is little-known to most of the public, and ABS remains a complex issue that is difficult to explain in media-friendly or easily accessible terms. The rise of digital DNA and digital sequencing information and their role in the de-linking of genetic resources from their natural sources and origins (Oguamanam, Chapter 11; Oguamanam & Jain, 2017), and the marginalization of Indigenous TK in Western scientific, legal and cultural paradigms only increase the scope of this public relations or public awareness challenge.

THE PATH FORWARD: CULTIVATING INDIGENOUS
PARTNERSHIP FOR RECONCILIATION

A number of lessons can be distilled from the Canadian context and the cases examined in this chapter. Canada is without question both a provider and user of GR. Climate change represents a new dynamic with both challenges and opportunities that exacerbate the urgency of tackling the biopiracy problem. The intersection of climate change, biopiracy and ABS will become an increasingly fraught space as new GR are identified through increased bioprospecting activity in Canada's Arctic, and in the rich and diverse marine ecosystems along Canada's extensive coastlines.

Even though there are pragmatic initiatives between Indigenous peoples and researchers or bioprospecting entities to ensure just and fair practices, biopiracy is best prevented where deliberate ABS laws are in place. ABS regimes that are culturally sensitive and developed in accordance with Indigenous customary law, traditions and worldviews enhance the goals of biodiversity conservation and the preservation of traditional knowledge more than arrangements that ignore or marginalize Indigenous perspectives.

The examples of existing practices in Nunavut or in the Gwich'in settlement area in the Yukon and Northwest Territories, and the James Bay Cree in Northern Quebec (who live under the first comprehensive land claims settlement in Canadian history) suggest that Indigenous communities with legal control over their resources and the internal capacity to dictate access terms to outside interests are the most effective bulwarks against biopiracy. In addition, such an arrangement is one of the best ways to ensure the preservation and promotion of the Indigenous traditional knowledge which is the springboard for the utility and applications of those GR in the first place.

As affirmed by Bannister (Chapter 12) and Burelli (Chapter 13) in this volume, our analysis here reinforces the fact that many researchers are already sensitive to concerns about biopiracy and the importance of conducting research in line with the Tri-Council guidelines that specify the importance of doing research by and with Indigenous peoples (Tri-Council Policy Statement, 2010). Developing constructive partnerships that allow Indigenous communities to retain control over their GR and associated traditional knowledge rather than merely *studying* them in a way that undermines their sense of identity, inherent dignity, innovation and intellectual contributions is a clear pathway for Indigenous-friendly ABS policy.

The stage is now set for government to make a choice. When given the correct tools, Indigenous communities are capable of developing sophisticated and robust protocols to govern access to their traditional knowledge and associated GR on their lands (Oguamanam & Hunka, Chapter 3). The optimal pre-condition is Indigenous self-governance, but whatever the status of the particular community – whether

under an original treaty, a self-governance arrangement, or a modern comprehensive land claim – Indigenous communities generally know what they wish to share and how they wish to share it (Oguamanam, 2018). They are also the best authorities on how to preserve the traditional knowledge that is essential to our understanding of the natural world and the ways to sustain its diversity and inherent balance (ABS Canada Focus Group Report, Moncton, 2015; Ottawa, 2016; Saskatoon, 2017). Some communities already have these tools, with *de jure* control over their own lands and resources (Burelli, Chapter 13). Others have access to useful proxies, like government statutory and regulatory frameworks that prioritizes Indigenous rights to land and resources (Dylan, Chapter 5) accounting for and reflecting Indigenous worldviews, and requiring consultation when Indigenous interests and rights are engaged.

However, many more Indigenous communities lack either their own tools or the levers to affect relevant government processes. It is these communities that will be the sites of biopiracy in a future of increased bioprospecting activity and continued growth in the biotechnology industry. The scope and impact of this problem is therefore entirely contingent on *how* Canada opts to proceed on the ABS file. One option is to embrace what is proven to work and by so doing mitigate the worst effects of the coming bioprospecting boom (Phillips, Chapter 9). A turn towards the promotion of unfettered access and the unbalanced privileging of the biotechnology industrial complex will compound rather than mitigate the problem.

CONCLUSION

In this chapter, we have highlighted Canada's unique status as both a provider *and* user country regarding GR and associated Indigenous or traditional knowledge. We have also charted the real and potential biopiracy flashpoints in Canada and their implications for Indigenous communities, especially in the context of Arctic and marine areas. We then reviewed Canada's policy guidance on domestic ABS implementation and critiqued its failure to include Indigenous voices and perspectives and pointed out how it marginalizes Indigenous laws and orders of government. But as many other contributions in this volume affirm, the inchoate state of treaty interpretations and inconclusive comprehensive land claims and self-governance agreements constitute ongoing meaningful hurdles to the full involvement of Indigenous peoples as key partners in ABS. Notwithstanding these obstacles, Canada is under both a moral and legal duty to facilitate a regime of access to GR and associated Indigenous knowledge in a manner that is consistent with Indigenous customary laws, protocols and worldviews. This is not just the most effective pathway to biodiversity conservation, but a way forward that ensures equity, justice and reconciliation.

We argue that the most effective means of mitigating biopiracy over GR and associated knowledge of Indigenous peoples is by having Indigenous communities craft their own policies and access regimes, reflecting the overwhelming consensus

of Indigenous voices in ABS Canada's regional focus groups. Ultimately, an ABS policy for Canada can only truly succeed at reaching the lofty goals set out in the CBD when Canada develops that policy in cooperation with Indigenous peoples, on the basis of a nation-to-nation relationship grounded in the principles of trust, good faith, understanding and mutual respect.

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NOTES

- 1 Ownership, Control, Access and Possession.
- 2 Canada's position on the ongoing negotiations at this specialist WIPO body charged to propose text of legal instruments for the protection of TK, GRs and TCEs is at odds with the position of indigenous people as articulated by the Indigenous Caucus of the forum.
- 3 These are settler legal constructs useful only so as far as they are required to advance Indigenous interests under Canadian law
- 4 'I am because you are; you are because I am'.
- 5 The 'Captain Hook Award' is a project of the Coalition Against Biopiracy; it is awarded to companies and governments engaged in particularly obvious or egregious examples of biopiracy or for furthering policies that contribute to biopiracy. See www.synbiowatch.org/captain-hook-awards-2016/?lores.