Supporting resurgent Indigenous-led governance: A nascent mechanism for just and effective conservation

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Policy Analysis

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ABSTRACT

Substantial increases in the pace, scale, and effectiveness of conservation will be required to abate the ongoing loss of global biodiversity and simultaneous ecological degradation. Concurrently, the need for conservation to respect inherent human rights, including the rights and title of Indigenous Peoples, is increasingly recognized. Here, we describe the often overlooked role that resurgent Indigenous-led governance could have in driving rapid, socially just increases in conservation. Whereas Indigenous resurgence spans all aspects of governance, we focus on three aspects that highlight both the necessity and nascent potential of supporting resurgent Indigenous-led governance systems as they relate to conservation of lands and seas. Firstly, much of the landscapes and seascapes of conservation interest are within Indigenous territories, so augmenting conservation within them will increasingly not be possible, justified, nor legal without Indigenous consent and partnership. Secondly, resurgent Indigenous governance provides potential for rapidly increasing the spatial coverage of conserved areas. Thirdly, resurgent Indigenous governance provides potential for increased conservation effectiveness. We focus on Canada, a country disproportionately composed of globally significant intact ecosystems and other ecosystems with considerable ecological value, comprised of Indigenous territories, and where Indigenous governments are well-positioned to advance meaningful conservation at a large scale. We discuss broader implications, with Indigenous territories covering large swaths of the globe, including in all five countries (Canada, USA, Australia, Brazil, Russia) whose borders contain the majority of the world's remaining intact landscapes. We offer suggestions for supporting resurgent Indigenous governance to achieve biodiversity conservation that is effective and socially just.

1. Introduction

In an effort to address international biodiversity declines and concurrent ecological degradation, Parties of The Convention on Biological Diversity (CBD) agreed in 2010 to a Strategic Plan for Biodiversity (2011–2020), including the 20 'Aichi Biodiversity Targets'. As the 2020 deadline for implementation approaches, parties largely have not met these targets (Visconti et al., 2019), and biodiversity continues to decline internationally (Betts et al., 2017; Sánchez-Bayo and Wyckhuys, 2019; WWF, 2018). Addressing ongoing biodiversity declines post-2020 will require substantial increases in the pace, scale, and effectiveness of conservation, suggesting a need for rethinking approaches to conservation governance (Ceballos and Ehrlich, 2006; Dinerstein et al., 2017; Garnett et al., 2018; Jonas et al., 2014; Maron et al., 2018; Noss et al., 2012). Concurrently, the need to abandon colonial conservation approaches that have been harmful to Indigenous and local peoples is increasingly being recognized (Ban and Frid, 2018; Eichler and Baumeister, 2018; Moola and Roth, 2018; Parks Canada, 2018a; Ruru, 2012; Witter and Satterfield, 2018).

Herein, we describe the necessity and nascent potential of

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supporting resurgent Indigenous-led governance of lands and seas for advancing conservation that is socially just and effective. We describe how global increases in conservation in some of the most globally significant areas of conservation interest will increasingly not only be unjust, but also impossible, without Indigenous consent and leadership. Conversely, resurgent Indigenous-led governance - the contemporary revival, strengthening, and adaptation of Indigenous governance systems that were impeded or interrupted by European colonization (Kimmerer, 2013; Wildcat et al., 2014) - increasingly provides avenues for substantial gains in both the spatial scale and effectiveness of conservation. Internationally, Indigenous resurgence involves Indigenous nations determining how Indigenous rights, recognition, and relationships with other peoples will be respected (Barker, 2015; Corntassel, 2012; Coulthard, 2014; Wildcat et al., 2014), described by Leanne Simpson as a political movement and philosophy with epistemological and ontological foundations that centre Indigenous cultural and knowledge systems, land-based pedagogy, and Indigenous laws and governance systems (Simpson, 2011). Indigenous governance is a broad concept encapsulating the varied laws, values, and practices across thousands of Indigenous nations worldwide. The strongest ethical reasons for supporting the resurgence of Indigenous governance have their foundations in social justice and working forward in recognition of the injustices brought about by settler colonialism. Here, however, we additionally highlight the concurrent potential benefits for ecological stewardship and conservation. We discuss both the direct protections of lands and seas, in line with what might be currently categorized in Industrial societies as 'conservation', as well as other aspects of land and sea stewardship, for example, of harvested resources and place-based agricultural practices. We focus on Canada, a country of global conservation significance given its disproportionate representation of the world's remaining intact ecosystems (Ellis and Ramankutty, 2008; Watson et al., 2018b) and its globally significant provision of ecosystem services (Andrew et al., 2014; Anielski and Wilson, 2005), and discuss how insights from here are applicable globally.

2. Conservation increasingly likely to fail without Indigenous consent

Canada has a disproportionate coverage of intact ecosystems (*i.e.* free from significant anthropogenic degradation; Ellis and Ramankutty, 2008; Potapov et al., 2017; Betts et al., 2017; Coristine et al., 2018; Watson et al., 2018b; Fig. 1). The extent of these landscapes is globally important: intact areas are often exceptionally biodiverse (Betts et al., 2017; Watson et al., 2018a) and provide globally significant ecosystem services such as carbon storage and freshwater provision (Andrew et al., 2014; Anielski and Wilson, 2005). In addition to vast intact landscapes, Canada also contains many landscapes that have been degraded by expansion of cities, towns, agriculture, resource developments, and infrastructure, but nonetheless retain considerable conservation value (Coristine et al., 2018; Moola and Vasseur, 2008).

In an effort to increase conservation across these areas, and in line with international Aichi biodiversity targets, Canada has committed to "2020 Biodiversity Goals and Targets for Canada", including Canada's Target 1: "By 2020, at least 17% of terrestrial areas and inland water, and 10% of coastal and marine areas, are conserved through networks of protected areas and other effective area-based conservation measures" (Environment and Climate Change Canada, 2016; Woodley et al., 2012).

However, attempts to increase conservation without addressing underlying jurisdiction, rights, and title of Indigenous groups, and without their direct involvement and leadership, will not only continue to be unethical, but will also be increasingly impossible to implement across Canada. Previous work (*e.g.* (Garnett et al., 2018; Rights and Resources Initiative, 2015; Schuster et al., 2019) has shown the extent to which state-recognized Indigenous lands overlap with areas of high conservation value throughout the world. However, it is increasingly clear that Indigenous rights, title, and responsibilities apply to a far greater portion of Canada than the area represented by state-recognized Indigenous lands, and hence the overlap between Indigenous lands and areas of conservation interest is likely far greater than what has been reported to date using available data (Jonas et al., 2014). In contrast to the relatively small coverage of state-recognized areas held 'in trust' (Vowel, 2016) for Indigenous people (*e.g.* less than 1% of Canada south of the Northernmost territories designated as 'Indian Reserves'), Indigenous territories span the country (Fig. 2). Title and rights to these areas, and requirements for free, prior, and informed consent for activities happening within them, are increasingly recognized, for example in Section 35 of the Canadian Constitution Act (Manuel and Derrickson, 2015), legal cases such as Calder (1973); Sparrow (1990); Gladstone (1996); Delgamuukwv (1997); Haida Nation v. British Columbia (Minister of Forests) (2004); Tsilhqot'in (2014); Gitxaala (2016); Ahousaht (2018) and Tsleil-Waututh (2018), federal guiding documents such as "Principles: Respecting the Government of Canada's Relationship with Indigenous Peoples" (Government of Canada, 2017), and internationally through the United Nations Declaration on the Rights of Indigenous Peoples (UN General Assembly, 2007), which Canada is a signatory to (but has not yet implemented; Tasker, 2019). Collectively, these show an increasing recognition of inherent Indigenous rights and title in state and federal legal systems and highlight the need for Indigenous consent in land use decisions. Although it is the experience of the authors and colleagues that Indigenous sovereignty continues to be insufficiently addressed in land use decisions by Canadian and provincial governments, the depth of obligations already described in existing laws, and the increasing number of cases affirming the deeper ramifications of inherent rights and title, highlight the strength of the imperative to address these quickly from a legal, let alone ethical, perspective.

Increased recognition of Indigenous jurisdiction across Canada has important implications for planning, management, and decision-making about lands and waters. For example, the Tsilhqot'in Title and Rights case (Tsilhqot'in Nation v. British Columbia, 2014) led to serious questions about the ability of Canadian and provincial governments to approve resource development without Indigenous support. However, in practice they have continued to do so, such that much of Tsilhqot'in traditional territory remains mired in negotiation and uncertainty as Tsilhqot'in assert their rights (Gilpin, 2019). On the west coast, Haíłzaqv and neighbouring nations have driven recent management changes and forced recognition of their jurisdiction in herring fisheries (Gauvreau et al., 2017; von der Porten et al., 2016). In other parts of British Columbia, fossil fuel infrastructure such as pipelines have been either stopped or repeatedly stalled due to inadequate consultation with affected Indigenous communities (Boyd and Lorefice, 2018; Gitxaala Nation v. Canada, 2016; Hoberg, 2018; Tsleil-Waututh Nation v. Canada, 2018). Combined, these examples suggest that proposed land and water use designations that contravene Indigenous governance decisions are increasingly unlikely to succeed.

The likelihood of failure for activities that do not address inherent Indigenous rights and title are not limited to extractive activities (Zurba et al., 2019), but also apply to conservation initiatives. For example, the Canadian Boreal Forest Agreement between Canadian environmental groups and large timber companies represented by the Forest Products Association of Canada (FPAC) resulted in the voluntary suspension of approved logging activities on approximately 29 million hectares of boreal forest. However, this suspension is not legally binding and these areas have yet to be designated as formal protected areas owing to opposition by Indigenous nations who were excluded from the agreement and who remain opposed to privately negotiated land use outcomes being imposed across their territories (Fuss et al., 2018; Murray et al., 2015; Smith, 2015). The "East Arm National Park" proposed by the federal government in 1969 ultimately failed because it lacked consent of the Łutsël K'e Dene First Nation (Parks Canada, 2018a). Indigenous groups have similarly opposed Ontario's Far North Act on the

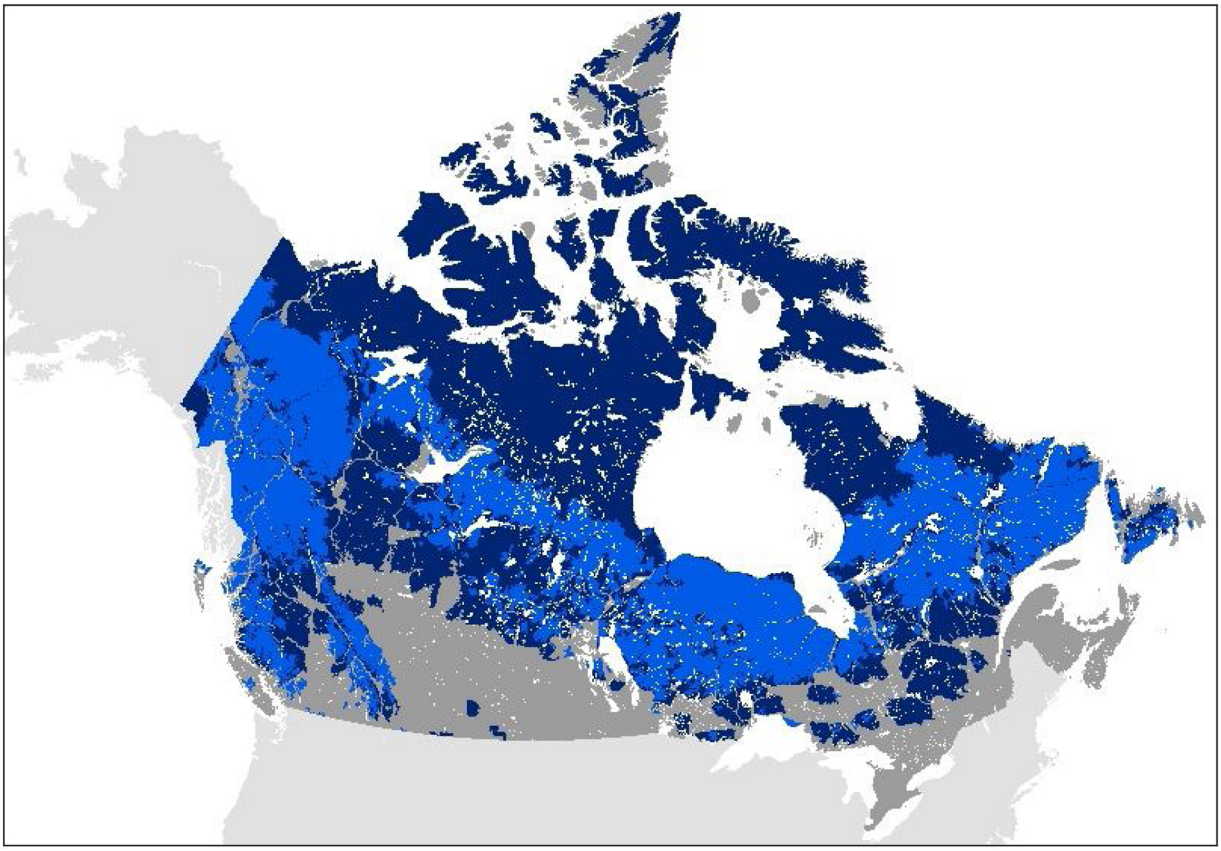

Fig. 1. Intact ecological areas in Canada, as described in the "last of the wild" dataset (Watson et al., 2018b; dark blue), and Intact Forest Layer (Potapov et al., 2017; light blue). Note that the 'last of the wild' layer only considered areas with 10,000 km^2 of contiguous land area as candidates for 'wilderness', which excludes islands in the Arctic and elsewhere that might otherwise be considered intact. Light grey areas represent land beyond Canada's borders. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

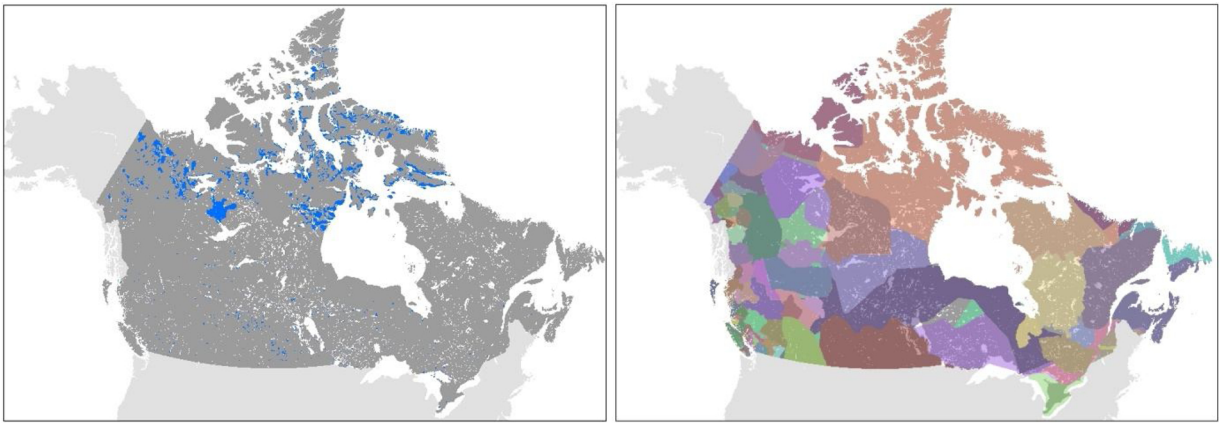

Fig. 2. State-recognized Indigenous lands in Canada (left), *vs.* Indigenous territories as described at Native-land.ca (right). State-recognized lands are derived from "Aboriginal Lands of Canada Legislative Boundaries" dataset and include reserves, land claim settlement lands, and Indian Lands. Territories from native-land.ca represent 'traditional territories', including overlap areas that fall within the territorial boundaries of more than one nation, with each territory appearing as a different colour. Disclaimer from native-land.ca: "This map does not represent or intend to represent official or legal boundaries of any Indigenous nations. To learn about definitive boundaries, contact the nations in question. Also, this map is not perfect – it is a work in progress with tons of contributions from the community." Visit native-land.ca for the most up-to-date version. Light grey areas represent land beyond Canada's borders.

grounds of inadequate consultation and concerns that it undermines inherent Treaty and Indigenous rights, though a number of large new protected areas have been established as an outcome of community land use planning under the legislation (Gardner et al., 2012; Wilkinson and Schulz, 2012). Whereas some of these examples have led to advancements in biodiversity protections, all have been mired in controversy and unnecessary conflict between conservationists and Indigenous Peoples, limiting their effectiveness in achieving benefits for biodiversity and Indigenous Peoples alike (Côté and Mitchell, 2018; Fuss et al., 2018).

The increasing recognition of underlying rights, title, and responsibility of Indigenous Peoples, and the recent examples of federal and provincial land use decisions stymied due to lack of addressing these, highlight that conservation of the scale needed moving forward will be

all but impossible without free, prior, and informed consent of Indigenous Peoples. Notably, however, recognizing and respecting the inherent rights, title, and responsibilities of Indigenous Peoples are minima. True reconciliation must include Indigenous leadership in land and sea decision-making processes (Zurba et al., 2019). Moreover, supporting the co-management and co-governance of Indigenous communities seeking to protect areas could in turn support their agency and the resurgence of practices that have supported sustained interactions between people and places for millennia.

3. Potential scale of conservation benefits of resurgent Indigenous-led governance

The scale of Indigenous territories across the country (Fig. 2) hints at the scale across which the conservation benefits of resurgent Indigenous-led governance could occur. Evidence of this potential has already borne out in substantial gains in conserved area coverage where Indigenous-led conservation was either not inhibited, or was supported, by state-level governments. Whereas many of these gains are not well known and are not currently described in the literature, some notable documented examples include the newly created 14,250 km^2 Edéhzhíe Dehcho Indigenous Protected Area in the Northwest Territories (Courtois, 2018; Galloway, 2018); the 5,000 km^2 Wemindji Cree Nation-led Paakumshumwaau-Maatuskaau biodiversity reserve in Northern Quebec (Mulrennan et al., 2012); the 29,040 km^2 Anishnaabeg-led Pimachiowin Aki in boreal ecosystems along the Manitoba-Ontario border, recognized in 2018 as a UNESCO World Heritage Site (Moola and Roth, 2018); the 14,000 km^2 Thaidene Nëné National Park Reserve in the East Arm area of Great Slake Lake, established by the Łutsël K'e Dene First Nation, Government of Northwest Territories, Parks Canada, Northwest Territory Métis Nation, and other Indigenous groups (Łutsël K'e Dene First Nation, 2019; Parks Canada, 2017); and the 64,000 km^2 Great Bear Rainforest region in coastal British Columbia, which includes 4,710 km^2 of parks and protected areas and 15,000 km^2 of conservancies (British Columbia Government, 2016), a land-use designation that excludes industrial extraction while explicitly allowing for continued cultural use by local peoples (Low and Shaw, 2011; Stronghill et al., 2015; Turner and Bitonti, 2011). In each of these, Indigenous nations and partners collaborated to protect vast landscapes from industrial activities while supporting use by local residents (Curran, 2017; Parks Canada, 2018a). In the marine and coastal realm, the 3,400 km^2 Gwaii Haanas National Marine Conservation Area and 6,131 km^2 SGaan Kinghlas – Bowie Seamount Marine Protected Area, protected in a collaboration between the Canadian and Haida governments, are among the largest marine protected areas of the Canadian Pacific Coast. More recently, the newly agreed-upon 109,000 km^2 Tallurutiup Imanga in Nunavut, planned in collaboration with the Governments of Canada, Nunavut, and the Qikiqtani Inuit Association, will be the largest protected area in Canada (Parks Canada, 2018b).

Indigenous governments and partnering organizations are proposing or implementing many additional Indigenous-led conservation areas. For example, the Moose Cree First Nation has proposed a Tribal Park that, if established, would protect over 6,600 km^2 of habitat for threatened species such as boreal caribou (Badelt, 2018). The Xeni Gwet'in and Yunesit'in (Tsilhqot'in) First Nations are establishing the 3,200 km^2 Nexwagwez?an – Dasiqox Tribal Park (Bhattacharyya and Dasiqox Tribal Park staff, 2018). Labrador Inuit have developed the Imappivut Marine Plan to manage and protect their interests in coastal and marine areas of Labrador covering 48,690 km^2 (Nunatsiavut Government, 2019). The potential for Indigenous-led conservation is not limited to remote or ecologically intact regions. For example, the Doig River First Nation has set aside over 900 km^2 of their territory to establish K'ih tsaa?dze Tribal Park in the heart of one of the largest natural gas areas in North America, where 67% of the region has already degraded by industrial development (Lee and Hanneman, 2013; Moola and Roth, 2018). Recent and ongoing Indigenous-led protections highlight the nascent potential for rapid conserved area expansion by supporting Indigenous-led governance.

Although the goals of Indigenous-led governance of lands and seas might be largely place-based, with the intent of stewarding specific areas or resources of importance to specific Indigenous nations, these new or planned conservation areas could also contribute significantly towards Canada's terrestrial and marine targets for expanded protection (Moola and Roth, 2018), and post-2020 targets, provided this is also a compatible goal for the relevant Indigenous nations (Zurba et al., 2019). Notably, an approach that explicitly supports Indigenous nations would also be in line with additional Aichi Strategic Goals, for example, Goal D: "Enhance the benefits to all from biodiversity and ecosystem services" and Goal E: "Enhance implementation through participatory planning, knowledge management and capacity building" (United Nations Environmental Program, 2010).

In most of the cases described above, areas for stewardship were identified first by Indigenous nations and, in some cases, eventually supported by colonial governments. Although in some cases disagreements remain over ultimate jurisdiction or governance structures (Ban and Frid, 2018; Zurba et al., 2019), collaborative approaches provide a promising alternative to top-down conservation schemes imposed by centralized governments or outside groups.

4. Potential effectiveness of resurgent Indigenous-led governance for achieving conservation benefits

Indigenous-led governance provides a powerful mechanism for achieving *effective* conservation. Shortfalls in conservation effectiveness, such as inability to protect biodiversity or prevent ecological degradation within existing parks, is a global problem, in part because of limited resources and the limited ability for state agencies to monitor and enforce protections in remote regions distant from urban centres (Archibald et al., 2014; Di Minin and Toivonen, 2015; Dureuil et al., 2018; Gill et al., 2017; Jones et al., 2018; Lemieux et al., 2019; Mora et al., 2009; Schulze et al., 2018). In Canada, a combination of expansive geographies, budgetary constraints, and relative remoteness often result in an inability for federal, provincial, or territorial governments to have sufficient 'boots (or boats) on the ground' for monitoring and enforcing in ecologically intact and remote areas that cover wide expanses of the country (*e.g.* Horejsi, 2002; Archibald et al., 2014).

Indigenous communities are well-positioned to conduct monitoring and enforcement of management objectives (Sheil et al., 2015). Beyond large urban centers, ecosystems across Canada have among the lowest human population densities on the planet (Fig. 3; Center for International Earth Science Information Network, Columbia University, 2018), which can lead to a perception that they are 'unpeopled wildernesses' or hinterlands. However, these landscapes are anything but devoid of human influence: they are home to hundreds of Indigenous communities and Peoples (Fig. 3) who have lived within them and shaped, and been shaped by, them for millennia (Bird and Nimmo, 2018; Kimmerer, 2013; Kimmerer and Lake, 2001; Mathews and Turner, 2017). Across Canada, Guardian programs often formalize the role of monitoring and enforcement of stewardship and conservation, with members of Indigenous nations patroling and monitoring their territories, often the only people doing so throughout much (or all) of the year (Fig. 3; Sheil et al., 2015; Social Ventures Australia, 2016; Trousdale and Andrews, 2016). The tangible benefits of Guardian programs are already emerging. For example, Guardian work in Łutsël K'e and the Dehcho region has delivered a social return on investment (SROI) of $2.50 of social, economic, cultural, and environmental value for each $1 invested (Social Ventures Australia, 2016), while the estimated SROI for Guardian programs on British Columbia's coast ranged from 10:1 to 20:1 (Trousdale and Andrews, 2016). Similar Indigenous-led enforcement also exist in communities without officially-designated

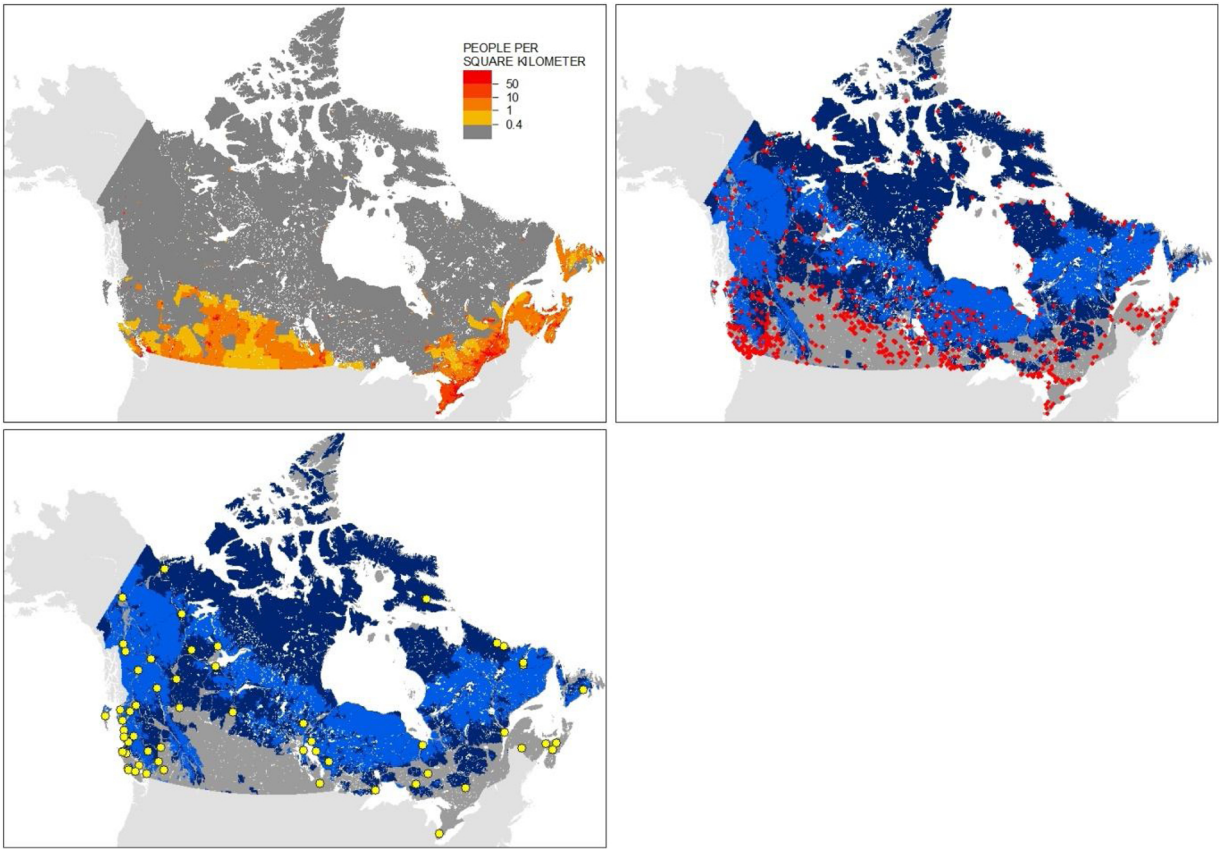

Fig. 3. Top left) Total human population density across Canada, based on 2016 census. Top right) Indigenous communities locations represented as red dots, as described by Crown-Indigenous Relations and Northern Affairs Canada's "First Nations Location" and "Inuit Community Location" datasets and Lower left) Present and emerging Guardian programs represented as yellow dots, as depicted in the "Indigenous Guardians Toolkit" (https://www.indigenousguardianstoolkit.ca/map), the "Indigenous Guardians Pilot Program Map" (https://www.canada.ca/en/environment-climate-change/services/environmental-funding/indigenous-guardians-pilot-program/map.html), and a map of Coastal Guardian Watchmen locations at Coastal First Nations (https://coastalfirstnations.ca/our-environment/programs/coastal-guardian-watchmen-support/).Underlying polygons in the middle and right panels denote intact ecosystems as described in the "last of the wild" dataset (Watson et al., 2018b; dark blue), and Intact Forest Layer (Potapov et al., 2017; light blue). Light grey areas represent land beyond Canada's borders. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

(and named) Guardian programs, though their presence and effectiveness are not always obvious to outside actors (Sheil et al., 2015).

Indigenous peoples are also often ideally suited to enact stewardship of lands and seas. Across the hundreds of cultures and Indigenous nations in Canada, Peoples generally have in-depth knowledge of their particular lands and waters. Resource use and stewardship practices developed over millennia shape and sustain many of the very ecosystems that currently have high conservation value (Bird and Nimmo, 2018; Kimmerer, 2013; Kimmerer and Lake, 2001; Mathews and Turner, 2017). Knowledge of places, combined with long-standing customary laws and place-based values that characterize these stewardship systems, epitomizes the adaptive, place-based relationships increasingly advocated for in natural resource management (Artelle et al., 2018; Westgate et al., 2013; Zurba and Berkes, 2014). Some contemporary challenges might be novel or occur at scales broader than the typical focus of place-based stewardship operates, for example, plastic pollution, invasive species, and global climate change (Hobbs et al., 2009). These suggest that new tools and approaches are needed. However, novel challenges do not negate the importance of conservation and stewardship being driven by people with rights and title to specific places. Moreover, people with close knowledge of, and connection to, lands and seas might be well equipped to not only observe novel changes to these ecosystems but to also develop novel ways of addressing them (Stephenson and Moller, 2009; Turner and Spalding, 2013).

Contemporary manifestations of Indigenous stewardship approaches provide tangible examples of how the shift towards a conservation model that supports resurgent Indigenous governance has already begun (Artelle et al., 2018; Bhattacharyya and Slocombe, 2017; Kimmerer, 2013). For example, nations across the Central Coast of British Columbia have developed marine use plans based on Indigenous knowledge, quantitative ecological data, and socio-economic data (Ban et al., 2014; Central Coast Indigenous Resource Alliance, 2012). They harmonized their plans, creating the Central Coast First Nations Marine Use Plan, which, if implemented with the recommended levels of protection, would achieve many of the best practices identified in the literature and would substantially outperform the existing federal Marine Protected Areas (MPA) network (Ban et al., 2014), parts of which have been criticized for providing limited protections (Lemieux et al., 2019). Encouragingly, this plan has been used to inform the creation of the region's Marine Planning Partnership (MaPP), a collaborative marine planning process between nations and the Province of British Columbia. The MPA planning process for achieving Canada's Target 1 for marine areas in the region in turn builds on the MaPP process, though ongoing uncertainties remain, such as the ultimate delineation of jurisdiction for these areas once implemented (Ban and Frid, 2018).

Although investigations are relatively rare, there is already encouraging evidence of contemporary Indigenous-led conservation's effectiveness. For example, biodiversity is often higher or equal in (state-recognized) Indigenous lands than state-led parks in Canada (Schuster et al., 2019) and beyond (Nepstad et al., 2006). There is also growing international evidence that Indigenous-managed areas are at least as

effective as state-controlled protected areas in resisting deforestation and degradation from logging and other forms of land use (Carranza et al., 2014; Nolte et al., 2013; Schleicher et al., 2017; Waller and Reo, 2018). This pattern is not unique to remote or intact landscapes. For example, the 18,000 ha Six Nations of the Grand River Territory in densely populated southern Ontario contains the largest tract of remaining Carolinian Forest in Canada (Carolinian Canada Coalition, n.d.), an ecosystem which has been described as Canada's most endangered (Carolinian Canada Coalition, 2007). Approximately 50% of the Six Nations reserve is forested, compared to 24% average forest cover across the rest of southern Ontario (Carolinian Canada Coalition, n.d.; Wilson, 2008). Worldwide, it is estimated that Indigenous-led protections approximate or exceed the number and coverage of state protected areas (Kothari et al., 2014), but they are significantly underrepresented in global conserved areas databases, owing in part to lack of clarity on their definition and recognition in international conservation policy (Jonas et al., 2014). Improved systems of tracking, monitoring and accounting for the contribution of Indigenous-led conservation, *e.g.* of Community and Conserved Areas (ICCAs; https://www.iccaconsortium.org/) and Indigenous Protected and Conservation Areas (IPCAs; Parks Canada 2018), will be critical to better understand how these areas already contribute to global conservation, and to facilitate recognition and support for them from the world community (Jonas et al., 2017).

5. Supporting Indigenous resurgence: a justice imperative, not a means to an ends

Meaningfully supporting resurgent Indigenous governance requires recognizing Indigenous Peoples as authorities in their territories, not simply as stakeholders used to achieve top-down conservation targets (Zurba et al., 2019). Similarly, supporting resurgent governance ought not be simply a means to an ends for conservationists: Indigenous rights and title must be recognized as inherent and inalienable, not contingent on their compatibility with conservation targets (Witter and Satterfield, 2018).

Misalignments might sometimes exist between the land use decisions of Indigenous governments and the wishes of conservationists. However, these areas of disagreement might offer considerable potential for understanding and evolving the values guiding conservation. Conservation is at its core an ethical exercise, but the ethics of land and sea use decisions being made without the involvement of Indigenous and local Peoples has often been overlooked, often to the detriment of People and places alike (Bird and Nimmo, 2018; Witter and Satterfield, 2018). These ethical shortcomings are perhaps most blatant in 'fortress conservation' approaches, whereby people are displaced from their lands in the name of conservation (Tauli-Corpuz et al., 2018). Addressing these historic blind spots might best be accomplished by working in solidarity with Indigenous communities, supporting Indigenous leadership and agency in decision-making of lands and seas. Notably, although Indigenous and conservation objectives might sometimes not overlap, they likely align more often than not given that many of the areas prized by conservationists today have been stewarded by Indigenous Peoples for centuries to millennia. Whereas places of disagreement might provide important opportunities for conservation to evolve, places of current agreement between conservation interests and Indigenous Peoples could present considerable potential for rapidly advancing conservation and stewardship that is both effective and just (Ban et al., 2018; Gavin et al., 2018; Zurba et al., 2012).

Meaningful engagement between conservationists and Indigenous peoples might inform the evolution of additional aspects of conservation's underlying ethos. For example, there are growing divisions in the conservation community between 'new conservationists' (Kareiva and Marvier, 2012), who advocate for a shift towards conservation that benefits human well-being (often through economic means, and potentially at the cost of biodiversity), and 'old conservationists', who are concerned that a shift away from biodiversity-focused conservation could be disastrous to ecosystems worldwide (Noss et al., 2013; Soulé, 2013). Resurgent Indigenous governance of lands and seas provides more nuanced approaches that recognize that the well-being of humans is linked to the well-being of environments (and biodiversity). For example, whereas new conservationists have argued that large-scale conservation of bears and wolves is unrealistic and belies 'nostalgia' for the past (Kareiva and Marvier, 2012), this position does not acknowledge the importance these species might have for the well-being of people with whom they coexist. Supporting the resurgence of governance systems that acknowledge the deeper, reciprocal connections between well-being of people and biodiversity might provide educational opportunities for non-Indigenous conservationists to better understand the fuller scope of potential ways of interacting with place, providing insight into the false dichotomy currently suggested by an 'old' conservation's focus on biodiversity and a 'new' conservation's focus on people.

6. Opportunities for supporting resurgent Indigenous governance

We suggest some basic steps that state governments, researchers, practitioners, and funders involved in ecological stewardship and conservation might take to support ongoing resurgence of Indigenous governance. The diversity of Indigenous nations across the country suggests that approaches, models, and outcomes might vary substantially from one case to another, with a single prescription applicable across nations being impossible. However, we suggest that there are basic steps that all actors could take to avoid impeding Indigenous governance, and to guide collaborative efforts for identifying how best to support Indigenous-led efforts. In each case, supportive collaborations could strengthen the capacity and amplify voices of Indigenous thinkers, practitioners, and nations involved in the work, and avoid non-Indigenous advocates speaking on Indigenous Peoples' behalf, or taking space that would be best occupied by Indigenous practitioners themselves.

State governments can support resurgent Indigenous governance through a number of actions. For example, recognizing the rights and title of Indigenous peoples is fundamental. States could go beyond symbolic and rhetorical recognition by incorporating concepts such as Free, Prior, and Informed Consent into legal and regulatory processes (*e.g.* environmental assessment and permitting procedures for extractive resource industries), encouraging land and sea use decisions to be Indigenous-led, and advancing meaningful collaboration agreements. Citizens (Indigenous and non-) of countries with Indigenous populations can hold state governments accountable to obligations as set out by UNDRIP, and to country-level obligations such as those stipulated in Section 35 of the Canadian Constitution Act, as these obligations all strengthen Indigenous governance (Parks Canada, 2018a). (Re)shaping decision-making processes to better recognize Indigenous authority and values systems and to restore self-governance could be especially helpful for addressing commonly imposed impediments to resurgent stewardship. Imbuing western legal rights to non-human species and places is one example of an approach that could provide greater protections while reflecting Indigenous values systems within state-level legal system (Chapron et al., 2019; Hutchison, 2014; New Zealand Government, 2016; Ruru, 2014).

Researchers, academics, and practitioner partners can also support the resurgence of Indigenous governance systems by addressing persistent power structures that can often benefit research partners to the detriment of Indigenous nations (*e.g.* through extractive approaches to research). Decentering research and conservation practice that occurs in Indigenous territories from the academy and western worldviews could help to avoid repeating and solidifying colonial power structures that have the potential to impede resurgence of effective governance (Adams et al., 2014; Ban et al., 2018), as could encouraging collaborations that combine strengths of both Indigenous ways of knowing

and western approaches (Parks Canada, 2018a). Shifting the metrics by which the academy measures achievement could help to facilitate such changes, for example by better encouraging researchers (Indigenous and non-Indigenous) to uplift and prioritize the voices of Indigenous people. It is important to recognize that research can place a heavy burden on Indigenous communities (Inuit Tapiriit Kanatami, 2018; Simpson, 2001). Prioritizing funding and research systems that support long-term research partnerships (including funding for Indigenous partners' time, travel, participation in conferences) could support accountability and long-term commitment of collaborative partners. Gearing work towards supporting stewardship activities of Indigenous stewardship offices, for example by helping to answer focal questions identified by nations, could be a direct means of supporting resurgent governance. Researchers (Indigenous and non-Indigenous) could also work to educate the general public (including research colleagues) on the biodiversity outcomes of Indigenous-led stewardship of lands and waters, including in cases (*e.g.* sacred sites, food production sites) that do not have conservation as primary objectives (but often fit the now common description of OECMs; Jonas et al., 2017). This might also involve educating the public about the human history of ecologically intact landscapes that are often mistakenly described as 'uninhabited wildernesses', 'pristine', or other terminology that suggests a lack of human influence: although this distinction might seem semantical, such language can work to further misunderstandings about the very human past (and present) of many of the world's most cherished ecological landscapes. Relatedly, helping to educate peers and non-Indigenous people about the governance systems, stewardship approaches, value systems, and management activities that have supported people and places for millennia (Artelle et al., 2018; Brown and Brown, 2009; Kimmerer, 2013) could help bolster support for resumption or continuation of these time-honoured approaches to stewardship. Many of the on-the-ground successes of Indigenous land stewardship are not well known; supporting Indigenous voices in the telling of these stories could help to not only bolster support for the nations engaged in the work currently but also provide insight for other nations wishing to follow suit.

Funders, including colonial governments, can also support resurgent governance (Nature United, 2018). In much of Canada (and elsewhere) investments in colonial conservation will not only be unjust but also increasingly less likely to succeed, even from a purely biodiversity perspective, if lacking Indigenous support. By contrast, investments in Indigenous governance could have outsized benefits for effective and large-scale stewardship. Supporting Indigenous Guardian Programs across the country provides an example of an immediate first step for supporting on-the-ground capacity and monitoring. Complementarily, funders might support "bright spot" best cases of stewardship by supporting Indigenous communities in their work on resurgent governance, including continuation or resumption of land relationships and practices. Sharing insights from such bright spot examples could motivate similar successes elsewhere. Supporting stewardship through resurgence might involve supporting Indigenous nations in many related capacities, including activities that might seem beyond the scope of typical conservation (*e.g.* language and cultural programs) but that are central to effective place-based stewardship approaches. To facilitate increased support of Indigenous-led projects, funders might adapt their proposal, evaluation, and reporting procedures to recognize and include Indigenous ways of knowing and qualitative methods of research. For example, this might involve relationship-based methods of grant-making that avoid onerous proposal formats that might privilege western quantitative science practitioners and instead embrace formats that recognize other ways of establishing credibility.

Some promising developments have recently occurred (or are currently unfolding) in Canada that point to increased support of Indigenous-led governance. For example, federal and provincial governments have made commitments to support meaningful reconciliation and to enact the principles of UNDRIP (Bellrichard, 2019; Government of Canada, 2017). In considering how to implement the 2020 Biodiversity Goals and Targets for Canada, Canada convened an "Indigenous Circle of Experts", commissioned a report to outline how the country could support reconciliation through conservation (Parks Canada, 2018a; Zurba et al., 2019), and subsequently provided funding through the Nature Canada Challenge Grant to support work that helps to achieve Canada's Target 1 goals, including through the creation of IPCAs (Environment and Climate Change Canada, 2018a). Canada recently announced federal funding, though quite limited ($25 million dollars across all eligible Indigenous communities in Canada and across five years), to support Indigenous Guardian programs (Environment and Climate Change Canada, 2018b). Indigenous rights and title are also increasingly being explicitly acknowledged in conservation planning (Witter and Satterfield, 2018), with at least the interests (though perhaps not always the rights) of Indigenous Peoples explicitly included in the (perhaps lesser-known) Aichi targets 14 and 18, as well the text of the Convention on Biological Diversity Treaty itself (Articles 8(j) and 10(c); Jonas et al., 2017). Indigenous-led conservation areas (*e.g.* ICCAs and IPCAs), which generally confer biodiversity protection while allowing for biodiversity-compatible uses (*e.g.* harvesting of flora and fauna for sustenance, medicines; Zurba et al., 2019), are expanding rapidly. Many conservation groups (*e.g.* West Coast Environmental Law, 2018; Nature United, 2019) and funders (*e.g.* Climate and Land Use Alliance, 2018) also explicitly support resurgent Indigenous governance in the stewardship and management of their territories, while the need to partner with Indigenous communities for achieving global conservation outcomes is increasingly recognized (*e.g.* in calls for a Global Deal for Nature, Dinerstein et al., 2019). Although all of these developments are ongoing and with uncertain outcomes, many of which could potentially be altered based on political changes or other external factors, these developments all point to an increased understanding of the need for supporting Indigenous-led initiatives, providing optimism for similar advancements in the future.

7. Conclusion: Canadian example, global significance

We have focused on Canada, a country where the nascent potential for resurgent Indigenous-led governance is becoming increasingly clear, and where investment in Indigenous-led conservation has the potential for substantial and rapid benefits. But insights from here apply broadly, with Indigenous lands and seas comprising a substantial portion of the remaining ecologically-intact regions of the world (Dudley et al., 2018; Garnett et al., 2018; Rights and Resources Initiative, 2015), including the five countries (Canada, USA, Australia, Brazil, Russia; Rights and Resources Initiative, 2015) whose borders contain the majority (70%) of the world's remaining intact landscapes (Watson, 2018).

In New Zealand, Māori-led conservation work and involvement in the country-level conservation estate has led to substantial conservation in recent years, including mountains and rivers gaining legal personhood and substantial protection while still allowing for local use (Hutchison, 2014; Magallanes, 2015; New Zealand Government, 2016; Ruru, 2014). In Australia, state funding supported the rapid expansion of both Indigenous Protected Areas and Indigenous Ranger (Caring for Country) programs. Though not without some challenges (Robins and Kanowski, 2011), these programs continue to have considerable potential for both conservation and reconciliation between non-Indigenous and Indigenous Peoples (Weir et al., 2011; Zurba and Berkes, 2014) in a country whose colonial history was often similarly brutal as Canada's (Rudd, 2008).

Elsewhere, international support of Indigenous governance is acutely needed, most urgently from a human rights perspective, but also if achieving local stewardship and international biodiversity targets is desired. For example, recent political changes in Brazil have already begun to erode Indigenous rights (Phillips, 2019). This is predicted to have catastrophic human welfare and rights consequences, with attendant ecological catastrophes likely to follow: Indigenous

Peoples and reserves protect far more of the Amazon, and have rates deforestation and degradation substantially lower, than state-sanctioned parks (Nepstad et al., 2006; Schuster et al., 2019; Watson, 2018). Similar plans exist in India to "evict" millions of Indigenous Peoples from their lands, ironically under the auspices of conservation, despite the place-adapted stewardship that these people have conducted for millions of years (Thekaekara, 2019)

Governance systems across the world are as diverse as the people and places they occur within. Some countries lack the constitutional and legal imperatives of Canada to respect Indigenous rights and title, while others lack the large expanses of lands and seas inhabited primarily by Indigenous Peoples. These and other differences suggest that there is no one-size-fits-all approach to bringing about socially just and effective land and sea decision-making. In many cases, international support might be needed to breathe life into, and ensure adherence to, requirements such as those highlighted in UNDRIP (UN General Assembly, 2007). More broadly, a resurgence of Indigenous governance systems might benefit not only the protection of Indigenous communities, lands, and seas, but also serve as a model for evolved conservation elsewhere by exemplifying time-honoured ways of interacting with environments that support people and places alike.

As humanity grapples with widespread ecological degradation and biodiversity loss, it is laudable that international targets and commitments are being made, although implementation is proving difficult. Mechanisms that support Indigenous-led governance might provide outsize benefits for meeting conservation targets effectively, and in a way that supports the well-being of Peoples historically disadvantaged by ecological degradation and protection efforts alike. Ensuring that Indigenous involvement is front and center in the next global conservation agreement for post-2020 objectives would be a powerful means of advancing resurgent Indigenous-led governance as not only a legal and ethical imperative, but potentially also as a highly effective means of advancing conservation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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