WATERSHED FUTURES
INITIATIVE

January 30, 2024

The Honourable Nathan Cullen,
Minister of Water, Land, and Resource Stewardship
biodiversity.ecosystemhealth@gov.bc.ca

Dear Minister Cullen,

Subject: Draft Biodiversity and Ecosystem Health Framework consultation

Thank you for the opportunity to comment on the draft BC Biodiversity and Ecosystem Health Framework ("the framework" from hereon) published by the Province of British Columbia in November 2023. We are a group of university-affiliated researchers with expertise in salmon ecosystems and their sustainability. We appreciate that as a policy statement the framework provides a transformative vision for sustainable ecosystems and the long-term wellbeing of people in BC. Here we offer reflection and suggestions to add more detailed and concrete mandated actions.

A Salmon Lens

While we think broadly about the sustainability of BC's ecosystems, here we primarily bring a salmon lens to this input. We believe this salmon lens is particularly relevant for several reasons. First, salmon are an important indicator of the well-being of BC's ecosystems. Salmon are the ultimate integrator, whose life cycle relies on connected and healthy headwater streams, lakes, estuaries, and coastal oceans. Thus, the state of their populations can be one effective indicator of the state of BC's ecosystems. Salmon are also a hard-hitting example of how the health of BC's ecosystems is connected to the well-being of diverse BC peoples. As salmon suffer, so do people. With salmon loss comes food insecurity and unhealthier diets, lost fisheries economies, and immeasurable cultural harm to both settler peoples and to Indigenous Peoples that may view salmon as kin or their lifeblood. On the other hand, thriving salmon watersheds can support fisheries and associated economies and cultures, and also wildlife that directly rely on salmon or share their need for intact watersheds. Thus, if we can get the relationship right between BC's people, industries, and salmon ecosystems, we can get a lot right—for biodiversity, environmental justice and reconciliation, and human well-being.

The crisis is real

Watersheds and their salmon have been pushed past their limits by land-use activities, fisheries, and climate change. Pacific salmon fisheries support 12,400 full-time jobs, generate

over $850 million in GDP annually, and provide healthy food for people, including to more than 196 salmon-reliant Indigenous groups in Canada. Fisheries and economies rely on remarkable Pacific salmon biodiversity spanning five species and more than 460 genetically distinct populations. However, Canadian Pacific salmon fisheries have been decimated over the last several decades—catches decreased by over 80% in some species, commercial license holders decreased from 4,500 to less than 2,000, and 50% of on-reserve BC First Nations recently reported food insecurity.

More than a hundred years of cumulative effects from human activities, including logging, mining, urban development, agriculture, and dams, have driven many BC watersheds to states that fail to support thriving salmon populations or meet the needs of many communities. Climate change fundamentally alters salmon ecosystems, for example by increasing water temperatures, reducing water flows in summer, increasing sedimentation through elevated wildfire incidence, and escalating flooding. In addition, these symptoms of climate change are greatly exacerbated by human activities such as logging. There is an urgent need to incorporate climate change considerations into the governance, planning, and management of all human activities.

Governance institutions have failed salmon in BC by enabling harmful human activities. Laws, regulations, and policies designed for the Canadian "western frontier" are inadequate, as the boundaries of healthy ecosystems have clearly been exceeded. Salmon ecosystems have suffered because of ineffective regulations and have slipped through jurisdictional gaps between the provincial and federal governments. The many and varied salmon watershed ecosystems along the coast and within the interior of BC face different threats and have been degraded to different degrees, but they are united in their need to reach healthy states that provide a sustainable future for salmon and people.

Biodiversity and ecosystem health for salmon and people

The framework is terrestrial in focus and makes only brief mention of aquatic ecosystems, despite the province's responsibility for them and their immense importance to the people of BC. Here we describe areas where the draft framework can be strengthened so that the final version incorporates factors important to salmon watershed ecosystems and the people that rely on them.

Cumulative effects

The framework represents an impressive statement of a necessary paradigm shift in BC society's relationship with nature to prioritize ecosystem health. The framework recognizes that in the face of climate change and ecosystem degradation, ensuring the wellbeing of BC residents requires a transformation in priorities. The framework also acknowledges the need to

manage ecosystems in recognition of cumulative effects based on future desired ecosystem states that are resilient to climate change. By corollary, all planning, management, and individual development decisions must consider their incremental impacts on the prevailing states of ecosystems. The province's current cumulative effects program is too small, is missing critical data and science, and lacks legislative teeth. It is insufficient for the new Office of Biodiversity and Ecosystem Health to point to the existing cumulative effects program to provide the breadth and quality of cumulative effect assessments required by the framework.

Recommendation 1: Cumulative effects

It is essential that the province expands, strengthens, resources, and co-develops with First Nations its cumulative effects programs to deliver the cumulative effects assessments of salmon watersheds to inform environmental decision making.

Salmon ecosystem protection

To minimize the risk of further declines in salmon watershed ecosystems, the province must emphasize the need to move quickly to protect watersheds using existing governance tools while the relevant laws are being overhauled and created. The framework's emphasis on protection alongside restoration is critical, reflecting the need to address the root causes of ecosystem harm and not only seeking band-aid restoration. One approach that should be advanced quickly is supporting the ongoing creation of provincially recognized protected areas in places where it is impactful and practical. Given the challenges of restoring damaged ecosystems, the protection of intact habitats is a key priority. Ideally, the creation of these protected areas would be led by the First Nations that wish to pursue this approach. Supporting Indigenous Protected and Conserved Areas (IPCAs) offers place-based local solutions and contributes to Canada's commitment to protect 30% of its land and waters by 2030. We acknowledge that territorial overlap between First Nations with different objectives can pose a challenge to establishing IPCAs. Nonetheless, if the province is truly committed to advancing ecosystem health and reconciliation with First Nations, IPCAs support should be a key priority, and the full range of ecosystem benefits from healthy salmon systems over the long-term should be considered in their planning and evaluation.

Recommendation 2: Indigenous Protected and Conserved Areas

Emphasize in the final framework the urgency of fast-tracking the creation and provincial legal recognition of IPCAs with provincial government support for their implementation.

Sustainable and sufficient funding

Sustainable funding from government and conservation finance schemes flowing equitably to First Nations is fundamental to Nations and Indigenous agencies with an interest in enhancing their capacity to execute the functions detailed in the framework. While we appreciate the substantive investments being made in salmon in recent years, we have repeatedly heard that the provision of resources to First Nations falls short of the required level at present. Understanding the current health and trajectory of salmon ecosystems, a key component of progress towards supporting biodiversity and ecosystem health in BC, necessitates elevated and sustainable funding to support First Nations in leading these efforts. Further funding is urgently needed to enable First Nations to lead the co-development of relevant laws, plans, and management. Although the framework recognizes that "consistent capacity funding for Indigenous communities, governments and organizations will be needed to support readiness in the implementation of the Framework", the final framework must also emphasize equity and sufficiency in the provision of resources, while avoiding inefficient competition-based funding. The new "Office of Biodiversity and Ecosystem Health within the B.C. Public Service" must be established and properly funded urgently to avoid delays in implementing priority actions and to ensure that the required funding begins flowing to First Nations. Funding for the provincial public service must be increased to create sufficient capacity to implement ecosystem-based management, including filling gaps in science, planning, and monitoring.

Creating financing mechanisms to sustainably fund the resources required to implement the framework is essential to progress. The framework acknowledges that implementation will require "consistent funding" from "conservation finance, tools and sustained long-term funds", but specific details about the sources and structures of financing and funding are currently uncertain. To maximize sustainability, investment funds must be built from which distributions are used to advance ecosystem health. One pathway with promise is a trust fund for the specific needs of salmon, established as a legal entity, and funded by the provincial and federal governments and non-government organizations. The BC Watershed Security Fund in 2023, established with a $100m endowment from the province, offers an example for the creation of a legislated BC Ecosystem Health Fund. Another potential example is the model of sovereign wealth funds (e.g. the Norwegian Pension Fund model). Following these templates, funds would be endowed by the province as a foundation, with ongoing contributions from the annual budget, and additional funds sourced from the federal government, NGOs, and through conservation finance mechanisms. Funds would be invested in sustainable and ethical global assets, and returns used to fund ecosystem health and to grow the fund. The fund could act as a security blanket for ecosystems that ensure ecosystem benefits for present and future generations. Rapid large-scale provincial funding is essential to implementing the framework and concrete plans should be specified in the final framework to provide greater certainty in the timing and substance of financing mechanisms.

Recommendation 3: Funding

The province must provide a large-scale up-front endowment and ongoing contributions from the annual budget to create a legislated BC Ecosystem Health Fund that can be leveraged to attract investment from the federal government, NGOs, and novel conservation financing mechanisms with investment returns used to sustainably fund framework implementation.

Additional funding recommendations:

3.1 The final framework must specify the 'sufficient' as well as 'sustainable' distribution of funding to BC's First Nations and avoid inefficient competition processes and inequitable distribution between Nations.

Salmon system governance

The framework acknowledges and values the rights and knowledge of First Nations as core to implementing biodiversity and ecosystem health, which should be applauded. It outlines an approach to working with First Nations rooted in the Declaration on the Rights of Indigenous Peoples Act (DRIPA) and a commitment to reconciliation. For example, the process for co-developing a new law for biodiversity and ecosystem health and overhauling existing land and water laws is a positive step. Furthermore, it is a notable step towards knowledge pluralism and equality that "implementation of the Framework will entail working with Indigenous knowledge holders to uphold and support Indigenous knowledge meaningfully and respectfully". By recognizing the potential for First Nation guardians to lead monitoring and enforcement activities, the province is taking a step towards empowering, valuing, and respecting the role that First Nations must play in stewarding their territories.

The framework states the need to co-develop with First Nations a new law and to amend existing laws that affect ecosystem health "to give effect to the framework including affirming First Nation jurisdiction, governance, and stewardship practices". Furthermore, the framework states that it "provides strategic direction, setting the course for changes in legislation and current practices that are grounded in the Provincial commitment to UNDRIP". A rapid overhaul of BC's laws that influence ecosystem health through the application of DRIPA provides a route to ensuring that, at a minimum, BC's First Nations must provide their consent for all development in their territories. The requirement to seek consent provides First Nations the power to prioritize ecosystem health. The review of existing laws that affect salmon ecosystems provides the opportunity to begin disentangling colonial regimes and institutions that deprive

First Nations in BC of their rights, including stewarding their territories. To achieve this, the new and overhauled laws must create the legal structures for the province to enter local co-governance arrangements that recognize Indigenous law.

The framework acknowledges the need to take a whole-of-government approach to prioritizing biodiversity and ecosystem health. A whole-of-government approach reflects the need to overcome intra-province silos that exist between ministries and the final framework should detail how this will be achieved. The framework neglects to note the importance of local government centers of power, which affect salmon ecosystems through control of impactful local decisions such as urban and residential development and planning and waste management. The creation of the new biodiversity and ecosystem health law must cut across all levels of regulations and governance so that salmon do not continue to slip through jurisdictional cracks. For example, the minimum would be the requirement that ecosystem health be the top priority in every relevant minister's mandate letter and that laws delegating power from the province to local government pass down the prioritization of biodiversity and ecosystem health. In addition, the final framework must state and address the challenge of shared responsibility for salmon across jurisdictions. In particular, the framework should detail how the province will work with Canada to ensure that both governments take responsibility for salmon freshwater, estuary, and nearshore ecosystem health while keeping to the province's prioritization of ecosystem health. By corollary, this requires the Department of Fisheries and Oceans Canada to also prioritize salmon watershed ecosystem health among the ministry's many mandates.

The framework must describe how transformation of the BC governance system will ensure prioritization of biodiversity and ecosystem health. Ensuring governance institutions have the necessary power is essential to ensure that government ministries and agencies execute their legal requirements and that new and amended laws are legally robust and have 'teeth'. The introduction of an independent BC ecosystem health regulator, if created by statute and empowered to require government decision-making in line with ecosystem-related legislation, would hold governments to account by monitoring decisions and processes and ensuring that the provincial government does indeed prioritize ecosystem health.

Reducing existing provincial and federal bureaucratic and regulatory obstacles to advancing the understanding of ecosystem health is also urgently required. For example, a recent research study involving some of the authors of this letter was delayed by about a year because of difficulties securing research permits, despite being funded by the same agency responsible for granting the required permits. The study seeks to understand how Indigenous fishing methods affect fish health and fisheries sustainability in the context of climate change. Identifying and removing barriers to research and monitoring (e.g. the timely provision of licenses and permissions for research carried out by academic, First Nation and NGO institutions) is vital for improving our understanding and quantification of ecosystem health.

Recommendation 4: Governance

The creation of a new ecosystem health law and the overhaul of existing laws affecting ecosystems in alignment with DRIPA should, at a minimum, introduce the requirement that development in First Nations territories can only proceed with their consent.

Additional governance recommendations:

4.1 Laws that delegate regulation from the province to local governments should be included in the overhaul of laws affecting ecosystems to ensure that local governments also prioritize ecosystem health.

4.2 The prioritization of biodiversity and ecosystem health should be emphasized in the mandate letters of BC Ministers that have control over ecosystem health.

4.3 The province should enter a legal arrangement with the federal government (DFO) that prioritizes salmon watershed ecosystem health and defines the governance of how shared responsibility for salmon watershed ecosystem health will function.

4.4 New legislation should be introduced to create an independent BC ecosystem health regulator empowered to hold the provincial government to account over the performance of the suite of legislation affecting ecosystem health including the new ecosystem health law.

4.5 The province must work with the federal government, First Nations, academia, and NGOs to identify and eradicate bureaucratic and regulatory barriers to researching and monitoring ecosystem health.

Minimum salmon ecosystem health

Ecosystem health is not absolute, but relative, and as such should be considered relative to a reference state, or baseline. For salmon ecosystems, we argue that this reference state should be the pre-colonial contact ecosystem health, as it existed under sustainable Indigenous stewardship, and adjusted for climate change. A healthy salmon ecosystem can be defined as a connected and functioning set of sub-ecosystems (e.g. forest, freshwater, estuary) that support climate change-adjusted reference baseline abundance and diversity of trees, plants, invertebrates, salmon, and mammal diversity with connected benefits to humans. Indigenous knowledge, values, and worldviews should contribute to the framework's final definition of ecosystem health, and it is critical that the province listen to, understand, respect, and formally

incorporate First Nations' accounts and Indigenous knowledge of historic baseline salmon ecosystem health.

There remains a need, through local co-governance, to define a vision of salmon watershed ecosystems within healthy boundaries. We feel that a reference-level definition of salmon watershed health is more helpful than one based on the precipice of salmon extinction, which is arguably the current management target, and is a dangerous policy that exposes salmon systems to a high likelihood of genetically unique salmon population extinctions, especially considering climate change. Given the diversity of BC's watersheds and rightsholders, we acknowledge that having different standards for different regions might be beneficial. For example, one option is to have a BC-wide enforceable minimum state of ecosystem health, but also have processes that enable local rightsholders to define more stringent restrictions of industry activities if they wish to prioritize healthier ecosystems. The simple question of "how much is too much harm to an ecosystem?" has not been clearly asked or answered by regulators or legislation nor has it been defined by the province. Without this clear limit, BC ecosystems will likely continue to be progressively degraded.

Recommendation 5: Minimum ecosystem health

The new ecosystem health law and overhauled laws must include a definition of a healthy ecosystem, must define a minimum state of ecosystem health using pre-colonial baselines for separately defined ecosystems (including salmon watersheds), and must make these standards legally enforceable.

Equity

The framework states that "analysis and policy choices" must be made to bring the strategic framework to life. Inevitably, these choices affect outcomes for different groups within BC in different ways, and the framework recognizes that to be successful the choices must be equitable and just. For example, the framework states that the choices made must ensure "intergenerational equity" and a transition that is "a just one that does not unfairly impact certain sectors or communities". Ensuring an equitable transition requires that the framework consider the 'what' of equity, which consists of three aspects: procedural (fairness of recognition and participation in political processes that influence outcomes for individuals and groups); distributional (fairness of the decision-making rules and associated distribution of

benefits and costs); and contextual (the status of inequality at the outset)[1]. These dimensions provide a useful way to think about the specific equity goals the framework should have and how improved equity from ecosystem benefits can be achieved.

Equity considers people's contexts, circumstances, and needs, and does not infer equality. It is critical to recognize the contextual inequity of BC salmon ecosystems, including the historical colonial, political, and economic forces and policies that have resulted in procedural and distributional inequity for First Nations. Achieving distributional equity for First Nations from the Province's transition to prioritizing ecosystem health requires addressing the contextual inequity of First Nations in BC and working with individual Nations to define what distributional equity means to them. It is critical that the final version of the framework overtly and transparently recognizes the contextual inequity of First Nations in BC, and states specific and measurable goals for realizing procedural and distributional equity that ensure First Nations receive an equitable share of ecosystem benefits.

The framework seeks to achieve procedural equity by stating that laws should "be co-developed with First Nations" and through the province working "in partnership with First Nations to advance territorial planning, which includes land use planning, to inform land use decisions that can support healthy ecosystems and biodiversity." While First Nations' expectations and requirements of procedural equity are their own to define, we suggest that the framework should truly recognize and affirm First Nations' rights to govern their territories and mandate that the new law establish, at minimum, ecosystem co-governance between the province and First Nations, such that First Nations have a leading role and equal power, and therefore veto power and decision-making authority. Ecosystem co-governance should involve no less than power-sharing to plan, manage, regulate, monitor, and enforce human activities and to research and monitor ecosystem health and benefits. In addition, the province should ensure that the new and overhauled laws facilitate, alongside Western-produced science, the equal respect, value, and use of Indigenous knowledge (traditional knowledge including governance and laws, local ecological knowledge, and Indigenous-produced science) with the guidance of the Nations, while also following the principles of OCAP® (Ownership, Control, Access, and Possession)[2]. Furthermore, the new Office of Ecosystem Health must be co-governed with First Nations. First Nations leadership in ecosystem governance would represent meaningful progress towards procedural equity and a transition away from over 100 years of Indigenous displacement from the governance and stewardship of their territories.

[1] McDermott M, Mahanty, S, Schreckenberg, K, 2013, Examining equity: A multidimensional framework for assessing equity in payments for ecosystem services, Environmental Society and Policy, 33, 416-427

[2] https://fnigc.ca/ocap-training/

Recommendation 6: Equity

The new ecosystem health law must establish the legal basis for province-to-Nation ecosystem co-governance agreements that recognize Indigenous law, mandate the use of Indigenous knowledge (in line with OCAP®), and at a minimum require power-sharing to plan and monitor industrial and development activities and enforce regulations.

Additional equity recommendations:

6.1 The final framework should clearly state goals for procedural and distributional equity, and the contextual inequity that justifies the goals.

6.2 The province must work with First Nations to define their expectations of procedural and distributional equity.

6.3 The new Office of Ecosystem Health must be established urgently and co-governed with First Nations.

Concluding remarks

The draft BC Biodiversity and Ecosystem Health Framework represents a positive policy statement and direction toward a new relationship between BC societies and ecosystems. We have provided 6 major recommendations that would improve the final framework using salmon ecosystems as a lens for ecosystem health. We would be happy to discuss our comments and recommendations to support the creation of the final framework.

Yours sincerely,

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Short biographies of author group

Dr. Nigel Sainsbury is a University Research Associate in the department of Resource and Environmental Management at Simon Fraser University and Project Director of the Watershed Futures Initiative, a BC SRIF-supported research program aiming to improve the science and management of cumulative effects in BC's salmon watersheds. Nigel is an applied environmental and conservation social scientist and geographer with expertise in connections between people and ecosystems, in particular human dimensions of natural resource management and environmental risk.

Dr. Jonathan Moore is a Professor at Simon Fraser University in the departments of Biological Sciences as well as Resource and Environmental Management and holds the Liber Ero Research Chair of Coastal Science and Management. He is an aquatic ecologist with 25 years of expertise researching on salmon and their ecosystems, from Alaska to British Columbia to California, and has published >130 peer-reviewed scientific papers on these topics. Jonathan co-leads the Watershed Future Initiative.

Dr. Sara Cannon is a postdoctoral researcher at the Centre for Indigenous Fisheries, housed within the Institute of Oceans and Fisheries in the Faculty of Science at the University of British Columbia. Sara is an aquatic community ecologist and multidisciplinary conservation scientist who has spent over a decade working with Indigenous and local communities to conduct research with and for communities.

Dr Tara Martin is a Professor of Conservation Decision Science in the Faculty of Forestry at the University of British Columbia and holds UBC's inaugural Liber Ero Chair in Conservation. Tara is a global leader in the field of conservation decision making - combining ecological data with decision science to bridge the gap between research and on-ground conservation action and policy. Tara co-leads the Watershed Futures Initiative. With >130 peer reviewed papers on cumulative effects and conservation decision making, many specific to salmon and their watersheds, Dr Martin is amongst the most highly cited authors for 2021, 2022 and 2023 globally.