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House of Commons Standing Committee on the Environment and Sustainable Development's Study of Freshwater

WWF-Canada Submission

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Introduction

In the face of the dual climate and biodiversity crisis, freshwater species are the least studied yet face the steepest decline rates. WWF-Canada's Watershed Reports, the first national assessment of the health and threats to Canada's water, found that even though 20 per cent of the world's freshwater is in Canada, data about its health isn't collected or shared on a national basis. Climate change already affects every sub-watershed in Canada, and habitat loss due to agriculture, urbanization and forestry is a significant threat in the majority of sub-watersheds. The Federal Government must help shape freshwater conservation for the 21st century by building water resilient communities, bringing water data to decision-makers and creating a culture of water stewardship across the country. Canada must be more progressive in protecting and conserving freshwater in the next decade than ever before. The goal has never been more important or more achievable.

For more than a half-century, WWF-Canada has joined forces with Canadians to conserve nature. With a focus on reversing wildlife decline and climate change, our efforts involve protecting marine and freshwater ecosystems, accelerating the transition to habitat-friendly renewable energy, supporting climate-resilient communities, ensuring a healthy future for the Arctic, and engaging Canadians in safeguarding at-risk species and rich areas of biodiversity. WWF-Canada conducts science-based actions in partnership and collaboration with communities, businesses, industry, fellow ENGOs and Indigenous groups.

WWF-Canada released the first ever comprehensive national assessment of the health and threats to freshwater. This seminal work, alongside our programs that build capacity, deliver community science and increasing the action for the impact of the health freshwater ecosystems on the ground have placed as a national freshwater leader. Through WWF-Canada's efforts we have gained years of knowledge and experience and have a deep understanding of national freshwater challenges that create barriers to local community success including healthy freshwater ecosystems, restoration needs, fish habitat and fisheries act, Navigable Waters Act, innovative technology for science and data.

Interaction and collaboration with federal departments and agencies

WWF-Canada interacts and collaborates with federal departments and agencies in several different ways.

Watershed Reports:

Most of the data used is from ECCC (Environment and Climate Change Canada). Data sources include CABIN (Canadian Aquatic Biomonitoring Network), the HYDAT database and a wide variety of water quality datasets. As there is no central repository for water quality information (as opposed to hydrometric and benthic invertebrate data), water quality data is taken from multiple sources, including



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the Environment and Canada Genie, data used for the Canadian Environmental Sustainability Indicators (CESI) and the national long-term water quality monitoring datasets recently openly released.

WWF-Canada has also consulted with Federal scientists within ECCC and Statistics Canada to help inform and advise on the conservation science and methodology that WWF-Canada has created for the Watershed Reports.

STREAM:

STREAM (Sequencing the Rivers for Environmental Assessment and Monitoring) is a multi-year multimillion-dollar partnership between WWF-Canada, ECCC's CABIN team, the University of Guelph and Living Lakes Canada. STREAM supports the community-based monitoring of benthic invertebrates by providing training and equipment to groups and communities that can use it. This exciting partnership allows community groups to do what they do best, which is monitor, and provides the standardized protocols of ECCC's CABIN program to ensure their data is scientifically sound and usable by all. STREAM is a great example of what can happen when a federal government supports and elevates community-based monitoring (CBM). Combining the expertise and resources of government, academia and the environmental not-for-profit sector allows groups like watershed organizations, First Nations, volunteer science organizations, and others to take charge and lead monitoring in their home waters. The investments in STREAM have allowed ECCC and CABIN to have a greater and more equitable impact on benthic invertebrate monitoring in Canada than if that investment were limited to the confines of the federal bureaucracy.

Community based water monitoring:

Alongside partners in the ENGO world, WWF-Canada has strongly advocated for greater support for CBM. We have had great engagement with ECCC on this, including during the 2018 Roundtable event held in Ottawa. While we know our colleagues within ECCC and other departments understand the value of volunteer science, we believe now is the time for further leadership to truly grow and elevate CBM. The 2018 Roundtable led to the creation of a set of recommendations specifically geared to the federal government on ways to elevate CBM. Now is the perfect time to address these recommendations.

Fisheries Act:

WWF-Canada provided testimony to the House of Commons Standing Committee on Fisheries and Oceans advocating for the modernization and reversal of the 2012 changes to the Fisheries Act.

Navigable Waters Act:

WWF worked with Transport Canada providing an analysis of free-flowing rivers that is now used to help determine waters that should be protected under the Navigable Waters Act. We advocated for more



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oversight of the longest wild and free-flowing rivers, as well as the Canadian Heritage Rivers, under the CNWA. Based on our recommendations, on October 4, 2019, Transport Canada officially added 25 wild and free-flowing rivers and Canadian Heritage Rivers to the List of Scheduled Waters under the CNWA. This includes six of the ten rivers we prioritized in our wild and free-flowing rivers report. WWF-Canada engaged their supporters to share feedback to Transport Canada in support of making this addition official. Almost 3,400 WWF-Canada supporters sent emails to ensure these rivers get the due diligence they deserve.

Canada Water Agency

Over the past decade, WWF has provided direction and thought leadership to the Federal Government regarding the management of freshwater at the national scale. WWF-Canada has participated in the Canada Water Agency discussions in both the Science and Data workshops and provided consultation on community-based water monitoring.

Community-based water monitoring within the Canada Water Agency

A Canada Water Agency needs a long-term vision to support CBWM. CBWM is required to ensure we have the data and science to move towards comprehensive assessment of Canada's freshwater. The Agency must both build up the efforts of CBWM in Canada and capitalize on CBWM capacity in the country to serve Federal goals of healthy freshwater for all. This comes at a time of looming international crises relating to the twin threats of the ongoing Coronavirus Pandemic, and the rapidly accelerating onset of climate impacts, which is transforming Canada's economy and natural environment.

While many levels of government monitor water, a CWA must support CBWM through three core pillars, based on the Federal Government's strengths, convening powers, scientific expertise and capacity to support this long-term vision.

- A Canada Water Agency can and should provide leadership in freshwater science including in the support of high-quality community-based monitoring.
- A Canada Water Agency can both best support CBWM programs AND be supported by CBWM efforts through the provision of impactful funding.
- The federal government has exceptional and often untapped convening powers. A Canada Water Agency needs to harness the Federal Government's convening powers to support CBWM.

Strengthen Reconciliation through Water

In order to fulfill Canada's commitment to implement the United Nations Declaration on the Rights of Indigenous Peoples, an agency-driven Canada Water Act should be codeveloped with Indigenous Nations.



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Strengthen Climate Change Response and Action

Degraded water quality from pollution (particularly from spills and agricultural run-off) and habitat loss are undermining the ecological integrity of our waters at alarming rates, reducing community resiliency and human's ability to bounce back from climate impacts. There are incredible opportunities for climate action in aquatic habitat restoration and nature-based solutions to address both the climate emergency and the biodiversity crisis in freshwater ecosystems.

Strengthen Freshwater Science and Security

WWF-Canada's Watershed Reports demonstrated the need for an ongoing, standardized national freshwater monitoring and reporting system in order to make evidence-based decisions about this valuable resource. The Federal Government can lead in this arena with renewed monitoring efforts and programs focused on collaborative and holistic approaches involving First Nations, Métis and Inuit communities, governments, academia, industry and communities. Citizen science, or community-based water monitoring, is underutilized in Canada. Focusing on a range of freshwater science partnerships (citizen science and academic) as well as modernizing access and availability of data would ensure better understanding of the impacts of climate change and enable action and response.

The health and threats assessment led by WWF-Canada, with its results illustrated below, demonstrate the results of four years of research. Launched in 2017 and updated in 2020, the framework provides broad-scale, comparative analysis and classification of current impacts and stresses on freshwater systems. The opportunity for the Agency lies in using Federal water data as a tool to analyze and communicate the health of and threats to Canada's watersheds. The Federal Government has the opportunity to show Canadians the current state of freshwater and a framework, through the Watershed Reports, to measure progress, target investment and understand and communicate freshwater issues to Canadians.

The water expertise and innovation in this country is incredible and a Water Agency can help drive reconciliation through a new Water Act. Backed by world-renowned freshwater science, there is an opportunity to draw on citizens, academics and scientists alike to address our understanding of freshwater systems, biodiversity and interactions with human landscapes. The Agency can also promote and support the hotbed of water innovation already happening in this country, such as eDNA, blockchain and remote sensing, to understand water resources and policy options.

A new Water Agency, with the right partnerships, the right cooperation and collaborations and resources, could maximize and lift the wealth of skills, knowledge and passion in this country.



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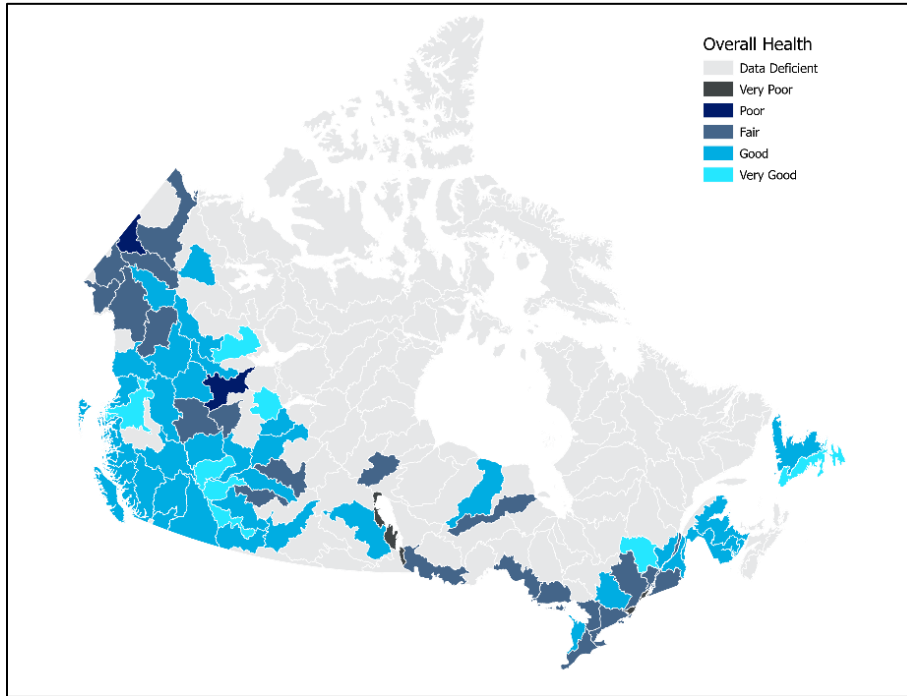


Figure 1 2020 Watershed Reports Overall health results.

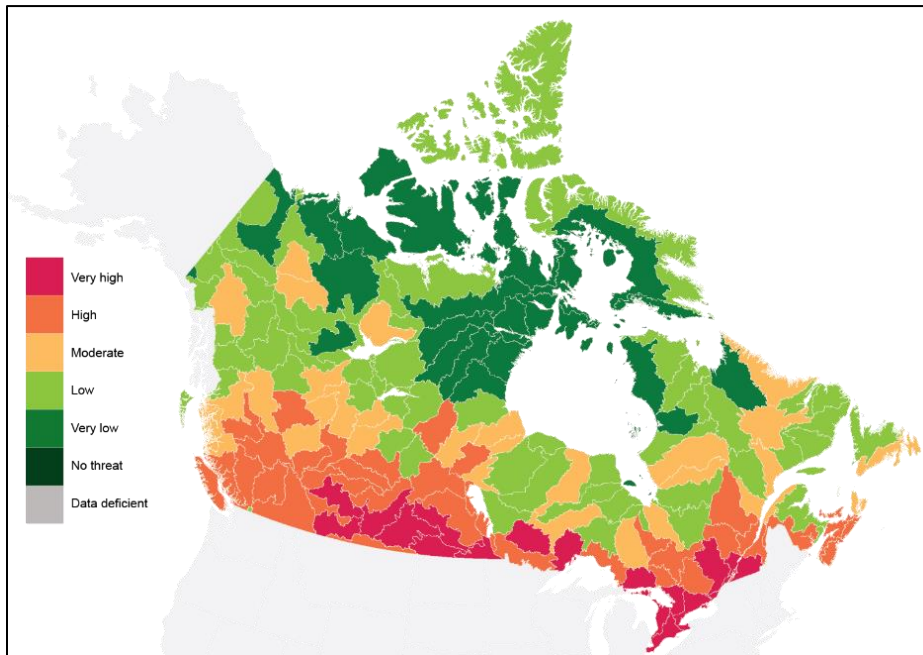


Figure 2 2017 Watershed Reports Overall threat results



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Collection of information and data

Canada lacks a comprehensive nationwide monitoring system to track both the health of our freshwater ecosystems and the impact human activity is having on watersheds. Canada needs an ongoing, standardized national freshwater monitoring and reporting system if we hope to make evidence-based decisions about this resource on a national level. Local assessments are essential for freshwater management, but water does not adhere to municipal or provincial water-management boundaries, especially as the climate changes and populations migrate in search of more suitable living conditions. As home to 20 per cent of freshwater in an increasingly hot and thirsty world, Canada has a duty to get it right.

As demonstrated by WWF-Canada's Watershed Reports, there is not sufficient data being collected and made available to get a good understanding of the state of freshwater in Canada. However, the answer isn't as simple as collecting more data. Data must be collected in a systematic and strategic way to make the best use of limited resources. Focus needs to be on creating a baseline of information where it doesn't currently exist and on understanding the impacts of human activity and climate change on freshwater habitats.

Currently, the approaches to aquatic monitoring and data collection in Canada are as varied as the country itself. The biggest barrier to a large-scale, cohesive and comprehensive data monitoring system is the sheer size and scope of freshwater systems across the country. This has led to a collage of monitoring programs from coast to coast to coast, with significantly underutilized data from CBM programs. There is, however, significant potential for use of the data collected through these community-based programs. CBM plays a critical role in community health and in the understanding of Canada's freshwater resources.

To allow for consistent, evidence-based conclusions about freshwater health at a national scale, standardized protocols for monitoring, assessment and data management are needed. Additionally, to provide the critical information needed for decision-making it is essential that data and assessments remain current and up to date.

Data sharing

Access to data is another challenge WWF-Canada faced while completing Watershed Reports. While improvements to open and accessible data have been made in the last decade, more work is still needed. Data needs to be more computer and machine readable, meaning proper QA/QC and organization protocols must be adhered to. Data that is available must also become more transparent and discoverable. Datasets that are only available in appendices of reports and publications are not as useful as they could be. The breadth of data that is available must also be improved. All data products that are funded or mandated by the federal government must be made available to the public. This



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includes tri-agency funded research (NSERC, SSHRC and CIHR) and data from environmental review processes.

To promote transparency and to allow all Canadians to better understand the state of freshwater in Canada, WWF-Canada believes the federal government should focus on providing more baseline data and information. As shown through WWF-Canada's Watershed Reports, we often just don't know how our freshwater resources are faring. Additional baseline information would allow a better understanding and forecasting of the future impacts of both human activity and climate change.

Additionally, we believe data related to specific projects and developments, like dams and mines, should be made public. An incredible amount of data is collected for the purpose of Environmental Impact Assessments, often in areas that are not regularly sampled by government or communities. Having access to this data would not only allow all Canadians to understand the impact of our activity on our environment but would help create more robust and complete watershed health assessments, which should be considered before any management or policy decisions.

WWF-Canada relies on federal government data for many of our projects and programs, including the creation of Watershed Reports. While we applaud the efforts to emphasize open data, we still experienced challenges in obtaining well-organized data making our assessment process significantly more time consuming than it would be if data were well-organized and machine-readable upon download. Issues include water quality datasets having unclear metadata, different units for certain parameters and issues with site coordination.

Additionally, as not all freshwater data is in a single database and is not easily discoverable, WWF-Canada staff spends significant time tracking down datasets that can be used for our assessments.

As identified in Watershed Reports, lack of standardization is one of the most important challenges facing watershed-scale assessments. Additional protocols for standardization of data, including in monitoring and collection, data management and sharing would provide WWF-Canada and other organizations more complete tools, resources and information to properly do our work, allowing better comparison and thus leading to more accurate results.

Federal water legislation, policies and regulations

The Federal Government has a responsibility and role in providing national oversight and standardization to freshwater health across the country. Canada lacks a comprehensive nationwide monitoring system to track both the health of our freshwater ecosystems and the impact human activity is having on watersheds. Canada needs an ongoing, standardized national freshwater monitoring and reporting system if we hope to make evidence-based decisions about this resource on a national level. While the mandate to manage freshwater is a shared jurisdiction between all levels of Government, the Federal Government is uniquely positioned to take a leadership and convening role in freshwater science, data sharing technology and in the communication of freshwater health to Canadians.



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WWF-Canada is proud of the role we have played in ensuring healthy freshwater habitat and fish stocks in the Fisheries Act, protection of wild and free-flowing rivers in the navigable waters act, thought leadership for community-based water monitoring and bringing to national attention the lack of national understanding of freshwater health.

Supplementary Information:

Included as supplementary information to this submission are WWF-Canada's submissions to the Canada Water Agency consultation process, the most recent Watershed Reports, an ECCC-commissioned WWF-Canada-written report on managing freshwater into the future and a copy of WWF-Canada's letter to Terry Duguid, Parliamentary Secretary to the Minister of Environment and Climate Change (Canada Water Agency).