



LAKE
WINNIPEG
FOUNDATION



FIVE THINGS THE FEDERAL GOVERNMENT **MUST DO** FOR LAKE WINNIPEG

Hedra Island: Photo: Paul Mutch

DECEMBER 2020

FOREWORD

Lake Winnipeg has been a lifeline for the people of all our communities who have lived on the lake for thousands of years. We have shared the good gifts of fresh fish, waterfowl and other aquatic life which have provided sustenance for our families.

Our communities have also shared the responsibility to care for the lake and all its life. As Anishinaabe, we have always tried to follow the laws and teachings given to us from our Creator on how to respect and care for all life.

For many years now, these laws and teachings have been dominated by a different set of laws, and the lake is suffering. There has been a complete lack of respect for the spirit and life of the lake.

- **Sophia Rabliauskas**

KNOWLEDGE HOLDER, POPLAR RIVER FIRST NATION

FIVE THINGS

the federal government must do for Lake Winnipeg

1. Recognize phosphorus as the cause of blue-green algal blooms on Lake Winnipeg

- 1.1 Accept the International Joint Commission's recommendation of an annual phosphorus-loading target for the Red River to combat the eutrophication of Lake Winnipeg. Request further evidence to justify the proposed nitrogen-loading target.
- 1.2 Set limits for phosphorus in sewage effluent within updated Wastewater Systems Effluent Regulations under the renewed Fisheries Act.

2. Use evidence to guarantee impact from every federal government dollar spent to reduce phosphorus loading to Lake Winnipeg

- 2.1 Renew the Lake Winnipeg Basin Program in Budget 2022. Strengthen accountability in funding arrangements to achieve program objectives.
- 2.2 Target the Lake Winnipeg Basin Program and relevant Agriculture and Agri-Food Canada funding programs to known phosphorus hotspots where phosphorus reduction is required.
- 2.3 Conduct robust, site-specific water monitoring of all federally funded phosphorus-reduction projects to quantify outcomes and evaluate program performance.

3. Support Indigenous peoples in reclaiming and restoring their relationship with water

- 3.1 Co-develop legislation with Indigenous peoples to adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples.
- 3.2 Establish and fund an Indigenous task force to ensure meaningful inclusion of Indigenous knowledge alongside science in the third and subsequent editions of the State of Lake Winnipeg report.

4. Increase enforcement of evidence-based policy and practices for freshwater health

- 4.1 Promote coordinated, well-monitored and evidence-based approaches to wetland protection across the Prairie provinces.
- 4.2 Increase and monitor enforcement of the recently renewed Fisheries Act, Impact Assessment Act and Navigation Protection Act.
- 4.3 Develop and implement an evidence-based process with provincial regulators to prevent the establishment and spread of aquatic invasive species in the Lake Winnipeg watershed.

5. Fulfill jurisdictional responsibilities through concrete action and strengthened accountability

- 5.1 Include Indigenous governments as signatories in the Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin (the MOU).
- 5.2 Develop an Intergovernmental Action Plan for Lake Winnipeg jointly with provincial and Indigenous governments, and in alignment with the principles of the MOU.
- 5.3 Recognize Indigenous jurisdiction by supporting Indigenous Protected and Conserved Areas around Lake Winnipeg that are governed by Indigenous law and affirm Indigenous rights and relationships to the land.

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LAKE WINNIPEG: a national priority

At the centre of Canada, Lake Winnipeg is the world's 10th largest freshwater lake, recognized nationally and internationally for its ecologically and culturally important habitats. While the lake is situated within the province of Manitoba, its watershed of nearly one million square kilometres draws water from four provinces, four states and hundreds of Indigenous nations.

Indigenous peoples have lived in connection with Lake Winnipeg since their ancestors walked with the receding waters of Lake Agassiz; the lake has shaped cultural and spiritual ways of life passed down through generations. Lake Winnipeg is a critical economic driver for the region, hosting the second-largest freshwater fishery in Canada and world-renowned recreation and tourism industries, providing vital livelihoods for Indigenous and non-Indigenous peoples all around the lake.

Over the past century, peoples around Lake Winnipeg have witnessed a concerning decline in the lake's health. The impacts of changing land use, waste disposal, hydro-electric power generation,¹ shoreline development and other human uses of water across the watershed have culminated over decades – causing eutrophication,² shoreline erosion, wetland loss and flooding,³ biological invasions, poor water quality, contamination, species decline,^{4,5} and habitat degradation. These effects have only worsened as climate change adds further pressure to the system.⁶

Unfortunately, political and economic incentives have frequently resulted in increased burden on the lake, accelerating wetland drainage and increasing fertilizer use, intensifying hydro-electric power demand, extending fishing seasons and delaying infrastructure upgrades required for environmental protection. Many Indigenous knowledge holders and leaders have raised concerns about declining water quality and flooding, which affect their treaty and inherent rights. These concerns have been too often ignored and denied, even as Indigenous peoples are disproportionately affected by chronic environmental impacts.

Improving the health of Lake Winnipeg is a well-established national priority, acknowledged through the policy priorities, mandate letters, and throne speeches of successive federal governments. The most recent mandate letter to the Minister of Environment and Climate Change commits to “develop further protections and take active steps to clean up” Lake Winnipeg and other large lakes across the country.⁷ The federal government recognizes the need for collaboration with the Manitoba provincial government through the Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin.⁸ Along with commitments to fund research and share resources, both governments jointly release the State of Lake Winnipeg report,⁹ a scientific overview of the lake that identifies emerging issues and gaps in knowledge.

1 Clean Environment Commission, 2015. **Lake Winnipeg Regulation Report.**

2 McCullough, G.K., Page, S.J., Hesslein, R.H., Stainton, M.P., Kling, H.J., Salki, A.G., & Barber, D.G., 2012. Hydrological forcing of a recent trophic surge in Lake Winnipeg. *Journal of Great Lakes Research.* 38, 95-105.

3 Pattison-Williams, J.K., Pomeroy, J.W., Badiou, P., & Gabor, S., 2018. Wetlands, flood control and ecosystem services in the Smith Creek drainage basin: a case study in Saskatchewan, Canada. *Ecological Economics.* 147, 36-47.

4 Committee on the Status of Endangered Wildlife in Canada, 2006. **Assessment and Update Status Report on the Lake Sturgeon (*Acipenser fulvescens*) in Canada**


5 Manitoba Sustainable Development, 2017. **A Profile of Manitoba's Commercial Fishery.**

6 Schindler, D.W., Hecky, R.E., & McCullough, G.K., 2012. The rapid eutrophication of Lake Winnipeg: Greening under global change. *Journal of Great Lakes Research.* 38, 6-13.

7 Canada, Office of the Prime Minister, 2019. **Minister of Environment and Climate Change Mandate Letter.**

8 Environment Canada & Manitoba Water Stewardship, 2010. **Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin.**

9 Canada and Manitoba, 2020. **State of Lake Winnipeg Second Edition.**



Despite past commitments, Lake Winnipeg's health continues to decline in the face of an array of complex and interrelated environmental challenges.

CALL TO ACTION

In alignment with whole-of-government priorities to advance reconciliation, increase effectiveness through evidence-based decision-making, and address the urgent challenge of climate change, the Lake Winnipeg Foundation (LWF) and the Lake Winnipeg Indigenous Collective (LWIC) together urge the federal government to fulfill its jurisdictional responsibilities to Lake Winnipeg by committing to the recommendations presented in this document.

The federal government must demonstrate strong leadership in this effort, by maintaining accountability for federal responsibilities while also ensuring effective fulfillment of authority delegated to the provinces.¹⁰ Additionally, Indigenous jurisdiction must be recognized and respected. Indigenous nations and rightsholders signed treaties with Crown governments to ensure peace and coexistence. The federal government must uphold the promises made in these treaties, redress misguided and harmful federal policies forced on Indigenous peoples, and acknowledge the value and complexity of Indigenous knowledge systems.

¹⁰ **Manitoba Natural Resources Act**, 1930.

HOW TO USE this document

This discussion paper, developed jointly by LWF and LWIC, emphasizes the importance of strengthening established programs, responding to a robust and growing evidence base, enforcing existing legislation and regulations, and following through on long-standing commitments. With the tools already in hand, we can achieve real impact for Lake Winnipeg – and for all lakes and rivers across Canada.

Effective freshwater management requires an evidence-based approach that translates into measurable impact on the ground. Throughout this discussion paper, “evidence” includes both science and Indigenous knowledge (IK), with neither system of knowledge taking precedence over the other and each being recognized for its unique strengths. We encourage processes and approaches that amplify these strengths and support ongoing knowledge generation through robust practice, respecting the traditions and methods of each knowledge system.

We emphasize that progress towards each of the five overarching recommendations presented here may be immediately demonstrated through specific, concrete actions achievable by existing federal departments under current mandates. The potential formation of a new federal water agency must not delay necessary actions that may be taken now, based on established science and Indigenous knowledge, and with respect for constitutionally affirmed treaty and Aboriginal rights.

Each of the immediate actions presented in this paper is:

- >> **concrete and tangible, with clear indicators of success;**
- >> **achievable in less than five years;**
- >> **aligned with whole-of-government federal priorities (e.g.: advancing reconciliation, renewing nation-to-nation relationships, evidence-based decision-making, climate change adaptation, effectiveness and transparency in government);**
- >> **possible under the existing federal department structure; and**
- >> **independent of the formation of a new Canada Water Agency.**

LWF and LWIC acknowledge that these actions, in and of themselves, will not resolve all the challenges facing Lake Winnipeg. They are, however, achievable and necessary first steps towards the fulfillment of each recommendation to improve the health of Lake Winnipeg.

A ROLE TO PLAY for federal departments & agencies

- Agriculture and Agri-Food Canada **AAFC**
- Canada Border Services Agency **CBSA**
- Crown-Indigenous Relations and Northern Affairs Canada **CIRNAC**
- Environment and Climate Change Canada **ECCC**
- Fisheries and Oceans Canada **DFO**
- Impact Assessment Agency of Canada **IAAC**
- Justice Canada **JUS**
- Office of the Auditor General of Canada **OAG**
- Public Safety Canada **PS**
- Transport Canada **TC**





RECOGNIZE PHOSPHORUS

as the cause of blue-green algal blooms on Lake Winnipeg

IMMEDIATE ACTIONS:

- 1.1 Accept the International Joint Commission's recommendation of an annual phosphorus-loading target for the Red River to combat the eutrophication of Lake Winnipeg. Request further evidence to justify the proposed nitrogen-loading target. **ECCC**
- 1.2 Set limits for phosphorus in sewage effluent within updated Wastewater Systems Effluent Regulations under the renewed Fisheries Act. **ECCC/DFO**

RATIONALE:

Phosphorus is the cause of blue-green algal blooms in freshwater ecosystems. An evidence-based approach to addressing the eutrophication of Lake Winnipeg must focus on phosphorus reduction.

The role of phosphorus in promoting algal growth has been demonstrated over five decades of research at the Experimental Lakes Area (ELA) in Northwestern Ontario.¹¹ Established in 1969 by Fisheries and Oceans Canada, the ELA research facility was specifically mandated to identify the causes and consequences of freshwater eutrophication,¹² prompted by bi-national concerns and questions about declining water quality in the Laurentian Great Lakes.¹³

ELA's groundbreaking, whole-ecosystem experiments identified phosphorus as the limiting factor in the growth of blue-green algal blooms.¹⁴ These studies resulted in rapid policy changes throughout the Great Lakes basin: in 1973, the federal government banned phosphate laundry detergents and required phosphorus removal through sewage treatment in municipalities around the lakes. Water quality in the Great Lakes improved demonstrably, a change touted as a global success story.¹⁵ Similar policies were adopted around the world to address freshwater eutrophication. Today, this focus on phosphorus continues to guide water-quality remediation efforts for Lake Erie.¹⁶

Despite this robust body of research conducted by federal scientists, efforts to address eutrophication in Lake Winnipeg continue to conflate the critical importance of

11 Management of ELA was transferred to the International Institute for Sustainable Development in 2014 and the research facility is now known as **IISD-Experimental Lakes Area**.

12 Schindler, D.W., 2009. A personal history of the Experimental Lakes Project. *Canadian Journal of Fisheries and Aquatic Sciences*. 66, 1837-1847.

13 International Joint Commission, 1965. **Interim Report on the Pollution of Lake Erie, Lake Ontario and the International Section of the St. Lawrence River**.

14 Schindler, D.W., Carpenter, S.R., Chapra, S.C., Hecky, R.E., & Orihel, D.M., 2016. Reducing phosphorus to curb lake eutrophication is a success. *Environmental Science and Technology*. 50, 8923-8929.

15 International Joint Commission, 2014. **A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms**.

16 Environment and Climate Change Canada & the Ontario Ministry of the Environment and Climate Change, 2018. **Canada-Ontario Lake Erie Action Plan: Partnering on Achieving Phosphorus Loading Reductions to Lake Erie from Canadian Sources**.

phosphorus reduction with concerns about the nutrient nitrogen.¹⁷ Yet ongoing experiments at ELA demonstrate that total reduction of nitrogen loading has no impact in reducing blue-green algal biomass, as these algae pull their required nitrogen directly from the atmosphere through a process called nitrogen fixation.¹⁸ Indeed, nitrogen fixation by blue-green algae contributes two and a half times as much nitrogen to Lake Winnipeg as does sewage from Winnipeg, Manitoba's capital.¹⁹

In freshwater ecosystems, phosphorus reduction alone has been shown to reverse severe eutrophication; nitrogen reduction has not. Using the eutrophication of Lake Winnipeg to justify nitrogen-reduction objectives is not evidence-based and is a costly distraction from the need to focus on phosphorus reduction to improve the lake's water quality,²⁰ particularly when investing public resources in large infrastructure projects such as sewage treatment plants.

Phosphorus released from sewage treatment plants is predominantly in soluble reactive form, meaning that it is readily available to support the growth of aquatic life, and particularly algae. Effluent containing phosphorus is thus an important contributor to eutrophication.²¹ In response to the increasing prevalence of toxic algal blooms in lakes across Canada,^{22,23} aggressive phosphorus reduction at sewage treatment plants must be an urgent national policy priority, realized through both infrastructure investments and regulatory updates under Canada's renewed Fisheries Act.

Aside from management of fisheries, the primary purpose of the Fisheries Act is "the conservation and protection of fish habitat, including preventing pollution."²⁴ Specifically, the act identifies as "pollution" any effluent "that contains a substance in such quantity or concentration ... as to degrade or alter ... the quality of that water." Under the act, the Wastewater Systems Effluent Regulations²⁵ set effluent quality standards that consider both acute toxicity and more complex and chronic changes to fish habitat.

While phosphorus is a nutrient critical to sustaining life, excess phosphorus in effluent is a form of pollution, as defined by the act. The significant ecosystem changes caused by eutrophication inevitably alter the composition of fish and fish habitat – even in historically productive lakes such as Lake Winnipeg. Under the renewed Fisheries Act, the Wastewater Systems Effluent Regulations must also be modernized to prescribe limits on phosphorus in effluent.

17 International Joint Commission, 2020. **Report on Nutrient Management Strategy for the Red River.**

18 Higgins, S.N., Paterson, M.J., Hecky, R.E., Schindler, D.W., Venkiteswaran, J.J., & Findlay, D.L., 2018. Biological nitrogen fixation prevents the response of a eutrophic lake to reduced loading of nitrogen: evidence from a 46-year whole-lake experiment. *Ecosystems*. 21, 1088-1100.

19 Lake Winnipeg Basin Stewardship Board, 2006. **Reducing Nutrient Loading to Lake Winnipeg and its Watershed: Our Collective Responsibility and Commitment to Action.**

20 Schindler, D.W., Hecky, R.E., & McCullough, G.K., 2012. The rapid eutrophication of Lake Winnipeg: Greening under global change. *Journal of Great Lakes Research*. 38, 6-13.

21 Jarvie, H.P., Neal, C. & Withers, P.J.A., 2006. Sewage-effluent phosphorus: A greater risk to river eutrophication than agricultural phosphorus? *Science of the Total Environment*. 360, 246-253.

22 Orihel, D.M., Bird, D.F., Brylinsky, M., Chen, H., Donald, D.B., Huang, D.Y. Giani, A., Kinniburgh, D., Kling, H., Kotak, B.G., Leavitt, P.R., Nielsen, C.C., Reedyk, S., Rooney, R.C., Watson, S.B., Zurawell, R.W., & Vinebrooke, R.D., 2012. High microcystin concentrations occur only at low nitrogen-to-phosphorus ratios in nutrient-rich Canadian lakes. *Canadian Journal of Fisheries and Aquatic Sciences*. 69, 1457-1462.

23 Pick, F.R., 2016. Blooming algae: a Canadian perspective on the rise of toxic cyanobacteria. *Canadian Journal of Fisheries and Aquatic Science*. 73, 1149-1158.

24 **Fisheries Act**, 1985.

25 **Wastewater Systems Effluent Regulations**, 2012.



USE EVIDENCE TO GUARANTEE IMPACT

from every federal government dollar spent to reduce phosphorus loading to Lake Winnipeg

IMMEDIATE ACTIONS:

- 2.1 Renew the Lake Winnipeg Basin Program in Budget 2022. Strengthen accountability in funding arrangements to achieve program objectives. **ECCC**
- 2.2 Target the Lake Winnipeg Basin Program and relevant Agriculture and Agri-Food Canada funding programs to known phosphorus hotspots where phosphorus reduction is required. **ECCC/AAFC**
- 2.3 Conduct robust, site-specific water monitoring of all federally funded phosphorus-reduction projects to quantify outcomes and evaluate program performance. **ECCC/AAFC/OAG**

RATIONALE:

Since 2008, the federal government has made dedicated financial investments for Lake Winnipeg. These investments have enabled both stakeholder-led phosphorus-reduction initiatives, and Environment and Climate Change Canada's own research, monitoring and intergovernmental relations to improve water quality in Lake Winnipeg. The current federal funding commitment, Phase 3 of the Lake Winnipeg Basin Program (LWBP), will end in March 2022.²⁶

Recognizing the health of Lake Winnipeg as a national priority which necessitates intergovernmental cooperation, the federal government must renew its financial commitment to Lake Winnipeg in Budget 2022. This renewal will support ongoing federal research and monitoring on Lake Winnipeg, and enable federal leadership in the development of adaptive management frameworks for both water quality and the lake's fisheries. The renewed LWBP must also be refined to improve funding program delivery and achieve measurable phosphorus reduction. Program priorities and funding allocations must be targeted through evidence-based decision-making. All funding recipients must be held accountable for measurable ecological outcomes achieved with public resources.

Federal evaluation of Phase 2 (2012-2017) of the LWBP identified clear opportunities to improve the program.²⁷ The evaluation notes that "there is widespread agreement ... that the ecological integrity of the lake and basin has not improved significantly based on efforts to date" and that, specifically, "more evidence is required to identify actions that will have the greatest impact" in reducing phosphorus and improving water quality. The evaluation recommends that the program be redesigned to ensure that LWBP-funded stakeholder projects "make a reasonable contribution to achieving final outcomes." As external funding agreements with stakeholders are the program's sole method of achieving measurable phosphorus reduction, these agreements must include requirements for robust phosphorus monitoring and strong accountability measures to ensure effective delivery of proposed outcomes.

26 Environment and Climate Change Canada, 2020. **Lake Winnipeg Basin Program.**

27 Environment and Climate Change Canada, Audit and Evaluation Branch, 2017. **Evaluation of the Lake Winnipeg Basin Initiative: Final Report.**

Over the last two decades, much emphasis has been placed on the size and multi-jurisdictional nature of the Lake Winnipeg watershed.²⁸ Too often, unfortunately, the scale of the watershed serves as an excuse for inaction or as an explanation for ineffective efforts. In reality, efforts to address Lake Winnipeg's algal blooms have simply lacked the relevant and necessary evidence to ensure their success. With stakeholders stepping in to fill this evidence gap, the federal government must now make use of all available and relevant data to ensure wise use of public resources in addressing the eutrophication of Lake Winnipeg.

The Lake Winnipeg Community-Based Monitoring Network (LWCBMN) is a collaborative long-term monitoring program designed specifically to identify localized phosphorus hotspots within the larger Lake Winnipeg watershed.²⁹ This program builds on existing Environment and Climate Change Canada research³⁰ to create a robust, continuous data set that enables geographic targeting of phosphorus-reduction efforts. With data shared openly through Lake Winnipeg DataStream,³¹ LWCBMN provides the evidence base necessary to ensure federally funded projects generate results and make effective use of public resources.

Leveraging the expertise of the Lake Winnipeg Foundation's Science Advisory Council and the commitment of volunteer citizen scientists, LWCBMN collects frequent water samples in multiple sub-watersheds. Sampling efforts are responsive to snowmelt, spring floods and summer storms, when heavy runoff flushes phosphorus off the land. Frequent, responsive and dispersed sampling is necessary to accurately characterize phosphorus exports, and will become increasingly important with a changing climate. Increased snowmelt, frequent flooding and more severe summer storms are expected to increase phosphorus loading, while warming water temperatures will accelerate algal growth. As a nimble, spatially distributed and cost-effective monitoring network, LWCBMN is a critical source of data for modern water management in the Lake Winnipeg basin. Phase 4 of the renewed Lake Winnipeg Basin Program must recognize the value of LWCBMN data, and use these data to allocate phosphorus-reduction funding to known phosphorus hotspots.

Once funded, Lake Winnipeg Basin Program project proponents must be held accountable for proposed project outcomes and must demonstrate measurable contributions to the larger program objective of reducing phosphorus loads to Lake Winnipeg. Work plans for all phosphorus-reduction projects must include the necessary expertise and resources to conduct scientifically defensible, on-site water monitoring to evaluate project performance. Data must be shared publicly upon project completion and must be reviewed by both ECCC researchers, and external stakeholders and advisors. Evidence gathered through monitoring and evaluation of funded projects must be used to inform future funding allocations through the Lake Winnipeg Basin Program and other relevant federal funding programs, especially those delivered by Agriculture and Agri-Food Canada and arising from the Canadian Agricultural Partnership.³²

28 Environment and Climate Change Canada & Manitoba Agriculture and Resource Development, 2020. **State of Lake Winnipeg, 2nd Edition.**

29 Lake Winnipeg Foundation, 2019. **Lake Winnipeg Community-Based Monitoring Network Report.**

30 Rattan, K.J., Corriveau, J.C., Brua, R.B., Culp, J.M., Yates, A.G., & Chambers, P.A., 2017. Quantifying seasonal variation in total phosphorus and nitrogen from prairie streams in the Red River Basin, Manitoba, Canada. *Science of the Total Environment*. 575, 649-659.

31 The Gordon Foundation, 2020. **Lake Winnipeg DataStream.**

32 Agriculture and Agri-Food Canada, 2020. **Canadian Agricultural Partnership.**



SUPPORT INDIGENOUS PEOPLES

in reclaiming and restoring their relationship with water

IMMEDIATE ACTIONS:

- 3.1 Co-develop legislation with Indigenous peoples to adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples. **JUS/CIRNAC**
- 3.2 Establish and fund an Indigenous task force to ensure meaningful inclusion of Indigenous knowledge alongside science in the third and subsequent editions of the State of Lake Winnipeg report. **ECCC**

RATIONALE:

Indigenous elders around Lake Winnipeg describe water rights as responsibilities, based in reciprocal relationships with water and all living beings. Indigenous peoples throughout the watershed maintain and assert their rights to water, and consider these rights to be indivisible and unsurrenderable. In turn, these rights are recognized and affirmed in Section 35 of the Charter of Rights and Freedoms,³³ and in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).³⁴

After 25 years of development, UNDRIP was ratified by the United Nations in 2007. Canada, along with three other nations,³⁵ initially resisted the declaration, but expressed support in 2010. Yet the federal government has been slow to implement UNDRIP in a meaningful way. In 2019, the Canadian senate stalled private member's Bill C-262,³⁶ which then failed to pass the final stage of the legislative process. The federal government has now brought forward new legislation to implement UNDRIP, through Bill C-15.³⁷ In the spirit of UNDRIP, this legislation must be co-developed with Indigenous peoples.³⁸

UNDRIP is unequivocal in recognizing the self-determination of Indigenous peoples' rights and their relationship to the land. Indigenous peoples have the right "to participate in decision-making matters which would affect their rights, through representatives chosen by themselves"; "to maintain ... their own means of subsistence and development"; "to maintain and strengthen their distinctive spiritual relationship with their traditionally owned ... lands, territories, waters, and coastal seas"; and "to the conservation and protection of the environment."³⁹

Indigenous peoples have lived on the shores of Lake Winnipeg since its formation, walking with the waters as they receded from the massive glacial Lake Agassiz. Generations of peoples survived by observing and listening to the land. Those

33 **Constitution Act**, 1982.

34 United Nations, 2007. **United Nations Declaration on the Rights of Indigenous Peoples**.

35 Australia (endorsed in 2009), New Zealand (endorsed in 2010) and the USA (endorsed in 2010).

36 **Bill C-262: An Act to ensure that the laws of Canada are in harmony with the United Nations Declaration on the Rights of Indigenous Peoples**.

37 **Bill C-15: An Act respecting the United Nations Declaration on the Rights of Indigenous Peoples**, 2020. See more information about the legislation: **Implementing the United Nations Declaration on the Rights of Indigenous Peoples in Canada**.

38 Office of the Prime Minister, 2019. **Minister of Crown-Indigenous Relations Mandate Letter**.

39 UNDRIP Articles 18, 20, 25 and 29, respectively.

observations developed into unique and complex systems of Indigenous knowledge (IK), passed to each successive generation through oral traditions. These traditions, rooted in survival and reciprocity, are evident in the resilience of the Anishinaabe, Dakota and Nehiyaw peoples who continue to maintain their relationships with the land and Lake Winnipeg.

As with written knowledge systems, rigorous and well-maintained processes are critical to generate, verify, and share IK. Knowledge holders' ceremonies and protocols require many years of practice and strict adherence to maintain the integrity of IK. In this way, the understanding of how to live on the land is a meticulous and deliberate act, and not an accident.

Indigenous peoples have, over hundreds of generations, developed IK specific to Lake Winnipeg. In contrast, scientific study has just barely begun in our lifetimes. While the tools of science promise specificity and precision critical in furthering our collective understanding of the lake, scientific study, as a relatively recent and centralized endeavor, is limited in temporal and spatial scope. This has left large gaps in our understanding of Lake Winnipeg's north basin and of the influence of large-scale land-use changes across the watershed over the past century.

Coupled with shifting baseline syndrome,⁴⁰ which reduces successive generations' expectations of the ecological integrity of natural systems, reliance on scientific research alone has hindered our capacity to effectively address chronic and pervasive ecological challenges. We need additional tools, systems and approaches to assess and understand change in Lake Winnipeg, an expansive and dynamic water body that has been in flux since it was formed 12,000 years ago. IK fills gaps in understanding and identifies relevant lines of inquiry for further research.⁴¹ IK relies on oral traditions that may initially be unfamiliar to western scientists and policy-makers; it cannot simply be written down without altering the context of the information. As such, Indigenous knowledge holders must be full and active participants in knowledge generation, alongside scientists and decision-makers.

Under the Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin (the MOU),⁴² Canada and Manitoba committed to a science subsidiary arrangement, which includes regular reporting on the state of the lake. Two editions of the State of Lake Winnipeg report have been published to date, each based solely in scientific research. Efforts to ensure Indigenous knowledge is included and respectfully represented in the third edition of the State of Lake Winnipeg report must begin immediately,⁴³ by assembling and resourcing an Indigenous task force directed by knowledge holders.

Just as scientists require resources to gather and synthesize the data that inform these reports, so too do knowledge holders. Science enjoys billions of dollars in funding from the federal government, with hundreds of supporting institutions and thousands of positions contributing to the development and dissemination of information to students and the broader public. We call on the federal government to begin redressing the severe lack of balance in supports provided to unique systems of knowledge, by properly resourcing Indigenous knowledge holders to freely conduct ceremonies, generate knowledge and enable intergenerational knowledge transfer, while participating in public policy processes.

40 Soga, M., & Gaston, K.J., 2018. Shifting baseline syndrome: causes, consequences, and implications. *Frontiers in Ecology and the Environment*. 16, 222–230.

41 Bartlett, C., Marshall, M. & Marshall, A., 2012. Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Sciences*. 2, 331-340.

42 Environment Canada & Manitoba Water Stewardship, 2010. **Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin.**

43 Wong, C., Ballegooyen, K., Ignace, L., Johnson, M.J., & Swanson, H., 2020. Towards reconciliation: 10 Calls to Action to natural scientists working in Canada. *FACETS*. 5, 769–783.

4

INCREASE ENFORCEMENT

of evidence-based policy and practices for freshwater health

IMMEDIATE ACTIONS:

- 4.1 Promote coordinated, well-monitored and evidence-based approaches to wetland protection across the Prairie provinces. **ECCC/PS**
- 4.2 Increase and monitor enforcement of the recently renewed Fisheries Act, Impact Assessment Act and Navigation Protection Act. **DFO/IAAC/TC**
- 4.3 Develop and implement an evidence-based process with provincial regulators to prevent the establishment and spread of aquatic invasive species in the Lake Winnipeg watershed. **DFO/CBSA**

RATIONALE:

The tributaries that flow into Lake Winnipeg cross multiple jurisdictions and Indigenous territories, creating a layered, complex legislative and regulatory framework for water management and habitat protection. While interested parties sharing an interconnected water system may not always agree, they must coexist.

Wetlands – increasingly referred to as “natural infrastructure”⁴⁴ – mitigate the effects of both climate change and landscape alteration by sequestering phosphorus and retaining water, limiting the intensity of floods, droughts and phosphorus-loading events. However, the Lake Winnipeg watershed has lost at least half of its wetlands over the past century,⁴⁵ driven by public policy that encourages each wetland to be viewed singularly, as a barrier and an economic loss.

With fewer wetlands, the entire watershed is vulnerable and cumulative effects become increasingly severe in downstream jurisdictions. This effect is apparent across the Prairies. In 2011, heavy precipitation and a lack of natural wetland infrastructure in Saskatchewan resulted in a historic flood on the Assiniboine River in Manitoba. Flood waters were diverted into Lake Manitoba and Lake St. Martin. Hundreds of kilometres downstream, the flood destroyed homes and community infrastructure, displacing mostly Indigenous peoples for eight years.⁴⁶ This disaster was the cumulative result of uncoordinated provincial water policies, yet much of the cost was passed on to the federal government through Disaster Financial Assistance Arrangements (DFAA). In 2016, the Parliamentary Budget Office (PBO) estimated that floods in the Lake Winnipeg watershed cost \$673 million annually, or about 75 per cent of the entire DFAA budget. The PBO identified “regulatory challenges of reduced enforcement and compliance”⁴⁷ as the primary driver of flood damage.

44 Stanley, M., Puzyreva, M., & Roy, D., 2019. **Advancing Natural Infrastructure in Canada: A forum report.** International Institute for Sustainable Development.

45 Cortus, B.G., Unterschultz, J.R., Jeffrey, S.R., & Boxall, P.C., 2009. The impacts of agriculture support programs on wetland retention on grain farms in the Prairie Pothole Region. *Canadian Water Resources Journal.* 34, 245-254.

46 Ahmed, T., Geebu, R. & Thompson, S., 2019. Assessing land loss from flooding in the Lake St. Martin basin in Manitoba, Canada. *Journal of Geoscience and Environment Protection.* 7, 171-180.

47 Office of the Parliamentary Budget Officer, 2016. **Estimate of the Average Annual Cost for Disaster Financial Assistance Arrangements due to Weather Events.**

While provincial governments manage wetlands across the Canadian Prairies, “wetlands are critical to federal responsibilities for maintaining the quality of the environment, migratory bird populations, inland and ocean fisheries, and international or transboundary resources such as water and wildlife.”⁴⁸ The Federal Policy on Wetland Conservation, published in 1991, advises the federal government to protect wetlands by “enhancing cooperation” and promoting “sound scientific” policy with provinces. The federal government must modernize and implement the strategies within this federal wetland policy, and hold provincial governments accountable for protecting and restoring wetlands.

The federal government must also demonstrate leadership through robust monitoring and enforcement of current national legislation and regulations designed to protect waterways. In 2019, with the passing of Bills C-68 and C-69, the Fisheries Act, Navigation Protection Act and Impact Assessment Act⁴⁹ were modernized with significant improvements, including increased participation of Indigenous peoples, and broader protections for all waterways and fish habitats. To address what had been characterized as a “deeply flawed regulatory regime and the federal government’s near-total abdication of responsibility for the protection of fish habitat over the past decade,”⁵⁰ one key enhancement was the introduction of public registries to improve transparency and enforcement of all three new acts. These registries must also serve as a tool to identify, track and mitigate cumulative effects.⁵¹

The new Fisheries Act Registry,⁵² as of Nov. 21, 2020, has not adequately demonstrated increased transparency within the Lake Winnipeg watershed: less than 10 registrations have been published across the one million square kilometres that drain into the lake.⁵³ Unfortunately, the stronger protections afforded to all fish and fish habitat through 2019 updates to the Fisheries Act may be undermined without effective enforcement. The federal government must provide resources and clear direction to enforce legislation and regulations that are critical to protecting water, fish and fish habitat.

Multiple aquatic invasive species (AIS), including zebra mussels and rainbow smelt, have become established in Lake Winnipeg, where they have the potential to alter food chains and nutrient dynamics, and undermine infrastructure and fisheries. In 2019, Canada’s Commissioner of the Environment and Sustainable Development found that both “Fisheries and Oceans Canada and the Canada Border Services Agency had not taken steps required to prevent invasive species . . . from being established in Canada’s waters despite the commitment to do so over the years.”⁵⁴ Multiple recommendations were presented to improve the federal approach to AIS prevention and mitigation, including identifying priority pathways for AIS entering Canada, clarifying roles with provincial and territorial counterparts, and investing in enforcement. The federal government must follow through on the Commissioner’s recommendations in order to address inadequacies in the current approach to AIS, and to effectively prevent the spread of existing and the establishment of new AIS in the Lake Winnipeg watershed.

48 Canada, 1991. **The Federal Policy on Wetland Conservation.**

49 **Fisheries Act**, 1985. **Navigation Protection Act**, 1985, and **Impact Assessment Act**, 2019.

50 Olszynski, M.Z.P., 2015. From ‘Badly Wrong’ to Worse: An Empirical Analysis of Canada’s New Approach to Fish Habitat Protection Laws. *Journal of Environmental Law & Practice*. 28.

51 Nowlan, L., 2016. **Habitat 2.0: A new approach to Canada’s Fisheries Act.** West Coast Environmental Law, and Forum for Leadership on Water.

52 Fisheries and Oceans Canada, 2019. **Fisheries Act Registry.**

53 This was determined through a count of all entries in the registry within the Lake Winnipeg watershed (based on “province,” “watershed,” “latitude” and “longitude” data). We found one entry in error (showing the Red River located in Ontario).

54 Office of the Auditor General of Canada, 2019. Reports of the Commissioner of the Environment and Sustainable Development to the Parliament of Canada: **Report 1—Aquatic Invasive Species.**



FULFILL JURISDICTIONAL RESPONSIBILITIES

through concrete action and strengthened accountability

IMMEDIATE ACTIONS:

- 5.1 Include Indigenous governments as signatories to the Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin (the MOU). **ECCC**
- 5.2 Develop an Intergovernmental Action Plan for Lake Winnipeg jointly with provincial and Indigenous governments, and in alignment with the principles of the MOU. **ECCC/AAFC**
- 5.3 Recognize Indigenous jurisdiction by supporting Indigenous Protected and Conserved Areas around Lake Winnipeg that are governed by Indigenous law and that affirm Indigenous rights and relationships to the land. **ECCC**

RATIONALE:

A strong foundation for intergovernmental collaboration to improve the health of Lake Winnipeg was established through the Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin (the MOU).⁵⁵ The MOU is based in the sound principles of:

- openness and transparency;
- cooperation and collaboration;
- maximizing the benefits of existing resources or mechanisms; and
- accountability for activities.

The MOU was first signed by the federal minister of the environment and the provincial minister of water stewardship in September 2010, marking a five-year commitment to cooperate and coordinate efforts to protect Lake Winnipeg and its watershed. The agreement was subsequently renewed in 2015 for another five years.

The MOU is due to be renewed again in 2020. In fulfillment of the whole-of-government federal commitment to acknowledge and strengthen nation-to-nation relationships,⁵⁶ Indigenous governments around Lake Winnipeg must be included as signatories to the MOU. This ensures that treaty and Aboriginal rights, Indigenous knowledge, and Indigenous self-determination will undergird collaborative efforts to understand and protect Lake Winnipeg.

While the MOU lays a strong foundation, it is insufficient on its own to advance evidence-based action and measurable results for Lake Winnipeg. An outcomes-focused, specific and time-bound action plan, with clear performance indicators and accountability mechanisms, is required.

55 Environment Canada & Manitoba Water Stewardship, 2010. **Canada-Manitoba Memorandum of Understanding Respecting Lake Winnipeg and the Lake Winnipeg Basin.**

56 Office of the Prime Minister, 2019. **Minister of Crown-Indigenous Relations Mandate Letter.**

In the Great Lakes region, the federal and provincial governments together developed the Canada-Ontario Lake Erie Action Plan to achieve measurable reductions in phosphorus load to the lake.⁵⁷ This action plan identifies federal and provincial departments with lead responsibilities, while also acknowledging the unique and tangible contributions provided by industry associations, municipal governments and non-governmental organizations. The Canada-Ontario Lake Erie Action Plan is:

- focused on phosphorus, the recognized cause of eutrophication;
- targeted, ensuring action is directed to priority tributaries and watersheds;
- integrated, with monitoring activities that directly inform action strategies;
- adaptive, enabling ongoing improvement as new information is gathered; and
- accountable, with clear responsibilities assigned to each partner.

Such a plan can be used as a model in the development of an Intergovernmental Action Plan for Lake Winnipeg, a critical next step in transforming the aspirational commitments of the MOU into concrete government actions that result in measurable improvements to water quality and ecosystem health.

Any action plan for Lake Winnipeg must explicitly acknowledge Indigenous jurisdiction and self-determination. The Lake Erie plan unfortunately falls short in this regard, listing Indigenous nations alongside stakeholders, rather than recognizing their inherent rights and sovereignty.

In 1996, the Report of the Royal Commission on Aboriginal Peoples (RCAP) made clear that Indigenous nations “are entitled to control matters important to their nations without intrusive interference. This authority is not something bestowed by other governments. It is inherent in their identity as peoples. But to be fully effective, their authority must be recognized by other governments.”⁵⁸

This authority may be clearly recognized in the context of Lake Winnipeg through the provision of federal resources and support for Indigenous Protected and Conserved Areas (IPCAs): “lands and waters where Indigenous governments have the primary role in protecting and conserving ecosystems through Indigenous laws, governance and knowledge systems.”⁵⁹ Recognized globally as significant contributors to ecological conservation,⁶⁰ IPCAs are critical to achieving the Canadian government’s conservation goals for terrestrial, freshwater and marine ecosystems. Flexible mechanisms for recognizing IPCAs within Canadian legal systems must be explored⁶¹, in order to ensure the necessary “rebalancing of political and economic power between Aboriginal nations and other Canadian governments.”⁶²

57 Environment and Climate Change Canada & the Ontario Ministry of the Environment and Climate Change, 2018. **Canada-Ontario Lake Erie Action Plan: Partnering on Achieving Phosphorus Loading Reductions to Lake Erie from Canadian Sources.**

58 Canada, 1996. **Report of the Royal Commission on Aboriginal Peoples.** Volume 5.

59 Indigenous Circle of Experts, 2018. **We Rise Together: Achieving Pathway to Canada Target 1 through the creation of Indigenous Protected and Conserved Areas in the spirit and practices of reconciliation.**

60 Garnett, S.T., Burgess, N.D., Fa, J.E., Fernandez-Llamazares, A., Molnar, Z., Robinson, C.J., Watson, J.E.M., Zander, K.K., Austin, B., Brondizio, E.S., Collier, N.F., Duncan, T., Ellis, E., Geyle, H., Jackson, M.V., Jonas, H., Malmer, P., McGowan, B., Sivongxay, A., & Leiper, I. 2018. A spatial overview of the global importance of Indigenous lands for conservation. *Nature Sustainability*. 1, 369-374.

61 Recommendations included in **We Rise Together.**

62 Canada, 1996. **Report of the Royal Commission on Aboriginal Peoples.** Volume 5.



About the **LAKE WINNIPEG FOUNDATION**

The Lake Winnipeg Foundation (LWF) advocates for change and coordinates action to improve the health of Lake Winnipeg, now and for future generations.

Combining the expertise of our Science Advisory Council and the commitment of our members, LWF is nationally recognized for our unique capacity to link science and action. Our goal is to ensure policy and practices informed by evidence are implemented and enforced.

LWF is the only membership-based freshwater organization in Manitoba, working collaboratively with non-profit, academic, industry and government sectors, First Nations, and the public to restore and protect our great lake. Our flagship initiative, the Lake Winnipeg Health Plan, identifies eight evidence-based actions to improve the health of Lake Winnipeg – providing a blueprint for cost-effective decision-making and long-term, evidence-based freshwater management.

About the **LAKE WINNIPEG INDIGENOUS COLLECTIVE**

The Lake Winnipeg Indigenous Collective works collaboratively to seek healthy and equitable solutions for our waters and people from the diverse communities who have a relationship with our sacred great lake.

The collective was established in 2014 by members of 14 First Nations in partnership with the Lake Winnipeg Foundation. Our vision is that our sacred waters are healthy, traditional livelihoods are restored and Indigenous perspectives are influential in leading the protection and sustainability of Lake Winnipeg as a source of life for all future generations.

Our Creation stories speak of how our people were placed on Mother Earth by the Creator. Our ancestors have inhabited the Lake Winnipeg basin since time immemorial, long before the current political boundaries were drawn. Our spiritual and cultural connections to our Mother Earth are evident by our willingness to embrace the responsibility of protecting and preserving the lands and waters.

AFTERWORD

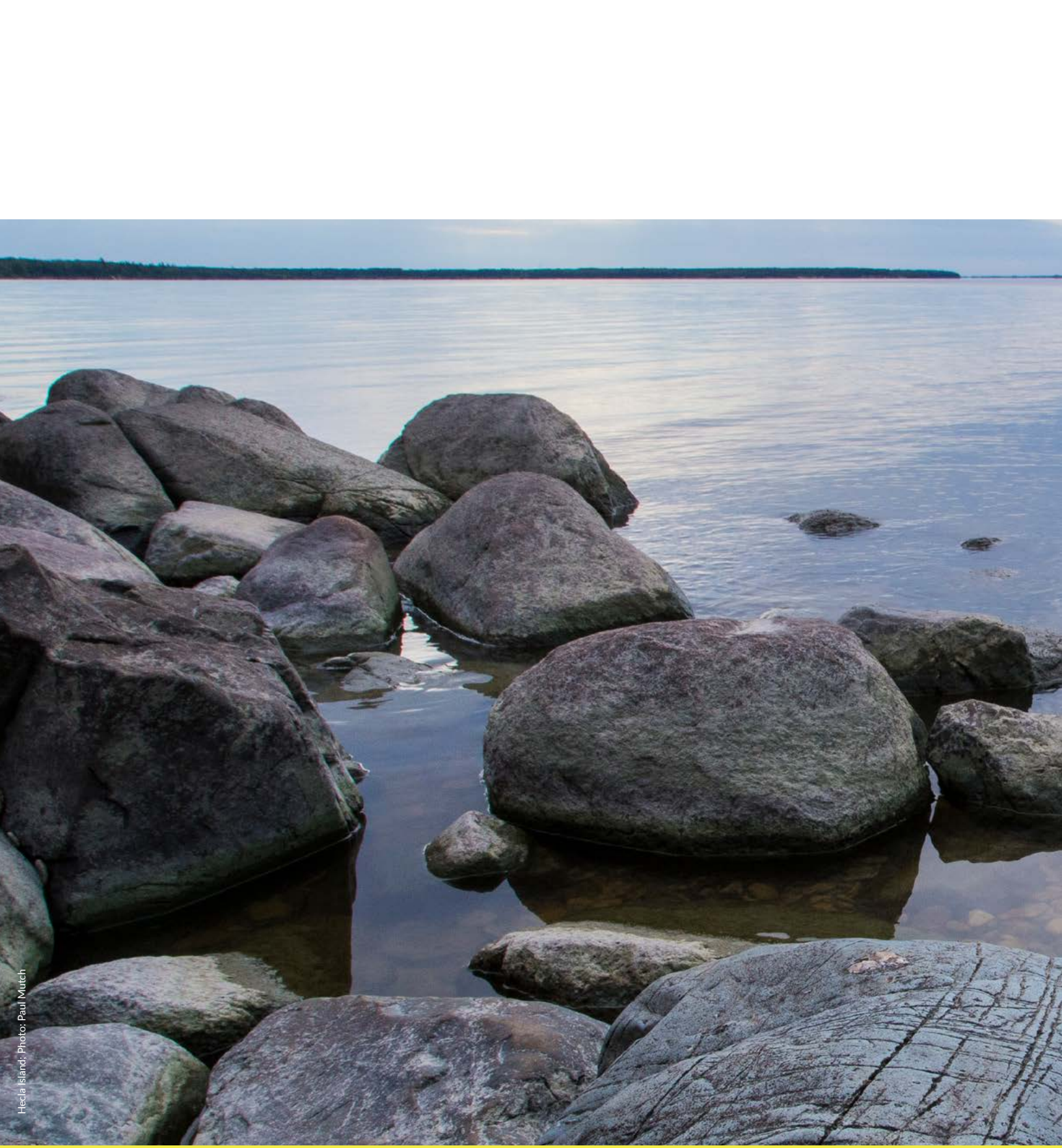
While Lake Winnipeg is important in its own right, its greater importance to me is as an indicator of how poorly we care for all of our waters and watersheds.

There was a time when coal miners used canaries to warn them of the presence of poisonous gases. When the canary fell off its perch, it was time to act and get out of the mine. Lake Winnipeg is our great canary, and for decades we have watched it tumble, all the while expressing how much we care about the lake.

It's time to stop *caring about* Lake Winnipeg – a sentiment of concern with no consequences – and to start *caring for* Lake Winnipeg – taking actions and paying the costs.

- **Michael Stainton, MSM**

ANALYTICAL CHEMIST, RETIRED, FISHERIES AND OCEANS CANADA



Hedra Island; Photo: Paul Mutch