

## **Canada's Biodiversity Strategy – a Focus on Pollution Prevention and Accountability**

We offer the following in response to the federal [discussion paper](#),<sup>1</sup> complementing the [survey](#),<sup>2</sup> on meeting biodiversity commitments by 2030.

In December 2022, Canada hosted thousands of international delegates at the 15<sup>th</sup> Convention of the Parties (COP15) on the Convention on Biological Diversity (CBD). Two weeks of high-security meetings of government representatives, scientists, activists and industrial interests focused on halting and reversing declines of species and natural systems. Canada was among 190 nations that signed the resulting four Goals and 23 Targets of the [Kunming-Montreal Global Biodiversity Framework](#) (GBF).<sup>3</sup>

We cannot take for granted how we have flourished for centuries, within favourable ranges of bio-physical-chemical conditions and atmospheric composition that support life as we know it.

Rachel Carson's iconic *Silent Spring* (1962) reflects on how pollution, particularly pesticides kill and impair much more than intended targets and effects ripple through complex ecosystems. Concerns grew, and [Canada attended](#)<sup>4</sup> and contributed to the formulation of conventions at the [1992 Earth Summit in Rio](#),<sup>5</sup> where the [Precautionary Approach](#)<sup>6</sup> was voiced and supported.

*"Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat."*

Global evidence that ecological limits for sustainability were being breached led to three [interlinked](#)<sup>7</sup> Conventions, on [Biodiversity](#),<sup>8</sup> as well as Climate Change and Desertification.

Scientists have clearly, repeatedly warned of severe and even existential threats to many species from the smallest microbes, to insects and birds, and hence threats to humankind. Over decades, laws have been passed to protect the environment, and rare and endangered species. Declarations and conventions have been signed and acted upon, or not.

The Kunming-Montreal GBF is a landmark, in at least three generations' efforts to research, draw attention to and to incite actions to protect and save habitat and natural systems. Today's decline and elimination of species and ecosystems is the result of land use choices and pollution over decades.

### **How will Canada meet the GBF's 4 Goals and 23 Targets?**

**An initial step is to acknowledge the urgency and the need for ambition**, with clear-sighted recognition of how environmental crises escalate from early warnings. In 2023 the chaotic, disastrous results of insufficient, late actions on environmental threats are reported daily, with record heat, fires, floods, droughts, tornadoes, melting landscapes and loss of polar ice.

**The best time to take action was years ago**, as scientists reported their research and were sounding increasingly urgent warnings. **The next-best time is today**. Success depends upon recognizing as many factors and forms of pollution affecting biodiversity as possible, and substantive actions with

accountability to track rapid progress. The agenda must be driven by urgency and precaution—we recognize that 2030 is *very* late.

The GBF covers many important topics such as protecting ecosystems and recognizing Indigenous knowledge from generations on the land, as well as recent science. In this submission we largely focus on Target 7, addressing pollution from pesticides, as well as from anthropogenic electromagnetic radiation. We also note the importance of habitat, and finally we discuss how gene-edited seeds can undermine genetic diversity for resilient food systems, threaten organic agriculture (genetic modification is prohibited under organic certification), and thwart the right to save unmodified seeds.

### **[Addressing biodiversity requires addressing pollutants contributing to climate chaos](#)**<sup>9</sup>

Greenhouse gases are affecting the entire world profoundly, at a rapidly accelerating pace. Since COP15 in December 2022, impacts on northern winter roads, ice and permafrost are profoundly impacting northern ways of life, and Canadians had the first winter with no skating on Ottawa’s Rideau Canal. In the spring and summer, most of Canada has been blanketed at one time or another with wildfire smoke. July is seeing heat records repeatedly broken around the globe. As the ocean warms, polar ice is cascading into the sea and extreme weather now features “flash droughts” (hot, dry weather is destroying crops, e.g., in the Canadian Prairies), as well as increasingly frequent and severe floods, tornadoes, ice storms and other damaging weather. Carbon emissions *must be reduced to near-zero* ([not merely an ill-defined “net-zero”](#)<sup>10</sup>). Further, other greenhouse gases including methane, and nitrogen-containing chemicals associated with fertilizers and intensive animal husbandry must be *minimized*. Canada’s Sustainable Agriculture Strategy and Partnership must embrace and elevate organic, regenerative agriculture (see PCN’s [submission on sustainable agriculture](#)<sup>11</sup>), because [organic, regenerative agriculture can work at scale](#).<sup>12</sup>

**In addition to greenhouse gases leading to heating and extreme weather, other types of pollutants that can profoundly affect biodiversity include:**

1. Toxic chemicals such as pesticides; and
2. Electromagnetic fields from “wireless” telecommunications and increasing electrification.

**Strong vested interests and social inertia can hinder pollution prevention, particularly when the agents have been ingratiated into daily life. Success requires that the government:**

1. recognize and communicate the harms;
2. identify, promote and facilitate shifting to safest alternatives; and
3. publicly track progress in as close to real-time as feasible.

## **CBD Target 7: Pollution Prevention**

### **Background**

Montreal delegates built on the July 2021 [First Draft of the Post-2020 Global Biodiversity Framework](#).<sup>13</sup>

#### **TARGET 7 (2020)**

Reduce pollution from all sources to levels that are not harmful to biodiversity and ecosystem functions and human health, including by reducing nutrients lost to the environment by at least half, and pesticides by at least two thirds and eliminating the discharge of plastic waste.

[The Final Version](#) <sup>14</sup> at the conclusion of COP15 in December 2022, was less ambitious and more ambiguous, aiming for 50% reduction of *risk*, with considerable qualifying text.

**TARGET 7 (2023 final agreed text)**

Reduce pollution risks and the negative impact of pollution from all sources, by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects, including: reducing excess nutrients lost to the environment by at least half including through more efficient nutrient cycling and use; reducing the overall risk from pesticides and highly hazardous chemicals by at least half including through integrated pest management, based on science, taking into account food security and livelihoods; and also preventing, reducing, and working towards eliminating plastic pollution.

Despite ambiguity, Canada must interpret this to be ambitious, and aim for success with transparency and accountability. We can meet this challenge of pollution by defining clear metrics to establish baselines and to track pollution reduction.

1. **Identification and rapid phasing out of the most toxic chemicals.** Discontinuing the most hazardous 50% of the chemistries would be a recommended start.

2. **Research and support to transition to sustainable, organic agriculture.**

Concerted efforts by vested interests to thwart any actions to reduce pesticides use (and sales and profits), are reflected in Government of Canada documents, asserting that less pesticide use could risk food security. In contrast, there is clear evidence that:

- Pesticides are harming [pollinators](#),<sup>15</sup> [birds](#) <sup>16</sup>and many other species; and
- [Pollinators are essential for food production, as well as being key species within ecosystems.](#)<sup>17</sup>

Canada's sustainable agriculture initiatives and associated Ministries promote the notion that chemical pesticides are essential for food production, *and are silent on organic agricultural practices*. This is misleading because, for example, pesticides are indiscriminate and can set up a situation where they must be used repeatedly, as the rapid rebounding of pests outpaces the reproductive capacity of pest predators. This results in what is colloquially described as pesticides "addiction," that in turn can impact food security as well as food quality. Industry makes it sound as if chemical pesticides are the only answer to pests, but the opposite is also the case, particularly over the longer term. See our [summary submission on sustainable agriculture](#).<sup>18</sup> [Data-driven organic agriculture can be resilient, productive and profitable at scale.](#)<sup>12</sup>

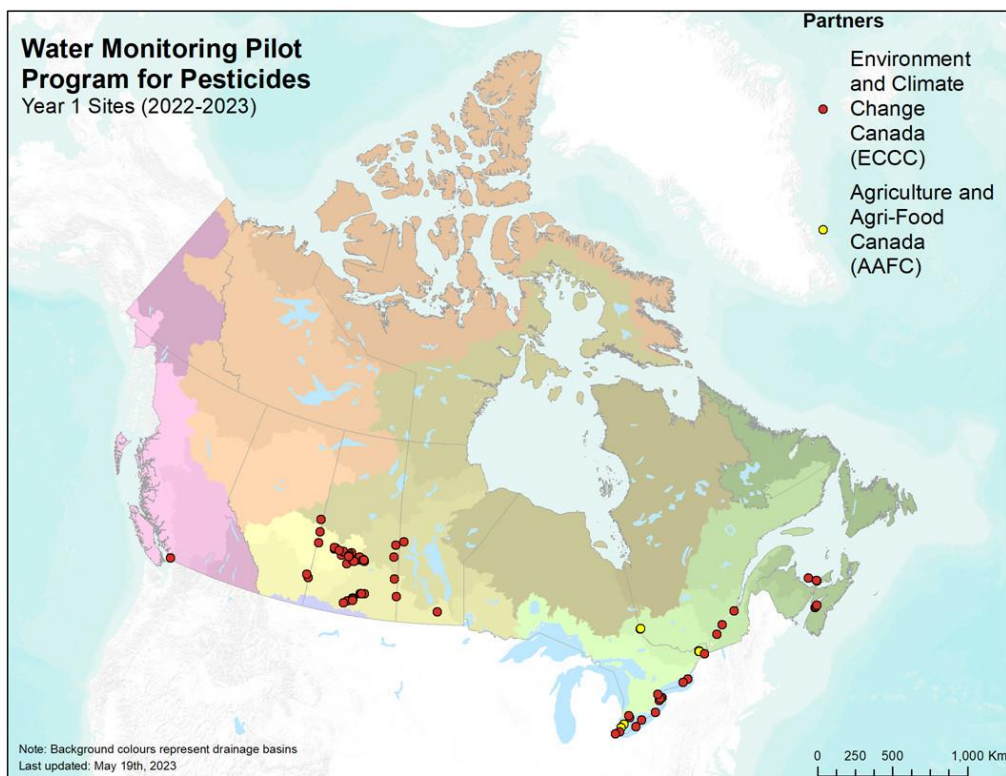
3. **Measuring what we want to manage – is water contamination sufficient?**

The federal GBF consultation document ([Toward a 2030 Biodiversity Strategy for Canada: Halting and reversing nature loss](#) <sup>1</sup>) proposes that water contamination be the only metric to track risk associated with pesticides. This is insufficient and meets no standard for accountability. Not only is surface water contamination subject to the vagaries of local events (e.g., possible spraying the day before versus the day after sampling) and weather (did a drought dry up where chemicals had accumulated, or did a storm wash them away?), there is a practical limitation.

**Canada has little data.**

## Results of the first pilot water quality pesticides monitoring pilot study<sup>19</sup>

Support for pesticides measurements in water was announced in 2021, and the [first Water monitoring pilot program data was posted online, on July 13, 2023](#).<sup>20</sup> The map of test sites (below) clearly shows that these 89 sites cannot represent a robust national assessment of risks to biodiversity from pesticides.



The study found that **5% of tests for a pesticide yielded measurable results**, and that human health or aquatic life **reference values were exceeded 0.1% of the time**. Zero exceedances were reported for Alberta and Saskatchewan.

**The pesticides that were most frequently detected, and that exceed Canadian guidelines, have already been identified as being harmful to biodiversity.**

*In top place, clothianidin was detected almost half of the time, with 10% of all samples exceeding acute reference values for invertebrates.* Clothianidin is one of the highly contested neonicotinoid insecticides that were linked to bee deaths, as well as decline of [grassland birds](#).<sup>16</sup> A gap in Canada's pesticide regulatory system, is that clothianidin is used to treat seeds, but treated seeds are not considered to be "pesticides" by the PMRA.

*In second place, the herbicide atrazine was detected in 71% of samples and 2% of samples exceeded guidelines.* Famously, [Prof. Tyrone Hayes](#)<sup>21</sup> found that atrazine feminized male frogs. His team then mated normal males with atrazine-feminized males to produce live young, and repeated over successive generations.

## Accountability

Canada has made a commitment to reduce *risk* from pesticides by 2030, so we must be accountable. Water monitoring data, while interesting and concerning, is not sufficient for accountability regarding this large suite of chemicals, across vast tracts of land where there were no exceedances and few detections.

### Tracking a straight-forward, transparent proxy for risk

We believe that Canada does have relevant data to track the GBF target to reduce risks from pesticides. The PMRA reports sales data annually, and every pesticide is assessed to set *risk-based* application rates.

A known, previously-used proxy measure is the area that would be treated using the quantity of a particular chemical sold in a year. Ideally this would be mapped on a fine-grained basis, as data availability permits. [Variants of this metric are commonly used in research; recently by Canadian researchers.](#)<sup>22</sup>

$$[\text{equivalent area}] = [\text{kilograms of pesticide active ingredient}] \div [\text{minimum application rate (kg/area)}]$$

Adding up the “equivalent areas” for all relevant pesticide products sold in Canada annually amounts to a measure of risk. Using a consistent methodology, the relative reductions in risk can be tracked. *Of note, since the PMRA does not track insecticide-treated seeds, this proxy will be an under-estimate. The frequently-detected neonic clothianidin is used to coat seeds.*

Acknowledging limitations, Canada can use this method to track risks from pesticides – a widely acknowledged key contributor to biodiversity decline. Using the most complete data in hand (annual pesticides sales and application rates) to track an essential GBF commitment provides accountability; certainly more so than preliminary pilot water quality data, most of which identified no pesticides, reporting “no detect.” Hopefully, if water monitoring improves, the two datasets may complement one another.

***Accountability is essential for the key GBF commitment, to reduce pesticides risks by 50%.***

## Other related topics, queried in the biodiversity survey

### 1. Habitat protection

**Species require complete habitat. Human-centric environments in developed population centres, in conjunction with chemical-reliant intensive agriculture, do not support every life stage.** Flora and fauna need **complete habitats**, that serve all needs at all life stages. Not all species require this within one geographical boundary, but all features are necessary.

**Wetlands** clean water and air, improving environmental quality. Virtually all fauna either spends part of its life cycle in **wetlands**, or eats something that does. **Wetlands** need to be protected, rebuilt and rehabilitated, and existing habitats need stronger ongoing protections against urbanization.

## 2. Genetic diversity of seeds

**Gene-edited seeds undermine species diversity.** The GBF Goal A states in part:

- The genetic diversity within populations of wild and domesticated species, is maintained, safeguarding their adaptive potential.

Habitat protection is paramount, but as environmental conditions change and survival of many species is challenged, [preservation of genetic diversity is feasible and necessary, and offers a survival advantage](#).<sup>23</sup> In the case of foods, genetic diversity and related resilience is being directly undermined with unrestricted, unregulated, unlabelled creation and sale of genetically uniform gene-edited seeds.

Gene-edited seeds not only directly counter Goal A; genetic contamination of the diverse wild-type seeds used in organic agriculture could result in loss of sales, income, and the ability to plant the seeds the following year for an organic certified crop. Genetic pollution undermines the age-old farming practice of saving the best seeds for the coming year.

***Never has the right to save seed been more important, for adaptation in a changing climate, but this essential right, and Goal A overall, is negated by proprietary genetically modified seeds. Inhibiting the saving of best/most resilient seeds directly threatens the long-term viability of crops grown using regenerative farming principles.***

*(NOTE: This is distinct from the genetic resources issues covered in Goal C.)*

## INTRODUCING A NEW FORM OF POLLUTION:

### **Anthropogenic electromagnetic fields and radiation from modern technologies**

Prevent Cancer Now has worked over the years with Canadians for Safe Technology and other national and international groups and experts on the topic of health and environmental impacts of radiation used for telecommunications. Electrical fields around tension transmission lines also pose risks to health and biodiversity. We were principal collaborators in the creation of a website presenting the research on this topic, with specific discussions of insects, birds and other species, in accessible formats - <https://wirelessenviroimpacts.science>. It also summarizes how alternative technologies are not only safer, they are more resilient, faster, and have a smaller carbon footprint. The website also includes a [library of peer-reviewed studies](#).

This topic was raised during the 2015 review of the *Canadian Environmental Protection Act*, and in response Environment and Climate Change Canada staff Dr. Kim Fernie prepared a report in 2020, [Canadian Environmental Protection Act \(1999\): Considerations of electromagnetic fields \(radiation\) and biota](#).<sup>24</sup> It concluded:

*Across Canada, increased urban development and an increased reliance on new technologies is likely increasing EMF exposure of wildlife through additional power lines, telecommunications networks, and new technologies (e.g., 4G, 5G). It is conceivable that the RF-EMFs from power lines, telecommunication networks and technologies, may become or already are an environmental stressor to exposed wildlife, in conjunction with other, widely recognized environmental stressors that can affect wildlife, e.g., habitat destruction, climate change, chemical pollutants, heavy metals, among others. The potential of increasing EMF exposure as a contributing or confounding factor to adverse changes in wildlife, in conjunction with recognized environmental stressors, should be considered.*

Although these forms of anthropogenic non-ionizing radiation are not listed specifically in the CBD, this is nevertheless pollution that can and should be reversed, consistent with Target 7. We look forward to the government of Canada dealing expeditiously with this adverse exposure, that fortunately is the only form of pollution with an “off” switch. Ensuring that technologies are designed and deployed to meet the highest standards for efficiency, health and safety can benefit both human and environmental health.

## **Conclusion**

In summary, Prevent Cancer Now sees needs for

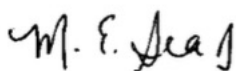
- strong, urgent actions to preserve functional natural landscapes, to address climate chaos with means that complement biodiversity goals and targets;
- clear, ambitious actions to halve pesticides risks while advancing research and transition to regenerative, organic farming practices and supporting genetic diversity in agriculture;
- recognition of risks from modern electromagnetic radiation and actions for safer, resilient technologies using fibre and wire connections; and
- persistence with actions to prevent and address pollution and to preserve, restore and protect diversity of natural features, and species and their habitats.

Thank you for careful consideration of these comments and recommendations for Canada to do its utmost to protect and restore biodiversity, and in so doing, to meet, be accountable and even exceed our commitments under the CBD, as well as counter climate chaos.

For further information and to discuss, Prevent Cancer Now and associated experts ask that you not hesitate to seek clarification and further information, in your most important work for our future.

We look forward to further engagement in this crucial topic.

Sincerely,



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