



EXECUTIVE SUMMARY

ADVANCING PRIORITY THREAT MANAGEMENT IN THE WOLASTOQ/SAINT JOHN RIVER WATERSHED:

QUANTIFYING THE CARBON BENEFIT OF CONSERVATION ACTION

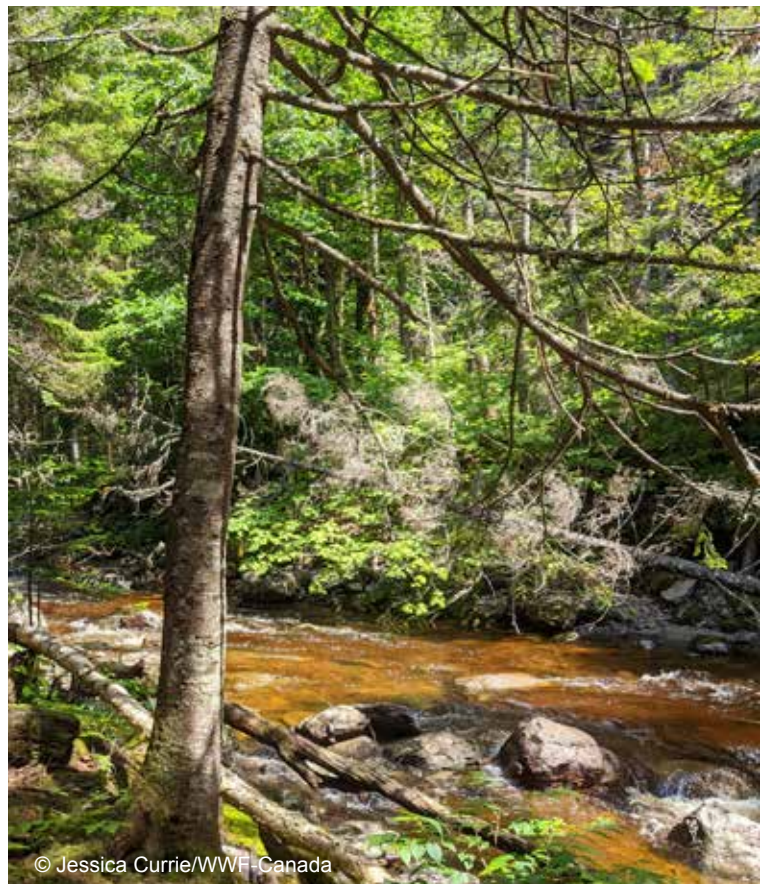


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BACKGROUND

Priority Threat Management (PTM) is a decision-support framework that helps to rapidly identify effective strategies for conservation, taking into consideration the costs, benefits and feasibilities of conservation actions to maximize the return on investment. PTM prioritizes the recovery of wildlife through broad strategies such as land and aquatic management which include the implementation of management actions such as protected and conserved areas.

Given the interconnectedness of the biodiversity and climate crises, we can be more effective and efficient in our approach to conservation if we consider both the biodiversity and carbon benefits of conservation actions. Protected areas, for example, can act as nature-based climate solutions by avoiding the conversion or degradation of natural carbon stores (which cause carbon emissions) while also protecting wildlife habitat.



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PRIORITY THREAT MANAGEMENT AND CARBON

In 2020, WWF-Canada and the University of British Columbia released a [PTM Report for the Wolastoq/Saint John River \(SJR\) watershed](#) to determine how to best allocate budgets to benefit the greatest number of species in the region. The report recommended several conservation strategies and actions to recover wildlife.

In 2021, WWF-Canada assessed the carbon benefit of some of these actions by evaluating how they helped to avoid carbon emissions (e.g., by protecting carbon found in nature) or remove them from the atmosphere (e.g., by restoring carbon sinks). Taken together, the PTM report and the complementary carbon analysis provide a way to guide conservation actions that benefit both biodiversity and climate change mitigation.

KEY FINDINGS

In the Wolastoq/SJR watershed, **6.1 Mt CO₂e** are at risk of release by 2050 if the PTM protected and conserved areas target (17 per cent) is not met — this is equivalent to about half of the province's overall greenhouse gas emissions in 2019. The right conservation actions could help to prevent this.

The conservation strategies that are projected to have the most benefit for wildlife in the Wolastoq/SJR watershed (land and aquatic management) were also found to provide the maximum carbon benefits — particularly by avoiding carbon emissions from these areas.

By implementing 15 strategies, the [PTM analysis](#) found 40 species could be recovered to healthy population levels at a cost of \$25.8 million per year — the equivalent of \$33 per New Brunswick resident.



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CARBON BENEFIT

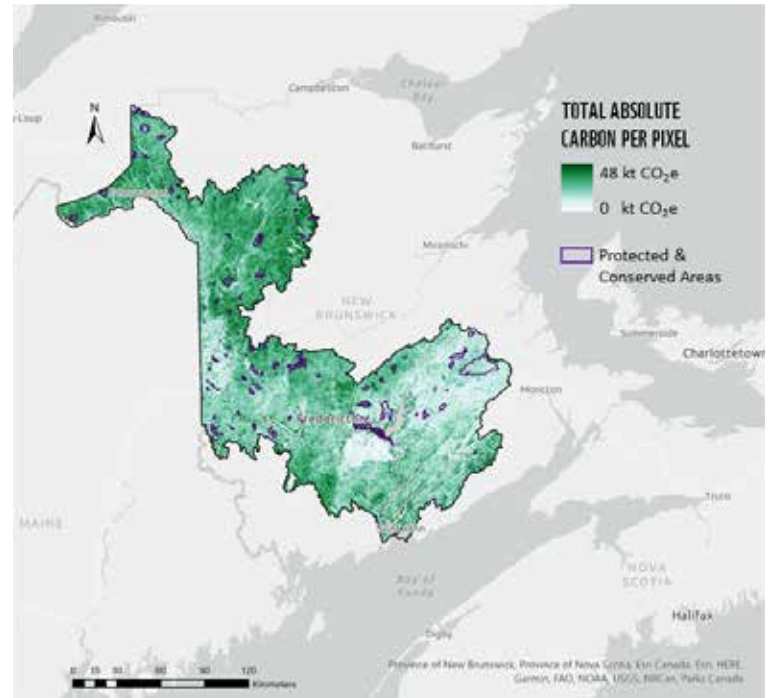
STRATEGY: LAND MANAGEMENT

Our analysis looked at the carbon benefits of protecting and conserving an additional 3,542km² (for a total of 17 per cent, which is the PTM analysis goal and is in alignment with 2020 federal targets) within the Wolastoq/SJR watershed. Using average carbon densities for current areas lacking protection, we estimate that by protecting an additional 3,542km² of habitat within the watershed, an estimated total of **615 Mt CO₂e** could stay locked in nature.¹ This is a massive amount of carbon, but only some is anticipated to be vulnerable to human disturbance in the next 30 years.

The PTM analysis also emphasized the need to protect habitats for specific species — particularly for rare and restricted plant and lichen communities, and bat maternity colonies.

By protecting habitats for specific species at risk in the watershed, an estimated total of **24 Mt CO₂e** could remain stored in nature.

As of December 2020, just under five per cent of terrestrial and freshwater areas were designated or established for protection in New Brunswick, despite provincial commitments of reaching 10 per cent.



The entire watershed has a carbon store roughly equivalent to 5,066 Mt CO₂e — the majority of which is found in soils, roots and wetlands. Purple outlines represent protected and conserved areas.

VULNERABLE CARBON

Not all stored carbon is at risk of being released to the atmosphere. Only the protection of carbon that is “vulnerable” to human disturbance can be considered an “avoided emission.”

To determine how much vulnerable carbon could potentially be released if the province did not achieve the 17 per cent target, we considered historical rates of land conversion in the region.

We found that 6.1 Mt CO₂e are at risk of release by 2050 based on historical rates of land-use change — equivalent to roughly half of the province’s overall greenhouse gas emissions in 2019.

This number is likely a conservative estimate because it only looks at conversion, not degradation (i.e., harvesting forested landscapes), which also increases the amount of vulnerable carbon in the region. **By achieving the 17 per cent target, we could avoid 6.1 Mt CO₂e of emissions to the atmosphere.**

STRATEGY: AQUATIC MANAGEMENT

Current wetland policies and regulations only apply to wetlands within the Wolastoq/SJR watershed that are provincially significant, contiguous to a watercourse or greater than one hectare in size. The others lack adequate regulatory protection. This means that the health of small wetlands is not protected despite their importance for wildlife. This is particularly important in New Brunswick, which contains a significant number of small wetlands whose carbon contribution could be substantial if disturbed.

Wetlands cover approximately five per cent of New Brunswick and store a disproportionate amount of soil carbon, so their disruption can impact global climate regulation. By protecting all currently mapped wetlands within the Wolastoq/SJR watershed, we can ensure that an estimated total of **32 Mt CO₂e** remains stored in these important habitats.¹



NEXT STEPS

The Priority Threat Management (PTM) analysis has put a plan in place for the Wolastoq/SJR watershed to address biodiversity loss, but many of the identified strategies and actions also provide carbon benefits. By halting the disruption and degradation of ecosystems, we can ensure that ecosystem carbon remains locked in nature. By protecting the right places — those with large carbon stores and species at risk — we can enhance our conservation impact now and into the future.

¹ This value represents the maximum potential for avoided emissions of presently stored carbon (i.e. does not consider additional carbon sequestered over time with protection), and does not account for the vulnerability of carbon (due to land conversion or degradation), nor the potential for human disruption (as protection does not entirely guarantee that ecosystems will be free from human pressures).

The Priority Threat Management work in the Wolastoq/Saint John River Watershed is supported by generous funders, including The Patrick and Barbara Keenan Foundation and Fisheries and Oceans Canada through the Canada Nature Fund for Aquatic Species at Risk.