

Exploring the function of soil and fungi in urban forest management and climate mitigation: An investigation into the perspectives of urban foresters in Canada



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Introduction

- Climate change is threatening urban environments which sparks a need to be resilient in these challenges (1,2).
- Urban forests provide many mitigating benefits such as CO₂ sequestration (3,2).
- Urban forests can enhance this function through proper management of fungi and soil, which are currently facing many threats in the harsh urban environment (4,5).
- Current urban forest management practices are lacking in considering the underground environment (6,1).
- As such, the benefits of considering soil and fungi are not widely reflected in urban forest management and climate plans (2).
- Urban foresters are intimately involved with the planning and management of urban forests and have unique insights on the processes that determine what gets considered in such processes (7).

Objectives

1. Gain insights on the degree of incorporation of scientific knowledge in urban forest planning and management in Canadian cities, specific to urban forestry and soil science.
2. Investigate challenges and opportunities at the science-policy interface to improve urban forest related decision-making processes in cities.

Methods

- A survey of 20 questions was issued to urban foresters across Canada using the CANUFNET Listserv and was completed by 43 respondents.
- 15 of the question were quantifiable, being asked using a likely scale of 1-5
- The Survey questions asked questions relating to 3 broad categories:
 - Academic Background and Work experience
 - Knowledge and perception of urban foresters and their incorporation in urban forest management planning
 - Knowledge of other stakeholders and their involvement in urban forest management planning
- Statistical analysis was conducted using Jamovi. T-test analysis was conducted the second and third category.

Results & Discussion

- Geographic distribution did not impact survey responses.
- On average soil is thought to be very important, X₆=4.51 and fungi are thought to be important, X₉=4.07, to the management of urban forests.
- However, there is little consideration of fungi in either in short or long term management, X₁₀=2 and X₁₁=2, and moderate consideration of soil in either short and long term management, X₇=2.67 and X₈=2.51.
- Decision makers were perceived to have no scientific knowledge on soil and fungi and their relation to climate change, X₁₃=1.42, however, believed engagement with decision makers to be very important, X₁₄=3.65.
- In terms of engagement of different stakeholders, decision makers, NGOs, Community members, indigenous peoples, and scientists, engagement was moderate to low.
- There is a gap where the importance of soil and fungi in management and climate mitigation is not accurately translated.
- Some key challenges that were presented were lack of funding, conflicting priorities, and lack of availability and mechanisms to transfer knowledge to urban foresters and inter-departmentally.

Conclusions

Considering the science, the benefits of fungi and soil in urban forest management are important to enhance climate goals.

Municipalities should look to develop policies that enhance knowledge transfer and integration to enhance the efficacy of urban forestry strategies that work to support municipal climate goals. Furthermore, collaboration with diverse stakeholder groups is beneficial to enhance communication and subsequently increase support to urban forestry projects and initiatives. Cities will benefit from using systems thinking and identify opportunities for collaboration to build capacity within municipalities to adapt to climate change challenges.

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