

Global change threatens the climate zones of Canada's major cities with rising winter temperatures and increased soil acidification, rainfall, and urban flooding. The increased frequency of extreme weather events and movement of species' fundamental niches, most notably in polar-tracking isotherms, thus jeopardize the stability of Canadian urban and rural forest communities. In monitoring the risk of single species catastrophe events and reduced native species fitness caused by climate change, biodiversity within these forests effectively approximates ecosystem resiliency. Unlike in rural forests, the composition of urban forests is largely determined by ecosystem services rather than ecological productivity/stability, and thus the biodiversity of urban forests has historically trailed that of rural forests. Ecologically, the extremely heterogeneous urban growth environment is characterized by low soil volume, water impermeable surfaces, and increased temperatures due to the heat island effect. Evolutionarily, differences in proximity to other biodiversity sources and frequency of range barriers between the two forests underlie the distinct processes that will dominate continued composition changes. Therefore, the primary strategy of rural forest managers in mitigating climate change may rely on ensuring gene flow and facilitating evolutionary rescue. Urban forest managers, however, could prioritize planting species well adapted to continuously developing niches, acknowledging the dependency of ecosystem services like stormwater attenuation on species composition. Planting strategies adopted by municipal governments to build climate-resilient urban forests must also consider socioeconomic factors, such as cultural attachment to particular species. By encouraging community participation, urban forest management has the potential to strengthen community social ties.