

# Reducing Pollinator Habitat Fragmentation in Toronto

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Pollinators are an essential part of Toronto's urban landscape. These species, which consist of butterflies, bees, beetles, moths and wasps, provide valuable ecosystem services that benefit plants, animals, and humans (City of Toronto, 2018). The pollination process is crucial to plant reproduction, agriculture and landscape management, and it is not something that humans can easily replicate (City of Toronto, 2018). Habitat loss and fragmentation are some of the biggest threats faced by urban pollinator species (City of Toronto, 2018). In order to ensure the longevity of pollinators in Toronto, it is important that the city advance their habitat creation and restoration efforts.

Creating a linked network of pollinator-friendly green roof spaces in Toronto is one approach to reduce habitat fragmentation in the city. These systems could be introduced on existing forms of transit infrastructure such as bus shelters and train or subway stations. These design interventions will not only help to reduce pollinator habitat fragmentation in Downtown Toronto, but will also mitigate stormwater runoff levels, provide heating and cooling effects to transit shelters and stations, as well as bring a 'naturalized' feel to the city - something that is lacking in Toronto's core. In their current state, the rooftops of transit stations and stops in Downtown Toronto do not provide any ecological services. Transit infrastructure offers an excellent opportunity to address habitat fragmentation reduction given the frequency of stops and stations located throughout the city. The proposed green roofs would be either extensive or semi-intensive systems; selection would be dependant on where these treatments are installed (i.e. extensive on transit shelters, semi-intensive where maintenance access is required) (IKO Industries, 2020). Plant material will be selected based on several factors

including whether the species is native, pollinator-friendly, as well as its ability to tolerate Toronto's seasonal climate. Union Station's train shed roof was targeted as a case study site to implement this design intervention. A semi-intensive green roof would be installed on either side of the station's central glass roof, covering the train sheds below. The proposed green roof would be nearly 23,000m<sup>2</sup>, and would consist of plant species outlined in the proposed planting palette (found on project panel), as well as other native, pollinator-friendly species. The green roof would be the second largest in Canada after the Vancouver Convention Centre (24,200m<sup>2</sup>) (Vancouver Convention Centre, n.d.).

These targeted interventions would be grounded in four of the UN's Sustainable Development Goals - Sustainable Cities & Communities (SDG 11), Responsible Consumption & Production (SDG 12), Climate Action (SDG 13), and Life on Land (SDG 15). Rather, implementing green roof systems on transit infrastructure would help promote a 'greener city', and contribute to sustainable planning and management practices (SDG 11). This project would encourage city-wide education and awareness of sustainability, specifically, how humans can live in harmony with nature and effectively manage natural resources and environments (SDG 12). The creation of a green roof network would help mitigate stormwater runoff levels in the city, and allow Toronto to become more resilient against increasingly frequent weather events (SDG 13). These systems would promote genetic and biological diversity in Toronto's urban landscape, which is essential to human, plant and animal life (SDG 15).

This targeted approach to reducing pollinator habitat fragmentation in Toronto would support local policies such as the Toronto Pollinator Protection Strategy, as well, contribute to the ecological productiveness and resiliency of the city.

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