THE UNIVERSITY OF MELBOURNE

School of Ecosystem and Forest Sciences

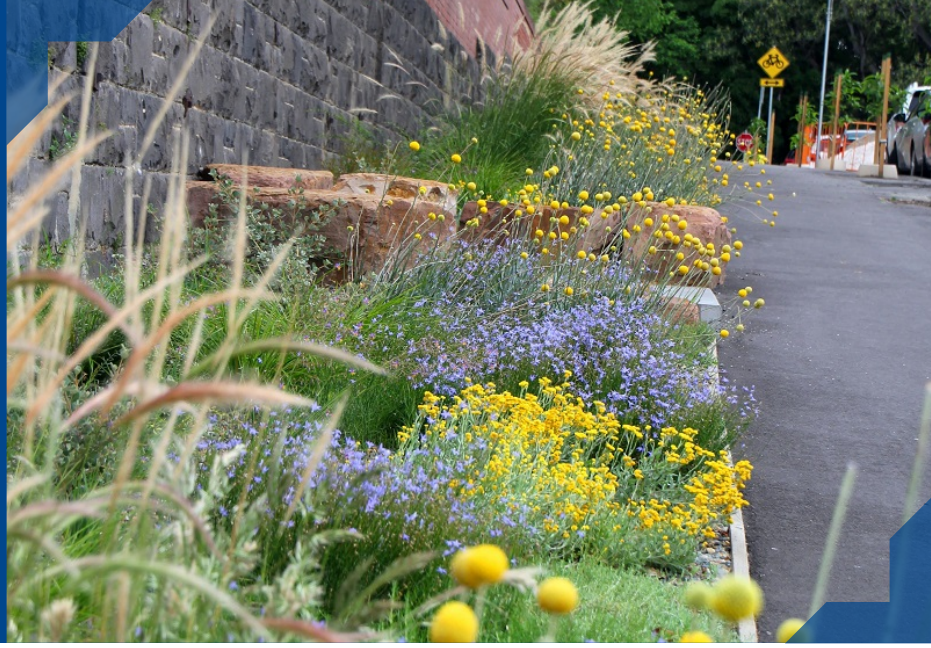

Image: Lee Harrison, City of Melbourne

Developing streetscape plantings for biodiversity

Providing the resource needs for bees, birds and butterflies

Researchers

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Funding

City of Melbourne (2017-2020)

About

The City of Melbourne's (CoM) *Nature in the City Strategy* aims to increase biodiversity and habitats within the municipality and make them more ecologically connected. Increasing the volume of understorey vegetation in urban landscapes can have positive effects on a range of fauna - especially when planted with native species[1]. CoM has a target to increase understorey plants on CoM-managed land by 20% by 2027. In this research project we are investigating:

- Which understorey plant species can provide biodiversity habitat and resources for native bees, butterflies and birds?
- Tolerances of plant species to harsh streetscape conditions and their aesthetic appeal.
- Faunal diversity and abundance in streetscape biodiversity plantings compared to "business as usual" plantings.

Changing from simple streetscapes comprising trees and lawn to more complex understorey vegetation is challenging because streetscapes typically have poor soils, are more frequently disturbed and have multiple infrastructure constraints (i.e. pipes and wires) – making them hostile environments for many native plant species.

Approach

We have developed a predominantly native plant palette of more than 80 species based on a research review and expert knowledge including CoM urban designers and landscape architects who provided information on planting constraints and current practices. We also looked at horticultural attributes, tolerances and availability, and the biodiversity resources that plants provide. Priority fauna species include native bees, butterflies and birds. Biodiversity resources from plants include:

- Flowers yielding high amounts of nectar and pollen
- Larval food sources for local butterflies
- Seed and fruit for birds
- Nesting locations for uncommon birds (i.e. spiky shrubs) and solitary native bees (i.e. hollow plant stems)

The CoM has developed an online guide of plant species including images, information on plant growth conditions and tolerances, maintenance requirements and the resources they provide for biodiversity. We are testing the effectiveness of our plant palette by comparing understorey sites before and after planting with non-understorey sites that only have street trees and mown grass. CoM have redesigned four inner city streets and planted them with species from our palette - Clowes Street, South Yarra; Arden Street, North Melbourne; Park Street, Brunswick; and Docklands Drive, Docklands.

For more information, visit **https://girg.science.unimelb.edu.au/**

Developing streetscape plantings for biodiversity

To date we have surveyed the abundance and diversity of bees, butterfly and birds in Spring and Summer in 2017-18 (before), 2018-19 and 2019-20 (after). We have also conducted quarterly plant health assessments.

Research impact

The City of Melbourne is now establishing additional streetscape biodiversity plantings on suitable streets throughout the municipality. They have also made the plant palette publicly available to encourage other local governments, landscape architects and residents to use them in their projects and gardens. See https://www.melbourne.vic.gov.au/community/greening-the-city/urban-nature/Pages/urban-nature-planting-guide.aspx

Findings to date

"Before" surveys showed relatively low levels of biodiversity at all sites - eight native bees, five butterfly and 27 bird species. This is likely due to a lack of flowers.

"After" surveys showed there was an increase in abundance and diversity of native bees at all understorey sites including three sites where bees had not been previously recorded. Bee abundance and diversity at the non-understorey sites remained largely unchanged, as did butterfly and bird species abundance and richness.

While there has only been a slight change in abundance and richness of butterfly and bird species at understorey sites we expect this to change with time as the streetscape plantings develop. Biodiversity surveys will continue for three years.

Contact information

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References

1. Threlfall, Mata, Mackie, Hahs, Stork, Williams & Livesley (2017) Increasing biodiversity in urban green spaces through simple vegetation interventions. Journal of Applied Ecology, 54, 1874-1883

Image: Nick Williams, University of Melbourne

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