

Landscape design: biodiversity and honey bees

The principles of landscape architecture, focused on the development of bee-friendly designs, can enrich biodiversity in city gardens and parks.

Australian plant communities have thrived for millennia, forming a unique landscape with high biodiversity.

Rapid urbanisation threatens native plant communities, with landscaping of public parks and gardens often offering limited native biodiversity. However, there have been moves for stronger ecological design approaches that encourage native biodiversity. This is important for bee conservation.

Europeans introduced honey bees to Australia in the 19th century, with the country now supporting approximately 50,000 managed bee hives. This supports the pollination of over \$14 billion worth of agricultural produce, and a rapidly growing honey bee product industry, currently valued at \$100 million.

Rapid urbanisation and climate change are threatening native plant communities.

Australia is home to over 800 species of native bees. With the domestication of many native plants for food production, native bee niche and economic importance are growing. The rapid escalation of urban hobby bee keepers means more colonies are dependent on garden landscapes to support their health. Both native bees and honey bees contribute to pollination within natural ecosystems, maintaining biological diversity.



CRC HBP
FOR HONEY BEE PRODUCTS

Yanchep beach joint venture



bee-friendly



biodiversity



landscapes





Researchers at the CRC for Honey Bee Products applied the principles of landscape architecture to develop bee-friendly botanic garden design guidelines for Western Australia. Each principle took bee physiology into consideration, including flight distance, colour and acuity of their vision, health requirements, breeding, nesting and aesthetics for garden enjoyment.

Researchers applied the principles of landscape architecture to develop bee-friendly botanic garden design guidelines for popularisation across Australia.

The resulting designs consider relationships between humans and bees, and the dichotomy of natural and human-made habitats and urban landscapes. This work was strengthened by information collected from interviews with commercial beekeepers, hobbyists, native bee experts and landscape practitioners, including architects, botanists and ecologists.

'The aim was to explore and reveal key factors that help in placing managed honey bee hives in botanic gardens and maintain the harmony,' said CRC Project Leader Maria Ignatieva.

'Revealing perceptions on nature, the vision of wilderness and biodiversity, and design with native plants approaches, with the south-west Western Australia as an example, the bee-friendly design principles encompass a range of biological and conservation values.'

CRC researchers also explored the concept of ecological linkage and its role in creating a sustainable urban environment. This research provides evidence that natural patches (wildlife habitats) in cities are vital in providing ecosystem services.

Research by the CRC for Honey Bee Products has yielded valuable information for policymakers and others in their evaluation of the quality of urban green spaces. It will help with the design of future parks and gardens to support biodiversity and the sustainability of bees in Australia.



CRC PhD student Yugi Yang displays bee-friendly flora at World Honey Bee Day, 2021