

Biodiversity in your Backyard

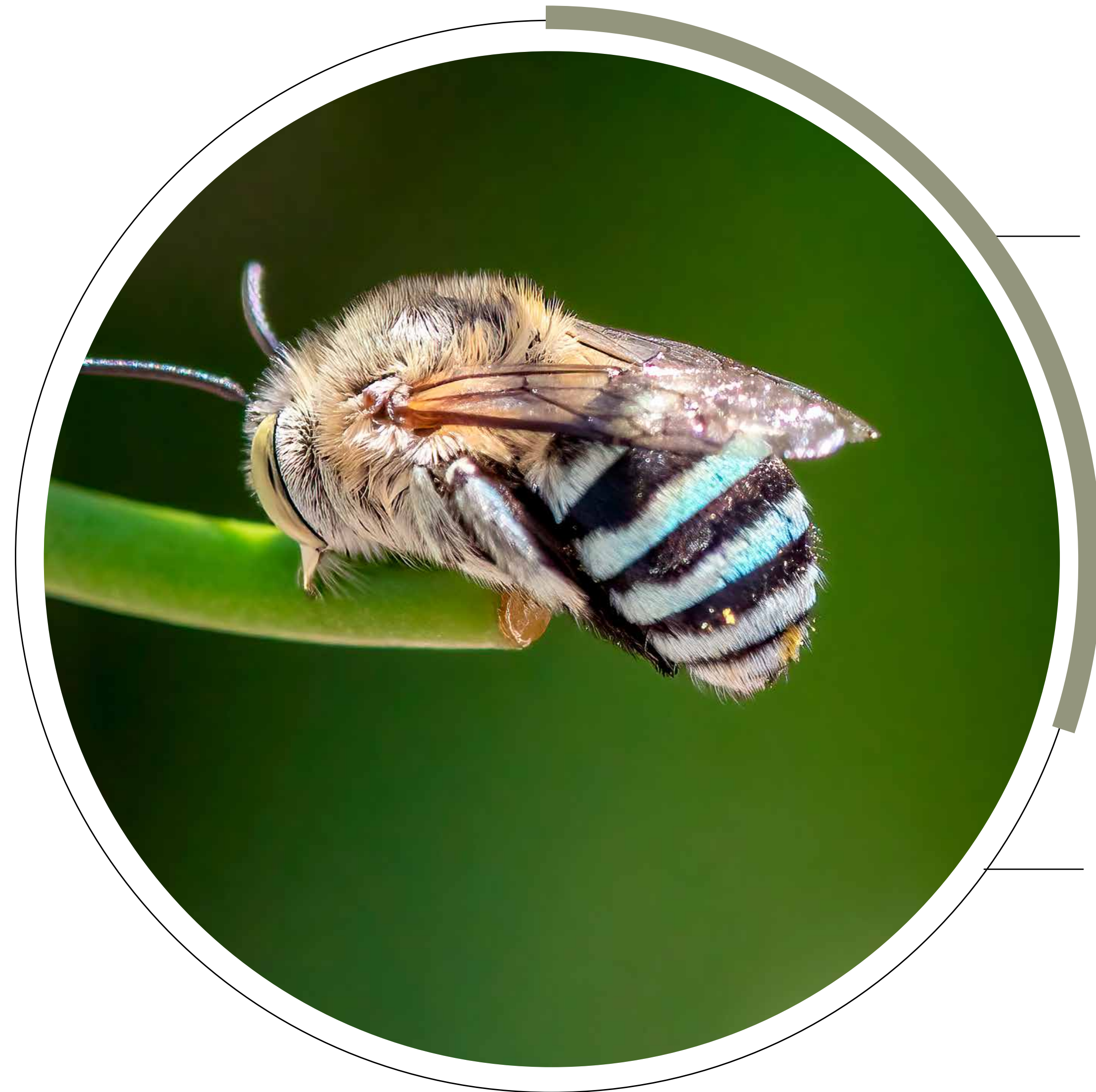
The future of nature in your hands.



In the pursuit of a sustainable future, Arup has embarked on an ambitious journey to foster innovation and research through its Invest in Arup projects. Arup aims to develop effective and workable solutions through collaborating with communities, clients, and research organisations. One such partnership with Conservation Volunteers Australia (CVA) has led to **Biodiversity in your Backyard**, a report to assist CVA to engage individuals to contribute to achieving Target 2 of the Kunming-Montreal Global Biodiversity Framework (GBF): Restoring 30% of degraded lands by 2030.

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30%
restoration of degraded land by 2030

The Blue-banded Bee

The Biodiversity Crisis

The biodiversity crisis has emerged as a consequence of human activities. Habitat loss remains the most significant threat to biodiversity, particularly due to urbanisation, which fragments natural habitats. Within urban areas, green spaces like parks and reserves serve as vital biodiversity hotspots, offering essential support for urban wildlife. However, these isolated habitat patches face the risk of species extinction due to limited capacity to support viable populations and reduced gene flow between populations.

In Australia, there are 500 threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* which have distributions intersecting with cities, highlighting the urgent need for urban habitat conservation and restoration. Establishing habitat corridors between isolated green spaces could help mitigate species extinction risks and enhance opportunities for human-nature interaction.

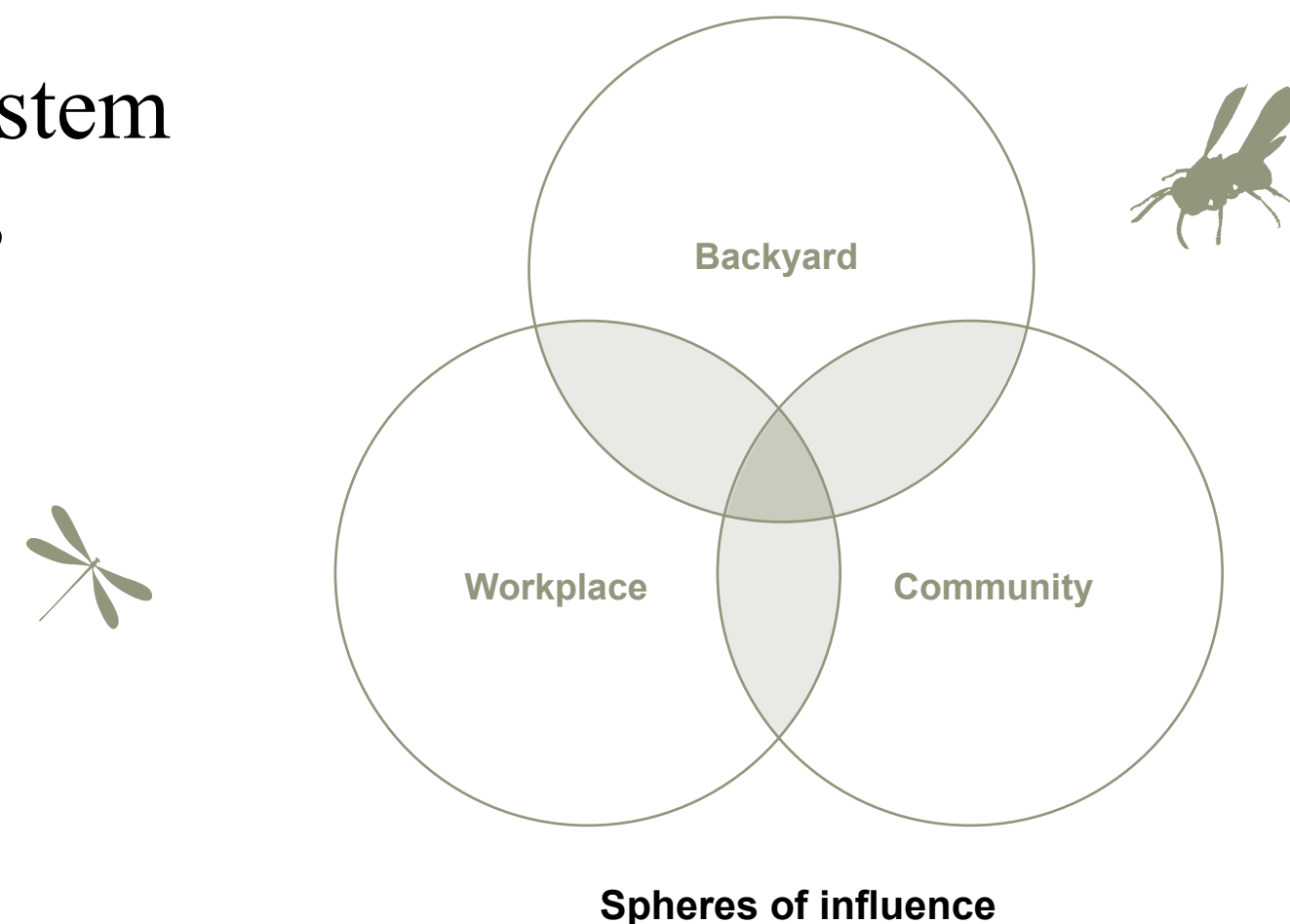
COP15 – The Biodiversity Framework

The Kunming-Montreal Global Biodiversity Framework (GBF) was established at the United Nations Biodiversity Conference (COP15) in December 2022. Target 2 of the GBF aims to

“ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.”

Achieving 30/30 in your own backyard

While governments and organisations play crucial roles, dedicated, on-ground action, focused on urban areas is necessary to ensure the preservation of urban biodiversity. Individuals possess multiple spheres of influence – their workplace, their community and their own urban backyards. Individuals can actively support urban biodiversity and help to achieve Target 2 of the GBF, through some simple actions such as planting of native species and incorporating natural habitat features. Restoring a portion (ideally 30%) of their backyard would contribute to the creation of urban habitat corridors.



Methodology

The aim of the analysis was to identify the benefits to biodiversity that could be achieved if urban residential properties restored 30% of their ‘backyard’. Approximately 3,000 residential properties in each of inner Sydney, Melbourne and Brisbane were selected as candidates for restoration to contribute to the creation of habitat corridors.

Limitations

It has been assumed that 30% of ‘backyards’ would be available to be restored and that restoration was not already happening, however no ground-truthing, or detailed scrutiny of this areas was completed. These findings therefore represent a baseline of the scale of the ‘possible’ should urban landholders ambitiously engage in land restoration.

Existing conditions

Melbourne

- The City of Melbourne (2023) ‘Insect Study Parks’ (ISP) were reviewed to determine which areas and parks of Melbourne had the highest insect species for richness and abundance, and hence should be prioritised for the creation of habitat corridors.
- The Victorian Biodiversity Atlas (VBA) and the Australian Government Protected Matters Search Tool (PMST) were used to determine the extent and presence of threatened species (accessed on the 25th of May 2023).
- The current habitat areas and connectivity, ISP, threatened species records, zoning areas, and building footprint data (Githud, 2020) were overlaid to determine optimal locations for habitat corridors.

Sydney and Brisbane

- A more high-level analysis was conducted for Sydney and Brisbane, using only current habitat areas and connectivity with building footprint data (Githud, 2020) to determine optimal locations for habitat corridors.



Results

If the selected properties in each city restored 30% of their available backyard it would lead to 127 hectares (ha) of restored habitat. That is equivalent to 178 soccer pitches of more space to promote greater species diversity, population abundance and facilitate species dispersal across previously isolated patches.



The Grey-headed
Flying Fox



The Powerful Owl



The Growling
Grass Frog

76 threatened species, 46 flora and 30 terrestrial fauna, have been recorded in inner Melbourne since 1960.

Bringing biodiversity into backyards

Creating habitat corridors offers positive impacts to biodiversity, including increasing food resource availability, supporting increased species diversity and population abundance, and potentially facilitating gene flow between isolated populations. Whilst restoring 30% of backyards may be ambitious, it's not impossible. Individuals can play a role in conserving and restoring habitat through a range of actions.



For nature

Planting for wildlife

- Midstorey vegetation, has the highest insect abundance and diversity, and, consequently, can support other wildlife species which depend on insects as part of their diet. Planting native shrubs, and groundcovers of local provenance can increase local biodiversity.
- Planting nectar producing plants can contribute to the availability of food sources for both insects and birds. Eucalyptus trees for example are important resources for many native wildlife species.
- Mammals can benefit from planting native species that produce fruits, nectars and pollens.
- Amphibians can benefit from habitats with water that contains submerged or floating plants, as well as nearby areas of short, open vegetation where they can catch insects. Favorable habitat features include rock piles around margins and in the shallows.

Habitat Features

Installing logs, rocks, tiles, nest boxes, insect hotels, shallow water features and bird baths may help provide habitat and support a diversity of native species.

Threatened Flora

Creating a favorable environment for threatened flora through irrigation, mulching, protection from exotic species and refraining from use of chemical-based products including nitrogen and phosphorous-rich fertilisers. Tube stock of many threatened and locally significant plant species can often be sourced from local nurseries.

Responsible Cat Ownership

Preventing outdoor predation by keeping cats indoors or providing them with secure outdoor enclosures to mitigate negative impacts to native wildlife.



The Chocolate Lily

For society

Climate Crisis

The biodiversity crisis and climate crisis are intricately linked. Human-induced greenhouse gas emissions are altering the climate and threatening species' survival. Ecosystem restoration, even in urban areas, helps can help to mitigate climate change by increasing carbon sequestration and enhancing resilience to extreme climate events.

Urban Heat Island Effect

Urban areas experience higher temperatures than surrounding suburban and rural areas due to reduced vegetation and the prevalence of heat-absorbing surfaces like pavement and buildings. Habitat restoration in cities assists to mitigate the Urban Heat Island Effect.

Flood Mitigation

Urbanisation results in increased impervious surfaces and altered water flow patterns, leading to reduced stormwater infiltration. Habitat restoration in urban areas helps counter these negative impacts, returning the urban water cycle back to the natural water cycle.

Human Health

Habitat restoration positively impacts human health, which is particularly important in urban areas where chronic physical and mental health conditions are increasingly common. Access to green spaces is recognised for its health benefits, including lower blood pressure, reduced allergies, decreased cardiovascular disease mortality, lower stress levels, and increased physical activity.



Specific actions for individuals



Backyard

- **Restore a portion of your backyard** (ideally 30%) to contribute to the **creation of urban habitat corridors.**
- **Incorporate local flowering plants** in your backyard to attract pollinators.
- **Plant a diverse range of native vegetation**, including understorey vegetation, midstorey vegetation, and native trees.
- **Incorporate habitat features** like rocks, tiles, logs and nest boxes that provide shelter and resting places for various species.
- **Provide water sources** including elevated birdbaths for birds, and shallow bowls on the ground for small animals with rocks to enable easy access and prevent drowning.
- **Practice responsible cat ownership** by keeping cats indoors or within controlled outdoor spaces.
- **Utilise online resources** to learn about native flora and fauna which were previously present in your backyard area and document your own sightings.

Workplace

- **Monitor and mitigate** negative impacts to biodiversity in the supply chains of your company.
- **Advocate for green infrastructure**, such as green walls and roofs, and habitat features, in your workplace.
- **Ensure that any carbon offsets** purchased by your workplace are biodiversity-friendly.



The Woolly Tea-tree

Community

- **Engage with local government and local council** by writing an email (or letter), highlighting the importance of addressing the biodiversity crisis and supporting habitat restoration for the community.
- **Build insect hotel or nest boxes for native species** and install them in your backyard or donate them to the local council for installation in suitable locations (ensuring they comply with any relevant Council standards).
- **Restore the nature strip in your local street** (with relevant permissions) by planting a diverse range of native vegetation, including local flowering plants.
- **Join a local biodiversity group** to help protect, enhance, and restore the natural environment in your local community.
- **Participate in environment events organised by local councils and biodiversity groups**, such as plastic clean up, native seed collection, and plantings.

Conclusion

Habitat restoration is important to protect native species and reverse the biodiversity crisis, particularly in Australia, which already holds the unfortunate record for the highest number of mammal extinctions. Restoring 30% of backyards across properties, even within the heart of Australia's most populous inner cities would create habitat corridors, support native wildlife and foster a human-nature connection. Dedicated on-ground action focused on urban areas is necessary to ensure the preservation of urban biodiversity. Initiatives like Conservation Volunteers Australia's [Nature Blocks™](#) which inspire and support individual action, can make a significant contribution to habitat restoration efforts. By working collaboratively across various sectors, we can transform the urban landscape and make significant strides towards supporting urban biodiversity and achieving the Kunming-Montreal Global Biodiversity Framework Target.

Individual action
can make a significant
contribution to habitat
restoration efforts.

127ha
of land restored
equivalent to
178
soccer pitches



The Australasian
Shoveler

