

Observing Urban Forests in Australia

By E. Gregory McPherson

From February 13 to 28, 2009 I had the good fortune of visiting Australia, and touring urban forests in Sydney, Canberra, Brisbane, and Melbourne. My visits were only a day or two in each city, so in no case did I get an in-depth view of the urban forest resource or its management. The following observations are based on rather superficial field assessments and brief discussions with city arborists, researchers, and consultants.

Not surprisingly, Australian urban forests reflect their historic connection to the English gardening tradition. Parks and botanical gardens are abundant and beautifully landscaped, while many older residential areas have tree-lined streets and verdant front yards. As in the U.S., tree canopy is not as densely distributed in newer residential developments and commercial areas. Parking lot tree shade was sparse.

Most large Aussie cities have street and park tree inventories or are in the process of conducting them. Trees of significance have been mapped and registered. Tree management plans protect these distinctive trees, and provide guidance for maintenance of other public and private trees in most communities. A uniquely Australian example is the 2015 Avenues of Honour project, founded by TREENET (Tree and Roadway Experimental and Educational Network). This project aims to restore trees to Avenues of Honor that were planted a century ago, honoring the memory of every individual who died fighting in wars between 1915 and 2015, with a planted tree. Volunteers are documenting, preserving and reinstating the surviving avenues, as well as establishing new avenues throughout Australia. That's over 102,000 trees, and if planted as a single avenue would extend over 1,000 miles of national highway.

Brisbane's two million tree campaign has been very successful, with 500,000 trees and shrubs already planted. Most of these are planted in large groves for watershed restoration purposes. Open growing trees are primarily located to shade bike trails and footpaths, thereby encouraging pedestrian use, protecting from skin cancer, and cooling urban heat islands. Sydney, Melbourne, and Brisbane have experimented with structural soils to provide adequate growing

spaces in downtown projects, including diverting street runoff into tree wells for pretreatment and peak flow management.

Some of the issues that face urban forest managers "down under" include:

- Absence of a champion at the federal level. There is no federal agency with the authority to lead urban forestry activities or fund research and development. Similarly, state level leadership in urban forestry is minimal. As a result, levels of funding and program sophistication are highly variable depending on support at the local level.
- The Nursery and Garden Industry Association's (NGIA) Urban Greenscapes Symposium and follow-up meetings with federal agencies (Environment, Climate Change, Energy, Public Works) were successful in generating greater awareness of the need for federal support for urban forestry, and may result in a multi-million dollar investment. By holding the Symposium in the national capital, Canberra, and saturating local radio, TV, and print media, the NGIA maximized the event's public relations impact.
- Opportunities for college-level education in horticulture/ arboriculture/urban forestry have diminished. Several years ago the two-year diploma program in arboriculture was discontinued at the University of Melbourne. Discussions are underway to develop a new program to fill this gap. Training in arboriculture is provided by professional organizations like the ISA Australian Chapter and TREENET. The absence of Cooperative Extension type programs limits tree care outreach to the public.
- In some communities, utilities only prune the top of tree crowns for clearance under power lines, requiring municipal crews to prune the lower parts of the same trees. In Brisbane, this inefficiency has been overcome in trials to date, with utility crews pruning entire trees to Council standards on their programmed cycle. In Sydney, the Council has requested permission to perform utility clearance on municipal trees.
- The transformation of mature urban forests, from forests of the past to forests for the future, poses problems in many communities.



A watershed restoration planting in Brisbane containing over 9,000 tree and shrub seedlings. This project is one of many in the city's campaign to plant two million trees.



A street side planting of camphors (*Camphora cinnamomum*) under utility lines in Brisbane. The trees were originally topped for power line clearance. Crown restoration pruning is creating more full crowns for summer shade.



Drought stressed Chinese elms (*Ulmus parvifolia*) along a residential street in Canberra.

Renewal of the urban forest is particularly complex in Canberra, where the historic quality of its streetscapes is integral to the character of its neighborhoods. Can the emotional debates about tree removal and replacement become a touchstone for broader public understanding and support?

- Windstorms in Brisbane and fires near Melbourne have resulted in catastrophic damage, giving trees a bad name with some residents. Instead of instituting overly aggressive tree removal practices, Brisbane is compiling information on storm damages, sampling its trees to assess risk, and conducting an independent review of its tree risk management policies.
- Invasive species pose serious threats in Aussie cities because of salubrious growing conditions. For example, Sydney is making an all-out effort to control the spread of Chinese hackberry (*Celtis sinensis*), which is readily naturalizing. Similarly, habitat destruction and urban warming has made it possible for native flying fox bats to become established in urban areas of Sydney and Melbourne, where they cause considerable damage to the trees they roost in due to their numbers and size. Relocating these creatures to forest stands, minimizing adverse impacts, is not a simple proposition.
- Private greenspace is minimal in new suburban development. Building footprints have grown and lot sizes shrunk. People move from air-conditioned offices to air-conditioned cars to air-conditioned homes with little interest in gardening or their landscape. The public landscape along streets and in parks is the last vestige of greenspace, and needs to be redesigned for maximum functionality.
- In Canberra and Melbourne, ten years of drought have resulted in irrigation restrictions, parched landscapes, and struggling or dead trees. Melbourne's 10,000 elm trees are in a sad state, sporting a fraction of the foliage one would normally expect. Policies that severely restrict landscape irrigation threaten to undermine the asset value of the green infrastructure. Municipal foresters are combating this threat with new irrigation technologies, harvesting and reusing rainfall, selecting drought tolerant species, and managing soil to detain and infiltrate runoff.
- Tree management remains reactive rather than proactive in some cities. An increasing number of residents are requesting tree care via the internet and the desire to provide a high level of customer service is driving political support for this reactive approach. Asset management tools are needed to quantify the economic benefits of proactive municipal forest management.

These urban forest management challenges are not unique to cities and towns in Australia. In fact, I suspect that several of these apply to just about every city across the world. No matter where you work, you're not alone! Somewhere, someone has developed a solution to your problem and has good information to share. We have much to learn from our mates down under, especially when it comes to dealing with water rationing, mounting large-scale tree planting programs, managing too many furry flying friends, and transforming our urban forests for the future.

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View of skyscrapers from the Botanical Garden in Melbourne, Australia.