AN OUTSIDER'S VIEW OF THE PAST, PRESENT AND FUTURE

ARBORICULTURE IN SINGAPORE

Text by Prof. William Maynard Fountain III, University of Kentucky (USA), CUGE Research Fellow

I have had the opportunity to visit Singapore multiple times over the past decade. Each visit has reinforced my recognition of the many positive things Singapore has in its favour. The rich cultural heritage coupled with people who are open and welcoming. The first week of my return was spent meeting up with friends who could be better described as family. My familiarity with place and culture creates the sense of having returned home. As I have revisited different sectors of the city I see many things that have changed since my last extended visit. As much as I love my free time and visits with friends, I remind myself that I am here as an arborist.

Arboriculture is the art and science of managing trees in the human environment for the purpose of enhancing the benefits they provide residents of the urban environment. Science-based tree care requires an understanding of a broad range of skills ranging from pathology and entomology to soil chemistry and plant physiology. It is with a chuckle and a smile that we often call ourselves "tree huggers". The reality is that working in and around natural systems is humbling and sobering rather than making one feel that he or she is an all-knowing master of the universe. To many of our fellow citizens we run the risk of being perceived as being in control of nature or sometimes even obsessed with trees. Sometimes we even believe this ourselves when we view the urban tree, forgetting to look at the urban forest for why we plant and manage trees in the first place.

When I was a young boy growing up in the United States, like my parents and grandparents before, we had passenger trains that we could ride in leisure across the country. Now, my children only know the hassle of travel in a post 9/11 world. Unlike Europe, high speed passenger trains are now almost nonexistent in North America. Railroads disappeared in part because the people who ran them were more interested in railroading than in providing exceptional service to their passengers. Arborists must never allow themselves to fall into the trap of growing and managing trees simply because of the awe that we feel for these giants of the forest. It is all right to love and respect these largest of living organisms as long as we do not forget the real reason that we have them in our cities. It is trees, big mature trees more than any other single feature, either natural or manmade, that make our cities liveable.

One has to travel to fully realise how special Singapore is among the cities of the world. It is not just that it is modern and located in the lowland, tropical rainforests that makes it uniquely different. Nor is it that it is the second most densely populated country per square kilometre in the world (32nd most densely populated city) and, compared to other urban areas, delightfully safe, clean and modern. It is all of these things that come together in a multicultural flavour that make Singapore one of the most liveable and pleasant metropolitan areas anywhere—and the urban forest is central to the features that make it so appealing.

Singapore is such a young city that we sometimes lose sight of time. Trees are not planted for ourselves but for future generations. The simple act of planting a tree is a remarkable statement in optimism making arborists among the most forward-looking of professions. A seedling planted today will be seen as a mature, functional member of the urban landscape by only the youngest among us. In essence, each of the trees we plant is a gift to our yet unborn children. Most of our other daily activities are concerned only with today. Much of the world has experienced the most significant economic downturn since the time of the Great Depression of the 1920s and 1930s. To many, the urban forest appears to be an expensive luxury—an expense that can be differed to some better time in the future. We must always remain vigilant against this deception of thought.

Modern municipal arboriculture is expensive but it is even more expensive to ignore it. Our profession requires a lot of highly skilled labour and heavy equipment. We hear the negatives of trees from the unenlightened and uninformed. "Leaves, branches and fruit fall requiring collection and removal." "Birds alight on boughs, awaking us at dawn on our day off." "The flowers attract insects and other creepy crawlies." These negatives along with what seems to be easily differed expenses of installing, maintaining and inspecting make this an inviting target for short-sighted budget cutters. During economic times like this, it is an especially large and inviting target for people looking for an easy and quick way to balance a municipal budget. Areas without trees and poorly maintained trees actually cost us more over the long term.

Trees whisper quietly to those who have learned to listen. The message of Singapore's trees that I hear as I walk your tree-lined streets is that their shade provides a cooling oasis for the temperate tourist walking in the seemingly relentless tropical sun. With the sudden onset of a tropical shower, trees give a few moments to get the umbrella out and open.

They are actually intercepting this initial three-quarters of a centimetre of precipitation so that the storm water removal system never has to account for it. While this seems like a pitifully small amount of water, multiply it by the 50 percent tree cover for the 710 square kilometres and you begin to see some big numbers ... and they do this 365 days a year, all without complaints and at no additional expense. We get additional benefits from this intercepted rainwater. As it evaporates from foliage it cools everything around the tree naturally and at no expense to us. Shade that falls on air-conditioned buildings keeps the buildings cooler. This means that cooling systems do not have to work as hard, saving us money twice. Less energy is used today and the air-conditioning system lasts longer saving us money in the future. These savings are further carried into the future by extending the life of the earth's limited natural resources. Tarmac on shaded streets has a functional life that is two to two-and-a-half times that of unshaded streets (McPherson and Simpson, 1999) and there are fewer volatile organic compounds (VOC) produced under shade. Shoppers have been shown to linger longer along shaded streets (Vargus, et al., 2007) and spend 12 percent more money (McPherson, 2008) thus leaving more of their tourist dollars in Singapore before returning home with more than just fond memories.

It is more difficult to quantify the health, psychological and social benefits of trees but the economic benefits are there just as assuredly. The birds in the branches add the music to our ears and put a smile in our heart. At the same time they keep populations of annoying insects in check reducing the need for toxic insecticides—all part of a balanced urban environment. Patients in hospital recover more rapidly (Ulrich, 1986) and workers express fewer job-related stress (Kaplin, et al., 1988) when trees and green spaces are a visible part of their human environment. These are just a few of the many benefits trees offer the urban dweller. Unfortunately trees are not able to argue their case to the public and public officials. This is our responsibility as ambassadors for the urban forest.

You may say, "What can I do? I'm not a good speaker. I'm not a good writer." There are many things that each of us can and should do! Among these are:

1 Speak up! Public policy makers expect us to support the concept of tree care. After all, we are getting a pay cheque for what we do and there is the appearance that our speaking up in favour of trees is just to insure the continuation of our jobs. However, when they do not hear from us, they assume that we agree with the naysayers that what we do really does not have much value. In this case silence can speak louder than words, and with a negative message. Speak loud and often!

2 Get family and friends to write letters of support for how valuable they see Singapore's trees.

3 When we get thanks from fellow citizens, show your appreciation for their support but don't stop there. Tell them that while we both know and appreciate the value of our urban trees, their community leaders really need to hear this from them. Give them a pre-addressed, stamped envelope for the local community leader.

4 Arboriculture is a gift to future generations. We do our jobs for future generations. But, most of today's youth have lived all of their lives in the city. Talk to youths about the wonder of trees and all that they do for us. Take them for a hike, stopping often to observe everything from the bugs to the birds and talk about the role that each of these things plays in a natural system. When you know and understand something, you value it and protect it. Today's youths are the ones who will be caring for and protecting the trees we plant today.

5 There are computer programmes[1] that will aid you in calculating the value of all the services urban trees provide us. These services range from cooling and carbon sequestration to mitigation of pollution and interception of precipitation. Calculate the value of selected trees and put a sign on prominent trees that states: "Have you thanked a tree today? This tree (and every other one like it) has contributed $1,500 in benefits to Singaporeans like you. For additional information on how you can help our trees grow and thrive, call: 1234-5678."

6 Trees in other parts of the world fail prematurely or fail to thrive. This is often because of defects in structure at the time of installation. Proactive individuals in the green industry have joined together in adopting uniform standards for grading nursery stock. The Florida (USA) standards[2] have been especially effective. All nursery stock has a tag stating that it is a Fancy, #1, #2 or Cull grade. Nothing in the law prohibits selling trees in the bottom grade. However, it allows design professionals to insure that their design is installed with the quality they envision.

7 The International Society of Arboriculture[3] (ISA) is developing a certificate programme for recognising individuals with skills in diagnosing structural problems in trees with the potential for increasing the rate of failure. When this programme is implemented, professionals working in this area should consider preparing for this certificate programme.

8 Contact the news media. They are always looking for good stories. If you need pre-prepared information you can obtain information from ISA's web[4] site developed specifically for this purpose.

Westerners visit Singapore for the tropical experience with an Asian flavour. Conserve your historical architecture and culture with all of the modern creature comforts we have come to know. This is a lesson that Raffles Hotel has learned and applied to their clientele. Each of us—designers, contractors and project managers—is working toward the same end goal. This takes coordination and understanding of the methodology and thought processes of the other professions. Each of us, working together can make the Lion City the most botanically diverse, environmentally green and sustainable city in the world. Now that is a Garden City!

Further reading:

Kaplin, R., J. Talbot and S. Kaplin. 1988. *Coping with Daily Hassles: The Impact of Nearby Nature on the Work Environment.* USDA Forest Service North Central Forest Experiment Station. Project Report. Urban Forest Unit Cooperative Agreement 23-85-08.

McPherson, G. and J. Simpson. 1999. *Carbon Dioxide Reduction Through Urban Forestry: Guidelines for Professional and Volunteer Tree Planters.* USDA Forest Service Pacific Southwest Research Station. General Technical Report PSW-GTR-171. 237 pp.

McPherson, Greg. 2008. Personal Communications

Ulrich, R.S. 1986. Human response to vegetation and landscapes. *Landscape and Urban Planting* 13: 29-44.

Vargas, Kelaine E.; McPherson, Gregory E.; Simpson, James R.; Peper, Paula J.; Gardner, Shelley L.; Xiao, Qingfu. 2007. *Interior West community tree guide: benefits, costs, and strategic planting.* USDA Forest Service, Pacific Southwest Research Station. Gen. Tech. Rep. PSW-GTR

[1] UFORE (Urban Forest Effects Model) (*http://www.ufore.org*) and i-Tree (*http://www.itreetools.org*) are two such programs.
[2] *http://www.urbanforestrysouth.org/resources/library/Citation.2005-10-18.2705*
[3] *http://www.isa-arbor.org*
[4] *http://www.treesaregood.org*