



Urban forestry – A cinderella science in South Africa?

Charlie M. Shackleton

To cite this article: Charlie M. Shackleton (2006) Urban forestry – A cinderella science in South Africa?, , 208:1, 1-4, DOI: [10.2989/10295920609505255](https://doi.org/10.2989/10295920609505255)

To link to this article: <https://doi.org/10.2989/10295920609505255>



Published online: 16 Mar 2010.



Submit your article to this journal [↗](#)



Article views: 224



View related articles [↗](#)



Citing articles: 2 View citing articles [↗](#)

Urban forestry – A cinderella science in South Africa?

INTRODUCTION

The benefits of forests (in their broadest sense) and of trees to the natural environment and rural communities are well known throughout the world, including in South Africa (e.g. see chapters in Lawes *et al.* 2004). The presence of these benefits has also been extrapolated to urban situations, where natural forests and veld might be left *in situ*, or trees planted in public spaces, or in private gardens. These benefits span the social, aesthetic, health, environmental and economic spheres. For example, urban forests can help to reduce stormwater runoff, improve air quality, reduce noise pollution, sequester carbon, provide wildlife habitats, as well as provide shade in the city and thereby saving on energy costs (Summit & Sommer 1998, Akbari 2002, De Sousa 2003, Kollin 2005). There are also financial as well as psychological and physical health benefits associated with urban forestry (Long & Nair 1999), and in suburbs of low economic status, the planting or maintenance of trees can provide opportunities for income generation through the sale of tree products such as fruits, medicines, dyes and fuelwood (Long & Nair 1999, Madaleno 2000, Shackleton *et al.* in press). Populations of some associated species, such as birds, may also be higher in urban forests than outside urban environments (Leston & Rodewald 2006). Surveys of urban residents confirm the positive attitudes they have to green spaces and urban forestry, such that estimates of willingness to pay can be higher than the real costs of maintaining trees and green belts within the urban environment (e.g. Tyrväinen 2001, Popoola & Ajewole 2002, Maco & McPherson 2003). Suburbs and properties with good urban forestry attract high land values and rents (Iverson & Cook 2000, Laverne & Winson-Geideman 2003), which increases tax flows to local authorities.

These well known benefits of trees and areas of natural biodiversity within urban landscapes come largely from research in the field of urban forestry. This is usually viewed as a highly interdisciplinary field (Konijnendijk *et al.* 2006), with most, although not all, of the research emanating from the temperate countries of Europe and North America. Seemingly, urban forestry research is not yet established on the agenda of research institutions in South Africa and many other developing nations. Before considering this oversight in more detail, it is first necessary to define what is meant by urban forestry.

WHAT IS URBAN FORESTRY?

Very generally, urban forestry relates to the promotion, establishment, maintenance and manage-

ment of trees in urban landscapes. Typically, most urban forestry research and programmes relate to public spaces within towns and cities, although the contribution of trees in private gardens to the overall environmental health and biodiversity of the suburb or town (and its inhabitants) is gaining recognition (e.g. Smith *et al.* 2006). Zipperer *et al.* (1997) argue for the consideration of the benefits of trees and treed areas in terms of ecological patches and to ignore the distinction between private and public space. This is appealing in terms of considering the benefits of trees in urban landscapes, but it ignores the fact that private and public spaces have different management authorities and financing mechanisms.

According to Konijnendijk *et al.* (2006), the term 'Urban Forestry' was first used in the late 1800s by a municipal parks official referring to the silvicultural context, i.e. the care of individual trees in urban space. A commonly used definition for a period of time was that of the American Association of Foresters (1958), who deemed urban forestry to be "the treatment of street, shade and park trees to preserve and protect their aesthetic value" (Owen 2000). The modern term, however, has embraced the broader social and economic dimensions, and includes both planted trees and natural landscapes within the urban limits. A current definition in wide use states that urban forestry is "the art, science and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economic and aesthetic benefits that trees provide society" (Konijnendijk *et al.* 2006). Interestingly, this definition does not mention the ecological benefits, which are of much current research interest internationally. In South Africa, the definition presented in the National Forestry Action Programme (NFAP 1997) gives recognition to the environmental dimensions, with urban forestry encapsulated as "an integrated approach to the planting, care and management of trees in urban and peri-urban areas to secure economic, environmental and social benefits of urban dwellers". The NFAP goes on to state that it includes trees in private gardens and the management of natural forests or woodlands within the urban or peri-urban periphery. Whilst a seemingly comprehensive definition, as with other disciplines of scientific endeavour, debate remains around what urban forestry is, or isn't. Key aspects of these debates relate to (i) whether or not private gardens should be considered as part of urban forestry?, (ii) where along the urban-rural continuum does urban forestry cease and 'conventional' forestry take over (if at all)?, and (iii) is urban forestry truly different from conventional forestry, and therefore does it need to be

defined and treated differently? Reviews of a range of definitions have been provided within different chapters of the seminal texts by Kuser (2000) and Konijnendijk *et al.* (2005).

URBAN FORESTRY PROGRAMMES & RESEARCH IN SOUTH AFRICA

Urban forestry programmes are myriad and varied in South Africa, although generally not under the banner of 'urban forestry'. Descriptors more frequently used are urban greening or tree planting programmes. The flagship programme at a national level is National Arbor Week, which brings together government, business and the non-government sector to highlight the benefits of trees (Guthrie & Shackleton 2006, Parkin *et al.* in press). This receives much media and education attention. Recently the National Greening Programme was launched via the South African National Biodiversity Institute, but details are yet to be made public. DWAF has a joint programme with Trees for Africa (a national NGO) pertaining to urban greening and especially urban forestry. At a local level, most municipalities allocate some budget for the development and maintenance of parks, and have some tree planting activities in well-frequented public spaces, such as along sidewalks or down the main street. The last 15 – 20 years has seen programmatic approaches to urban greening in general in most of the larger municipalities under the guise of metropolitan open space systems. The most advanced of these is the CAPE programme (Gelderblom *et al.* 2003) as it integrates the central tenets of biodiversity conservation, ecosystem processes and social dimensions. At the local level, various NGOs promote tree planting in specific regions, or specific towns. Examples include the Millennium Tree Planting programme in Grahamstown and Trees for Africa which provide a national coverage.

Although it is clear that the planting of trees in urban areas is widely practiced in South Africa, it is not supported by a systematic conceptual framework or based on research to optimize approaches and returns, and to provide the basis for advocacy and lobbying for better environmental quality in South African cities and towns. Indeed, the NFAP (1997) lamented that urban forestry in South Africa was largely haphazard and uncoordinated which was principally a result of there being no cohesive national strategy, which, in turn, was partially a consequence of inadequate knowledge and research. At that time there was only one urban forestry extensionist in DWAF (NFAP 1997).

In terms of government policy, urban forestry is mentioned (in passing, under Community Forestry) in the Forestry White Paper (DWAF 1996). There is more significant recognition of urban forestry in the NFAP (1998). Resulting from the NFAP, there is an internal departmental strategy for urban forestry (DWAF 2005), currently being revised. Under the

current strategy much is left up to NGOs and seemingly at least 35 forestry extension officers in various provincial offices, who have urban forestry "integrated into their job functions". But few of them are working solely on urban forestry full time. All in all, the focus is on promoting awareness and to some degree facilitating tree distribution, and leaves the planning and management of those trees and areas of natural forests/woodlands within urban areas to local municipalities, who generally lack funds and expertise for appropriate planning. The distribution of trees, and their subsequent management is not guided or informed by any research programme, and takes only limited cognizance of the economic and social dimensions. The fact that the much publicized presidential Urban Renewal Programme does not mention urban forestry and green space planning in its list of deliverables (which are centred on infrastructure delivery and safety and security), is indicative of the pitiful recognition and state of urban forestry practice and advocacy in South Africa. Considering the urban forestry strategy and indicators of achievement outlined in the NFAP, most have not been achieved at all, or only partially.

On the research front the situation is even more extreme. An examination of several electronic databases for published literature on urban forestry (and various synonyms) in South Africa over the last twenty years revealed only one, namely the six-page chapter by Mudau (2000) under the banner of urban greening, and hence included urban agriculture and permaculture. Prior to that was the handbook of Vosloo (1973) regarding the silvicultural practicalities of growing trees in urban areas. Approaches to the Faculties of Forestry at the Universities of Stellenbosch and KwaZulu-Natal indicated the same, i.e. there are currently no systematic programmes for urban forestry teaching, training or research within the forestry faculties in South Africa (Pierre Ackerman pers. comm.; Mike Underwood pers. comm.). Staff are involved in some projects from time to time that have an urban forestry component to them, but there is no comprehensive and dedicated focus on urban forestry research and advocacy.

WHERE SHOULD WE START?

Considering the almost non-existent state of urban forestry research in South Africa, both in the past and the present, the research agenda is open. As such, one assumes initial efforts would focus on a description of the current extent and nature of urban forestry in various parts of the country, across a range of municipalities, and a range of communities within municipalities. The current government priorities on social spending will undoubtedly mean that budget allocations to urban forestry will be meagre, unless the links to social and economic upliftment are tangible. Work from temperate regions show that the benefits are clear for individuals, municipalities, the nation and the environment.

Thus, scaled-up investment in urban forestry would be worthwhile. Competent research within South Africa should, therefore, be able to make the case for sufficient budget allocations to urban forestry at the local level because of the numerous benefits it can potentially offer to human well-being, urban sustainability and poverty amelioration. But the South African context and local conditions need to be considered, and so models and approaches developed elsewhere need to be adapted here.

Recently, Dwyer *et al.* (2002) proposed a set of seven priorities for urban forestry research in the United States. Of those, three are immediately pertinent to South Africa, namely, (i) Development of appropriate inventory and monitoring tools and approaches; (ii) Understanding how the location and configuration of the forest patch affects use and benefits, and (iii) How to best communicate the benefits of urban trees and forests to all stakeholders. To these I suggest the following could be added (i) Determination of the constraints (and how to overcome them) to urban forestry in different administrative and ecological settings in South Africa, (ii) Valuation of the benefits of trees and urban forests, (iii) Urban forestry and poverty mitigation, (iv) How to integrate urban forestry into municipal zoning processes, and (v) Determination of the relative benefits and costs of exotic and indigenous forests and trees in urban forestry. These research topics are not the realm of solely the ecological and forestry scientists, but require collaboration with social and economic scientists within a multidisciplinary approach, along with active participation of stakeholders (communities, municipalities, NGOs, CBOs).

CONCLUSIONS

It is clear that whilst tree planting in urban areas is widely practiced in South Africa, it receives neither the profile, government support or nor the research focus that it requires and deserves. Tree planting programmes occur, but remain fragmented (as bemoaned in the NFAP), and uninformed by either a conceptual framework of urban forestry, nor a systematic analysis of the benefits, constraints and optimal approaches within different settings and communities. There has been patently little change in the state of urban forestry since the NFAP (1997), almost ten years ago, and none of the goals identified at that time have been fully accomplished. Integration and maintenance of treed and natural areas into urban landscapes is usually an afterthought, and most developed in the larger metropolises. It has a fragile profile amongst the authorities in small and medium sized towns, but needs to be boosted before the growth of these smaller urban areas is at the expense of the natural lands at the urban-rural periphery. It is time for the research sector to provide the necessary information, knowledge and models to guide development of vibrant

and workable urban forestry policies and strategies, which will capture the attention of policy-makers and municipal planners and hence the budget strings they control.

ACKNOWLEDGEMENTS

I am grateful for useful commentary on earlier drafts of this paper from James Gambiza.

REFERENCES

- AKBARI, H., 2002. Shade trees reduce building energy use and CO₂ emissions from power plants. *Environmental Pollution* 116: 119-126.
- DE SOUSA, C.A., 2003. Turning brownfields into green space in the City of Toronto. *Landscape and Urban Planning* 62: 181-198.
- DWAF, 1996. White Paper on Sustainable Forest Management in South Africa. Dept of Water Affairs & Forestry, Pretoria. Dept of Water Affairs & Forestry, Pretoria.
- DWAF, 2005. Urban greening strategy: a guideline for community forestry staff and discussion document for external stakeholders.
- DWYER, J.F., NOWAK, D.J. & WATSON, G.W., 2002. Future directions for urban forestry research in the United States. *Journal of Arboriculture* 28: 231-236.
- GELDERBLOM, C.M., VAN WILGEN, B.W., NEL, J.L., SANDWITH, T. BOTHA, M. & HUACK, M. 2003. Turning strategy into action: implementing a conservation action plan in the Cape Floristic Region. *Biological Conservation*, 112: 291-297.
- GUTHRIE, G. & SHACKLETON, C.M., 2006. Urban - Rural contrasts in National Arbor Week in South Africa. *South African Journal of Science* 102: 14-18.
- IVERSON, L.R. & COOK, E.A., 2000. Urban forest cover of the Chicago region and its relation to household density and income. *Urban Ecosystems* 4: 105-124.
- KOLLIN, C., 2005. Making it official: Writing trees into ordinances to improve environmental quality. *American Forests* 110: 22-25.
- KONIJNENDIJK, C.C., NILSSON, K., RANDRUP, T.B. & SCHIPPERIJN, J. eds, 2005. *Urban forests and trees*. Springer-Verlag, Berlin.
- KONIJNENDIJK, C.C., RICARD, R.M., KENNEY, A. & RANDRUP, T.B., 2006. Defining urban forestry - a comparative perspective of North America and Europe. *Urban Forestry & Urban Greening* 4: 93-103.
- KUSER, J.E. ed., 2000. *Handbook of urban and community forestry in the northeast*. Kluwer Academic Publishers. New York.
- LAVERNE, R.J. & WINSON-GEIDEMAN, K., 2003. The influence of trees and landscaping on rental rates at office buildings. *Journal of Arboriculture* 29: 281-290.
- LAWES, M., EELEY, H., SHACKLETON, C.M. & GEACH, B. (eds). 2004. *Indigenous forests and woodlands in South Africa: policy, people and practice*. University of KwaZulu-Natal Press, Pietermaritzburg.
- LESTON, L.F.V. & RODEWALD, A.D., 2006. Are urban forests ecological traps for understory birds? An examination using Northern cardinals. *Biological Conservation* 131: 566-574.
- LONG, A.J. & NAIR, P.K.R., 1999. Trees outside forests: agro-, community, and urban forestry. *New Forests* 17: 145-174.
- MACO, S.E. & MCPHERSON, E.G., 2003. A practical approach to assessing structure, function and value of street tree populations in small communities. *Journal of Arboriculture* 29: 84-97.
- MADALENO, I., 2000. Urban agriculture in Belém, Brazil. *Cities* 17: 73-77.
- MUDAU, T., 2000. Urban Greening. In: Owen, D.L. (ed.) *South African Forestry Handbook 2000*. SAIF, Pretoria. pp. 545-550.
- NFAP 1997. South Africa's National Forestry Action Programme. Dept of Water Affairs & Forestry, Pretoria.
- Owen, D.L. 2000. The glossary of forestry terminology. In: Owen, D.L. (ed.) *South African Forestry Handbook 2000*. SAIF, Pretoria. pp. 724-734.
- PARKIN, F., SHACKLETON, C.M. & SCHUDEL, I., in press -

2006. The effectiveness of schools-based national arbor week activities in greening of urban homesteads: a case study of Grahamstown, South Africa. *Urban Forestry & Urban Greening*
- POPOOLA, L. & AJEWOLE, O., 2002. Willingness to pay for rehabilitation of Ibadan urban environment through reforestation projects. *International Journal of Sustainable Development & World Ecology* 9: 256-268.
- SHACKLETON, C.M., MCCONNACHIE, M., CHAUKE, M.I., MENTZ, J. SUTHERLAND, F., GAMBIZA, J. & JONES, R., in press - 2006. Urban fuelwood demand and markets in a small town in South Africa: livelihood vulnerability and alien plant control. *International Journal of Sustainable Development & World Ecology*
- SMITH, R.M., THOMPSON, K., HODGSON, J.G., WARREN, P.H & GASTON, K.J., 2006. Urban domestic gardens (IX): composition and richness of the vascular plant flora and implications for native biodiversity. *Biological Conservation* 129: 312-322.
- SUMMIT, J. & SOMMER, R., 1998. Urban tree-planting programs – a model for encouraging environmentally protective behaviour. *Atmospheric Environment* 32: 1-5.
- TYRVÄINEN, L., 2001. Economic valuation of urban forest benefits in Finland. *Journal of Environmental Management* 62: 75-92.
- VOSLOO, J.J., 1973. *Trees in urban areas*. Pamphlet 108, Dept of Forestry. Government Printer, Pretoria.
- ZIPPERER, W.C., SISINNI, S.M., POUYAT, R.V. & FORESMAN, T.W., 1997. Urban tree cover: an ecological perspective. *Urban Ecosystems* 1: 229-234.

Charlie M. Shackleton
 Department of Environmental Science
 Rhodes University
 Grahamstown

E-mail: c.shackleton@ru.ac.za