



Research paper

How tree professionals perceive trees and conflicts about trees in Australia's urban forest



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HIGHLIGHTS

- Australian tree professionals fall into five attitude groups, which vary in location, occupation and type of employment, but not gender.
- Urban forest planners/strategists value trees as green infrastructure while on-ground arborists have a more emotional attachment to trees.
- Tree professionals recognise that different values and attitudes can cause social conflicts based on tree type, size and abundance.
- Tree professionals see various ways of resolving these conflicts, but differ in their opinions on the best ways to maintain urban tree cover.

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ABSTRACT

Tree professionals are responsible for management of the urban forest. It is important to understand how they perceive trees and conflicts about trees. Information gained from semistructured interviews with tree professionals in eastern Australian cities was treated as qualitative (0/1) variables to derive a repeatable classification. The strongest differences between these groups were between a group dominated by urban planners and strategists and a group dominated by private arborists. The urban forest planners and strategists regarded trees as green infrastructure. The onground tree managers were more emotionally engaged with trees, similar to the residents reported in a previous study. The professionals had strong opinions about the public, believing that they overestimated risk from trees. Four types of conflict about trees were evident: between those who see trees as cost-effective machines for achieving urban goals and those in love with them; between those who had ideological attachments to types of trees; between those scared of trees and those sanguine about their risk; and, between adjacent land owners. Interviewees suggested that the first type of conflict could be avoided by appropriate selection of trees, the second mitigated by consultative processes, the third by education and the fourth by arboricultural advice and legal means. Most tree professionals felt that there was room for improvement in tree management in cities, but they disagreed on the effectiveness of different options for tree conservation, indicating that the effectiveness of the variety of mechanisms used to enhance tree coverage in Australian cities needs to be determined.

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1. Introduction

There is variation in preference for different types of trees in cities (Fraser & Kenney, 2000; Iles & Vold, 2003; Kirkpatrick, Davison, & Daniels, 2012; Pearce, Kirkpatrick, & Davison, 2013; Summit & Sommer, 1999; Williams, 2002). There is also variation in perceptions of the nature of the importance of trees (Kirkpatrick, Daniels, & Davison, 2011; Kirkpatrick et al., 2012; Kitchen, 2012; Lohr, Pearson-Mims, Tarnai, & Dillman, 2004). Among residents, we have those who predominantly perceive urban trees as sacred,

utilitarian, decorative or hazardous and those who are indifferent to urban trees, or see most of them as growing in the wrong place (Kirkpatrick et al., 2012). While there is a growing literature on variation in the attitudes and actions of residents in relation to trees and urban forestry (Getz, Karow, & Kielbaso, 1982; Hull, 1992; Hunter, 2001; Jones, Davis, & Bradford, 2013; Kirkpatrick et al., 2012; Kirkpatrick, Davison, & Daniels, 2013; Lohr et al., 2004; Summit & McPherson, 1998; Zhang & Lin, 2011; Zhang, Hussain, Deng, & Letson, 2007), the attitudes of arboricultural and other tree professionals have been largely ignored. In two exceptions, Braverman (2008) argues that tree professionals impose arboriphilia and Kuhns, Bragg, and Blahna (2002), Kuhns, Bragg, and Blahna (2004) document gender bias.

Despite the lack of research on tree professionals, their attitudes and opinions are as likely to be important for the future of the urban forest as the attitudes and opinions of residents, as

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they variously regulate the forest as a whole, manage trees in public spaces, and make diagnoses of health and hazard that strongly influence tree survival on both public and private land. We have a reasonable understanding of the ways in which residents perceive trees in the suburbia and exurbia of eastern Australia (e.g. Daniels & Kirkpatrick, 2011; Head & Muir, 2007; Kirkpatrick et al., 2012, 2013; Zagorski, Kirkpatrick, & Stratford, 2004). This eastern Australian work tells us that the composition and future of the urban forest are often hotly contested. To understand conflicts related to trees, and potential resolutions of these conflicts within this region, we will benefit from an understanding of the attitudes and opinions of tree professionals, for which no data have been available.

Tree professions are likely to encompass a variety of attitude syndromes (sensu Kirkpatrick et al., 2012), which may be concentrated geographically, occupationally, by employment type and by gender (Kuhns et al., 2002, 2004). For example, those tree professionals who are engaged in planning and strategising may have different perspectives and motivations than those who directly manage trees on the ground.

Our major aim in the present paper is to understand how eastern Australian arborists perceive trees, conflicts about trees and solutions to conflicts about trees, and whether they differ between each other in these perceptions. Our first step in this process was to determine whether there are distinct attitude syndromes among 52 tree professional interviewees. We then focus on the perceptions and opinions of the extreme groups of tree professional revealed by this analysis. Finally, we discuss the resolutions to conflicts related to trees that were suggested by the tree professionals and the implications of our results for tree conservation in Australian cities. Our discourse covers all urban trees, as tree professionals have a role in managing trees on both private and public land.

2. Methods

2.1. Data collection

One of us (AD) interviewed 52 tree professionals, of whom the majority identified as arborists (or arboriculturalists), with a minority identifying as landscape architects, horticulturalists and environmental planners. Sampling was purposive, based on identifying different occupations, type of employment and geographical coverage within and between cities. Recruitment relied on third party organisations and the snowball technique. Interviews were conducted in Townsville, Brisbane (including Gold and Sunshine Coasts), Adelaide, Sydney, Melbourne and Hobart. We selected these cities to build on our previous systematic work in these cities in relation to urban tree cover and composition and resident attitudes to trees (Kirkpatrick et al., 2011, 2012). The cities cover an environmental range from cool temperate to tropical, are spread over five States and encompass over sixty percent of the Australian population. With the exception of Brisbane, each city region encompasses many municipal governments (over thirty in the cases of Sydney and Melbourne).

Interviews were semi-structured, allowing participants to discuss matters they thought important, with the result that the order and framing of questions varied between interviews. Interviews usually involved one participant and were designed to elicit understanding of the ways in which tree professionals thought about, and interacted with, trees, tree professions, other professions, organisations, regulatory and legal frameworks, and residents. Each interview was recorded and transcribed.

A questionnaire administered in the same six cities elicited responses from 736 residents. The detailed design and findings of this survey are reported in our earlier work (Kirkpatrick et al., 2011, 2012). The present paper draws upon previously unpublished data

derived from an open-ended question inviting respondents to offer 'any other comments you wish to add in relation to your attitudes to trees in cities', and a closed question asking respondents to indicate which out of a list of 42 reasons for planting trees pertained to them. Respondents were asked to tick all boxes that applied to them.

2.2. Data analysis

Interview transcripts with tree professionals were open-coded for themes focussed upon statements of opinion, belief and value. Closely similar statements were grouped into 152 generalised thematic codes, such as 'problems with effectiveness of some tree protection mechanisms', 'developers corrupt arborists' and 'passionate about beauty of trees'. In some cases these codes were directly drawn from representative interviewee statements. In other cases, codes phrases were generic approximations of thematic content. These codes or thematic statements were treated as qualitative (0/1) attributes of the interviewees.

The use of repeatable methods to determine attitude syndromes gives confidence that all major complexes of opinions, attitudes and values have been discriminated. We used a combination of ordination and numeric classification to this end. Ordination is a method designed to induce parsimony in multivariate data sets. Ordination procedures seek to gain values in one to a few dimensions that adequately represent the differences between individuals. The effectiveness of an ordination is judged by the difference between distances between individuals in ordination space and their distances using all their attributes. Individual tree professionals were ordinated in four dimensions using global non-metric multidimensional scaling with the default options in DECODA (Minchin, 1990), on the qualitative data for the coded thematic statements. This ordination procedure is recommended for data, such as ours, in which there are attributes with large numbers of zero values.

Classification complements ordination by providing classes of individuals. We used an agglomerative procedure, in which the most similar individuals are successively fused. We used the scores on the four ordination axes as the input. Euclidean distance (geometric distance) and Ward's procedure, which averages distance values rather than attributes at each successive fusion and thereby prevents chaining (the tendency for fusion of single individuals into large groups, rather than with each other), were the options we selected in Minitab 16. Five groups were selected on the basis of a sharp increase in distance values between five and four groups. These groups were highly significantly different from each other when tested using analysis of similarities (a multivariate equivalent of analysis of variance) in DECODA. We used the Chi-square test to determine whether there was significant variation in qualitative attributes between the five groups.

3. Results

3.1. Attitude syndromes among tree professionals

Within the sample, there were five distinct groups of tree professionals of approximately equal size and widely varying characteristics and attitude syndromes (Tables 1 and 2). There was variation in attitude syndromes by city, employer and profession, but not by gender (Table 1). The strongest differentiation between groups was by location and private (or self-employment) versus public employer (Table 1), attitude groups 3 and 4 epitomising the extremes. Group 3 largely consisted of publically employed planners and strategists, while group 4 largely consisted of privately employed arborists (Table 1). The planners/strategists and arborists as a whole largely occupied different parts of the ordination space

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