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A walk on the wild side: Perceptions of roadside vegetation beyond trees

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ABSTRACT

Urban nature is of vital importance for human well-being in an increasingly urbanized world. Despite the wide variety of urban greenspaces, previous research has mostly focussed on parks and in particular presence of trees. Although streets are fundamental urban structures and offer an array of green elements beyond trees, the perception and valuation of other kinds of roadside vegetation by urban residents is understudied so far. This study explores the range of roadside vegetation and associated ecosystem services perceived by city dwellers in densely populated inner city districts of two German cities. Further, we explored how wild-grown roadside vegetation is valued by interviewees. Results confirmed the important role of trees but also demonstrated that city dwellers perceive a variety of cultivated and "wild" green components other than trees. Respondents attached a wide range of meanings and values to roadside greenery and showed a surprisingly high awareness of associated ecosystem services. Wild urban roadside vegetation met with high approval, although planted and maintained vegetation was preferred. Our study illustrated that trees and other elements of roadside vegetation fulfil important functions in the view of the public. For many respondents, ecological and economical functions of roadside vegetation were more important than orderliness. This indicates opportunities for enhancing the biodiversity of urban streetscapes. As public green spaces are in short supply in many cities, enhancing cultivated and wild roadside vegetation could help to deliver ecosystem services in the areas near where people move and live.

Introduction

In an increasingly urban world (UN-Habitat, 2008), addressing human needs in the urban context is essential (Young, 2010). Urban greenspaces offer manifold ecosystem services for improving human well-being and health (Niemelä et al., 2011), for instance, reducing elevated temperatures (Bowler et al., 2010), trapping airborne pollution (Beckett et al., 1998; Freer-Smith et al., 2004), and improving urban storm water (Bolund and Hunhammar, 1999). Urban vegetation can positively influence social contact among neighbours (Sullivan, 2004) and allows people to maintain a connection with the natural world (Dunn et al., 2006). Even commonplace nearby nature, such as plants in a courtyard, can have positive effects on human well-being and is well appreciated by the public (Ulrich, 1984; Kaplan and Kaplan, 2005; Largo-Wight, 2011). At the very least, urban vegetation represents a considerable economic resource by increasing the market values of properties (Lindsey et al., 2004; Saphores and Li, 2012).

Recent landscape research has mainly focused on urban parks and greenways, although public urban greenspace comes in many forms, from large parks to the spaces around public housing, public facilities, to the green strips along transportation corridors as well as the small random areas that are the remnants of urban development (Williams et al., 2009). As urban growth is projected to continue undiminished, the importance of greenspaces beyond the traditional ones is expected to increase (Fuller and Gaston, 2009). Consequently current landscape research considers rooftop gardens (Yuen and Hien, 2005; Oberndorfer et al., 2007), domestic gardens (Goddard et al., 2010), brownfields (Hofmann et al., 2012), pocket parks (Nordh and Ostby, 2013) and façade greenery (Köhler, 2008). Particularly understudied though, in terms of both ecosystem service delivery and perception by the public, is urban roadside vegetation. This is rather a paradox as road corridors are highly visible habitats where people move and spent a significant amount of time. Quantitatively, roadside vegetation makes up 10–25% of the

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total urban green space managed by parks departments in German cities.

Up to now, most studies on roadside vegetation have addressed trees (e.g. Fukahori and Kubota, 2003; Weber et al., 2008; Soares et al., 2011). However, roadside vegetation includes a wide variety of plants beyond trees owing to the range of cultivated and "wild", i.e. non-planted, spontaneously emerging, plant assemblages that exists along many road verges and in median strips, tree planting sites and paving joints. Little information is available on how urban roadside vegetation is perceived in general and about preferences for distinct components of roadside vegetation in particular. A recent nationwide survey in Germany revealed that 92% of the respondents highly value roadside trees and greenery (KGST, 2010)—although without specifying what type of roadside greenery was valued and in what respect. A study on how various street planting designs are perceived revealed that trees have the greatest effect on preference, although the space beneath trees, i.e. flowering herbs in combination with trees, can also affect preferences (Todorova et al., 2004).

In European cities, design and maintenance of roadside vegetation are the responsibility of public administrations whose ability to act is hampered by budgeting concerns. Hence opportunities for achieving savings and finding low-cost alternative greening measures are in demand. The environmental and economic burden of conventionally managed urban landscapes, in terms of the water, pesticides, and fossil fuels necessary for maintenance, is becoming increasingly apparent (Skaller, 1981; Borman et al., 2001; Kristoffersen et al., 2007). This suggests that there are opportunities for enhancing biodiversity by allowing, or even fostering, elements of "wild" vegetation along road corridors. It is an open question, however, whether and how people perceive and value wild vegetation in urban roadscapes.

The general public seems to prefer urban landscapes that indicate care, control and tidiness and that are managed accordingly (Nassauer, 1995; Ford, 2000). In general, studies on public perception of wild urban vegetation are scarce and have yielded contradictory results. Previous work suggests that wild-looking urban nature is perceived as messy (Hands and Brown, 2002), unsafe (Chiesura, 2004) or scary (Bixler and Floyd, 1997). Other studies show that city dwellers accept wild urban vegetation in urban parks (Burgess et al., 1988; Özgüner and Kendle, 2006), former wastelands (Keil, 2005; Hofmann et al., 2012) or workplace greenery (Kaplan, 2007).

At the same time the potential role of wild urban nature in providing social and ecological functions and in supporting biodiversity conservation is increasingly acknowledged (Rink, 2009; Del Tredici, 2010; Millard, 2010; Kowarik, 2011). This growing awareness coincides with the emergence of active urban citizenship, ranging from sponsorship to guerrilla gardening (Reynolds, 2009; Müller, 2011), thus possibly signalling a shifting attitude of some of the public in terms of the management and design of public urban open greenspace.

Here we aim to explore the role roadside vegetation plays in the everyday lives of city dwellers and the underlying rationales for why certain urban roadside layouts are preferred. The research focuses on roads in highly dense and heavily trafficked inner-city residential areas. We thus analyzed (1) the range of roadside vegetation types perceived by city dwellers, (2) residents' perceptions of specific types of roadside vegetation, (3) the meanings and values city dwellers attach to roadside vegetation, (4) suggestions for the design and management of roadside vegetation. Results can be used to inform policies and programmes that aim to integrate wild urban vegetation in urban settings.

Fig. 1. Study site in Cologne.

Methods

To explore the attitudes of city dwellers regarding urban roadside vegetation along a wider geographical range we conducted two independent studies in highly dense and heavily trafficked inner-city residential areas of two major German cities (Cologne, Berlin). In each study we used quantitative and qualitative research methods to disclose how residents perceive roadside vegetation. Yet as the methodological approaches were different, the studies are no replicates in a strict sense but complement one another. In Cologne, we performed a survey to explore which types of roadside vegetation are significant for residents and which functions and values residents generally assign to roadside vegetation. In Berlin, we questioned passers-by about their preferences for the existing wild-grown versus planted and maintained roadside vegetation and explored underlying motifs and values associated with those preferences.

Cologne study

The Cologne study was conducted on a lively main arterial road on the western edge of the inner city of Cologne (81 inhabitants/ha) with a colourful mixture of shops, restaurants, cafés and bars (Fig. 1) (Stadt Köln, 2011). The study was performed on three consecutive typical summer weekdays, from morning until early evening, in 2009.

We asked randomly selected passers-by ($N = 108$) to answer open questions presented on a paper form: (1) When you think of urban roads, which different plants or vegetation come to mind? (2) How do plants become established along urban roads in your opinion? (3) What activities do you use urban roads for? (4) What is vegetation along roads good for in your opinion? and (5) How should urban road spaces be designed, what changes would you like to see? Additionally we asked the respondents their age and gender. More than half of respondents (56%) were younger than 30 years, with a slight majority of male respondents (58%) (Table 1). Answers were written down by respondents, or if they had difficulties with writing, answers were transcribed word for word by the interviewer.

Berlin study

The Berlin study was conducted on a main arterial road (Fig. 2) in Friedrichshain-Kreuzberg (134 inhabitants/ha), a multicultural borough with low average age and many cultural attractions (Amt