



Short communication

Lawn as a cultural and ecological phenomenon: A conceptual framework for transdisciplinary research



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ABSTRACT

Globalisation and urbanisation are driving the worldwide homogenisation of urban landscapes. The flora and fauna of cities in different parts of the world are very similar, irrespective of geography and climate. One of the most powerful symbols of modern urban landscapes is the lawn. There are just a few management options for urban lawns, regardless of how they are used and where in the city they are situated. Today, lawns occupy much of the green open spaces in cities (70–75%) and are located in private front and rear gardens, public parks, cemeteries, golf courses and along roads. Most people in the Western world view lawns as a ‘natural’ and even compulsory element of the urban landscape, without questioning their social, symbolic, ecological or aesthetic values. In this article we discuss the conceptual framework and methodological approaches being used in an ongoing transdisciplinary collaboration project including stakeholders to study lawns in Sweden as a social and ecological phenomenon. The overall aim is to understand the role of lawns in sustainable urban planning, design and management. The transdisciplinary approach allows us to exchange knowledge between scientific disciplines in order to influence the studies within each subject throughout the project and to achieve a multi-dimensional understanding of the lawn as a phenomenon. The involvement and close collaboration of stakeholders in the project allows us to obtain first-hand information on planning issues connected to lawns and existing planning data from cities and to focus on true implementation aspects rather than just theoretical recommendations.

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Introduction

Globalisation and urbanisation are the major drivers of the worldwide homogenisation of urban landscapes. The flora and fauna of cities in different parts of the world are strikingly similar, despite geographical and climate differences (McKinney, 2006; Müller and Werner, 2010). In most of the Western world, urban landscapes have been influenced and shaped by the same landscape architectural approaches, namely French formal, English Picturesque and Victorian Gardenesque and, in the 20th and 21st century, Modernism (Ignatieva, 2010). One of the most powerful symbols of these landscape architectural approaches, and thus of modern urban landscapes, is the lawn. Only a few management

options have been adopted for urban lawns, regardless of how they are used and where in the city they are situated.

The use of lawns in our modern society is seen as a product of our life style (Giddens, 1990). Today, lawns cover a significant part of all green open spaces in cities (up to 70–75%). They can be found in private gardens and public parks, cemeteries, golf courses and along roads. Most people of the Western world view lawns as a ‘natural’ and even as compulsory element of the urban landscape, without questioning their social, ecological or aesthetic values (Stewart et al., 2009).

There is a common positive view of lawns as functional and accessible areas in parks, playgrounds and private gardens. Lawns often have symbolic value and people enjoy them (see, hear, smell etc.), although they may be not permitted to enter or use the lawn area. However, the intensive management practices used on lawns, such as frequent mowing and spraying of herbicides and fertilisers, has raised awareness about their potential negative impact on the urban environment. All previous research on urban biotopes has

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shown that lawns are strikingly similar in terms of plant species composition and, in their modern expression, are important contributors to the homogenisation of urban landscapes and loss of urban biodiversity (Ignatieva, 2011). Most grasses used for lawns are varieties originating from the same few nurseries or seed mixtures, creating habitats that have no equivalent within the native environment. In the US, 23% of the entire urban land area is estimated to be covered by lawns (Robbins and Birkenholtz, 2003), 62 000 t of pesticides are used by homeowners each year and 1.5 billion cubic metres of municipal water are used for irrigation of lawns each summer day. In Sweden too, lawns cover large areas of public courtyards, parks, golf courses, sports fields and traffic environments.

Like everywhere else in the Western world, lawns in Sweden are widely advertised by urban planners, landscape architects, developers and mass media as a very useful consumer product for the market. In the present project we regard lawns as specially constructed plant communities with a domination of a limited number of grass and herbaceous species which are densely planted and depend on a special management regime (regular mowing). The lawn is designed for social (sport and recreation), historical, aesthetical and cultural purposes (viewing, picnicking, playing golf and football, walking). There are intensively managed lawns (frequently cut short) which we call “conventional” and less-frequently cut lawns which are “meadow-like lawns”. The latter lawns are closer to natural grassland in the sense that they are mowed and had bigger number of species. The environmental impact of lawns largely depends on the intensity of management (Cameron et al., 2012). If fertilisers, pesticides and herbicides are used, the surrounding surface water and groundwater may be affected. Bolund and Hunhamma (1999) present six major groups of important urban ecosystem services: air filtering, micro-climate regulation, noise reduction, rainwater drainage, sewage treatment and recreational/cultural values. Out of these six, the one where lawns are most important is the rainwater drainage. In vegetation-free cities, up to 60% of the rain water ends up as surface runoff. In areas with a permeable surface, such as a lawn, only 5–15% of the rain water becomes surface runoff, whereas the rest evaporates or infiltrates into the ground providing important soil-moisture for trees and other vegetation that further contributes to many of the abovementioned ecosystem services.

Although lawns may have positive effects on the environment, e.g. through carbon sequestration in soil (Qian et al., 2010; Zirkle et al., 2011), the total effect on the environment may be negated by the frequent use of mowers powered by fossil fuels. Lawns in general could also serve as a habitat for grassland fauna, including bees and butterflies that utilise urban environments (Ahrné et al., 2009; Ockinger et al., 2009; Matteson and Langellotto, 2010). Despite the important role of lawns in the urban landscape, there are few comprehensive studies including their social, ecological, cultural, historical and symbolic values, as well as their management and overall environmental impact. Most existing studies have been conducted in Europe, the US and New Zealand, where lawns are causing problems with invasive species because most lawn grasses originate from Europe (Müller, 1990a,b; Thompson et al., 2004; Stewart et al., 2009). In urban planning and policy documents, the emphasis is often placed on sustainable planning and the importance of promoting ecosystem services, but since these scopes are inherently complex, they are difficult to implement in practice. In order to provide urban planners with valuable information on how this could be achieved, one way could be to focus on a major urban green element, for example lawn, and study it from different scientific perspectives in collaboration with practitioners. However, this calls for interdisciplinary projects.

Transdisciplinary research on lawns

Here, we describe the conceptual framework and methodological approaches of an ongoing project on lawns (Tress et al., 2003). The project is a transdisciplinary collaboration including stakeholders. The main research question “What is the phenomenon of lawn in Sweden?” involves studying lawns from different perspectives. The overall aim is to understand the role of lawns in sustainable urban planning, design and management. Ecological knowledge, social values and norms influence the management of urban green areas (Andersson et al., 2007) and may thus influence their biodiversity, environmental impact and the ecosystem services they provide. Without understanding the social motives behind the strong attachment of modern Western society to lawns, introducing potential alternative solutions and changing conventional management routines can be difficult. The transdisciplinary approach allows us to exchange knowledge between scientific disciplines in order to influence the studies within each subject throughout the project and to achieve a multi-dimensional understanding of the lawn as a phenomenon. The involvement and close collaboration of stakeholders in the project allows us to get first-hand information on planning obstacles relating to lawns and existing planning data from cities, and to focus on true implementation aspects and not just theoretical recommendations.

To frame the project, we are using a multiscale approach and studying lawns from different perspectives: from the large scale including the entire city (estimating the total coverage of lawn as a land use type) through the medium neighbourhood level (providing typology, coverage of lawns, their functions, values and use in parks or backyards) to the fine level of the lawn itself, with emphasis on biotope characteristics such as biodiversity and carbon sequestration. The study areas were chosen within dominant typologies of neighbourhood areas in Sweden, multi-storey housing areas and residential private houses. The pioneering character of our research is emphasised by the broad perspective, including qualitative studies of social, cultural and historical values and a number of classical quantitative biological studies (biodiversity of plants, pollinators and decomposers, and carbon balance), as well as design considerations. All these aspects are being synthesised to assess the environmental impact of lawns and their importance for ecosystem services in three Swedish cities. Another very important part of this interdisciplinary research project is the involvement of urban planning and design dimensions, with practical output for practitioners and decision makers who are formulating and implementing municipal policies.

More specifically, the aim of the project is to obtain interdisciplinary quantitative and qualitative data on lawns which will allow us to estimate the values of different lawns and draw conclusions about their negative and positive environmental impacts in our modern cities. Our ambition is not to avoid or prohibit lawn as a phenomenon, but to critically analyse it, connect it to people's needs and suggest a new planning, design and management paradigm.

Specific objectives of the project are:

- To classify and identify main types of lawns and their current management practices.
- To estimate the proportion of lawns related to other green and blue areas in the city, such as forests, agricultural land and water bodies.
- To understand the motives for decisions about the establishment and management of lawns among different stakeholders.
- To examine historical and social roots, perceptions, norms and aesthetic, symbolic and design values of current management practices of lawns.

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