



ELSEVIER

Contents lists available at ScienceDirect

Ecosystem Services

journal homepage: www.elsevier.com/locate/ecoser

Considerations in the valuation of urban green space: Accounting for user participation



Matthew Dennis*, Philip James

School of Environment and Life Sciences, College of Science and Technology, University of Salford, The Crescent, Salford M5 4WT, United Kingdom

ARTICLE INFO

Article history:

Received 19 February 2016

Received in revised form

2 August 2016

Accepted 3 August 2016

Available online 13 August 2016

Keywords:

Ecosystem services valuation

Social-ecological

User participation

Urban ecology

ABSTRACT

Within the ecosystem services framework, valuations of natural capital have primarily taken a landscape-scale approach. The generation of transferable monetary values for individual ecosystems has likewise depended on assessments carried out at large spatial scales. Such methods, however, lack adequate regard for complex natural habitats. This complexity is heightened in urban areas where green spaces provide multiple services according to use and participation. Hence, there is a need to acknowledge the unique value of urban nature, and the socially-mediated nature of its productivity. This need was addressed through a study of collectively managed green spaces in a north-west England conurbation (UK). Ninety-one sites were identified, followed by a case study of twelve sites assessing their value across four ecosystem services. A subsequent projection of the value of stakeholder-led land management was calculated and compared to an existing reference for the value of urban green space from The Economics of Ecosystems and Biodiversity database. The study found that collectively managed sites contribute considerable added-value to urban natural capital. In addition, the work highlights the shortcomings of applying transferable values to multi-functional habitat types, calling for a closer consideration of social-ecological contexts in the valuation of ecosystem services.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

Since the idea of placing value on the services provided by nature from both economic (Westman, 1977) and utilitarian (Ehrlich and Ehrlich, 1981) perspectives was proposed in the late twentieth century, the concept of ecosystem services has developed into a major framework for the promotion and design of regional, national and global environmental management (CBD, 2004; MEA, 2005; UK NEA, 2011). The Ecosystem Approach (CBD, 2004) adopted the notion in the fifth of its twelve principles, placing emphasis on the importance, and value, of those services which are derived from the wide range of global and local habitats and ecosystems (MEA, 2005; Bennett et al., 2009; Niemelä et al., 2010; Maes et al., 2012; Mouchet et al., 2014). The ecosystem services framework was further developed and promoted by the Millennium Ecosystem Assessment (MEA, 2005) which sought to categorise and measure the current and historical health of the world's ecosystems with an emphasis on the implications for human health and well-being. The concept continues to take precedence in national and international ecological assessments

* Correspondence to: University of Salford, Room 105a, Cockcroft Building, The Crescent, Salford M54WT, United Kingdom.

E-mail address: m.dennis@salford.ac.uk (M. Dennis).

(TEEB, 2008; UK NEA, 2011; Haines-Young and Potschin, 2013) as well as in research exploring issues in environmental governance, human well-being and biodiversity (e.g. Von Shiring, 2002; Burls and Khan, 2005; Worm et al., 2006; Costanza et al., 2007; Pudup, 2008; Niemelä et al., 2010; Mace et al., 2012; Wall and Nielsen, 2012).

It has been asserted in the literature that assessments of ecosystem services across spatial scales must take into consideration the multifunctional and complex nature of natural habitats and, therefore, the goods and benefits they provide (Niemelä et al., 2010; Norgaard, 2010; UK NEA, 2011). Understanding the co-production of ecosystem services in highly complex social-ecological systems demands both a site-specific and landscape-scale approach to habitat assessments (UK NEA, 2011). The opportunities and challenges associated with the co-management of multiple ecosystem services have been described through the identification of positive (win-win) and negative (win-lose) relationships between specific services (e.g. Raudsepp-Hearne et al., 2010; Howe et al., 2014; Dennis and James, 2016a).

Despite the majority of the world's population now living in towns and cities (United Nations, 2008), urban areas have been under-acknowledged in global and regional assessments of ecological capital. The authors of the Millennium Ecosystem Assessment (2005) chose largely to ignore the urban landscape and the World Development Report (United Nations, 2008), while

focussing on urban areas, did not touch upon the subject of urban ecosystems in any form. More recently, patterns in the production of urban ecosystem services have been explored (e.g. Niemelä et al., 2010; Haase et al., 2012), though these have largely taken a landscape-based approach. Accordingly, much of the work carried out on urban ecosystem services does not honour the complexity of the urban habitat mosaic. In order to evaluate the productivity and value of urban nature, the identification of ecosystem services at the landscape scale must be married to a smaller scale appreciation of the productivity and use of green spaces in cities.

Attempts to integrate nature conservation into planning and policy have led to the establishment of the field of ecological economics (Costanza et al., 1997) with the aim of incentivising and mainstreaming greater consideration of the environment towards development which is both economically and ecologically sustainable. The Ecosystem Approach was put forward as a lucid, practical framework, where necessary, adopting a monetary approach to managing ecosystems at various scales (MEA, 2005). Attempts have since been made to flesh out the promising conceptual elements of the Millennium Ecosystem Assessment into a working methodology for environmental accounting and management to protect and enhance global and local ecosystem services (e.g. Mace et al., 2012; Maes et al., 2012). Perhaps the most comprehensive of these has been The Economics of Ecosystems and Biodiversity (TEEB) programme, a global-scale initiative that seeks to produce research on the economic and environmental costs of ecosystem and biodiversity degradation with the intention of informing decision-makers at all levels (TEEB, 2008). The TEEB initiative is married closely to the notion of natural capital and the use of economic methods and proxies to value, and thereby manage, ecosystem services more effectively and realistically. The designation of transferable economic values to natural resources is aimed at providing a working appreciation of the role of such capital towards human well-being (Daly and Farley, 2004) as well as functional valuation approaches to ecosystem goods and benefits (Costanza et al., 2006). In this respect, urban areas, largely due to their inherent complexity, have been continuously overlooked.

1.1. *The value of green space and civic ecological movements in urban areas*

Although urban relevant ecosystem services have been described and categorised according to recognised international classifications (e.g., Bolund and Hunhammar, 1999; Niemelä et al., 2010; Elmqvist et al., 2013) such studies have largely taken a landscape-scale approach. Likewise, the valuation of ecosystem services in urban areas has been projected through highly generalised approaches such as the use of secondary data and spatial modelling (e.g. Konopacki and Akbari, 2000; Costanza et al., 2006; Jim and Chen, 2009; Peng, 2012; Gómez-Baggethun and Barton, 2013). The TEEB database compiled by Van der Ploeg and De Groot (2010) is one of the few attempts to place a coherent, transferable value on urban green space. This database provides a figure for total economic value of urban green space as the sum of the contribution of this habitat type to climate regulation, recreation and water regulation (based on a study by Brenner-Guillermo (2007)). Again, a landscape-scale approach was employed and, hitherto, studies which offer a detailed economic account of the functionality of the current array of multi-functional and multi-use urban green space types have not been forthcoming.

The main findings of the UK NEA (2011) include the importance of nature in meeting existence and value “needs” of human beings where contemporary consumption practices have failed. In particular, interaction *with* and recreation *in* nature were highlighted in the report as significant contributors to human health and well-

being. The report states that “a key knowledge gap regarding education and ecological knowledge goods concerns the processes by which adults acquire ecological knowledge, their participation in nature-based educational activities and how knowledge acquisition is influenced by engagement with environmental settings as a form of cultural service” (UK NEA, 2011, p. 83). Despite this assertion, and that the report also highlights, and recommends, increasing public participation in the management of ecosystems, the influence of user participation in natural resource management on the value of ecosystem services was not acknowledged.

The lack of consideration given to the effect of social mediation in the production of ecosystem services is conspicuous in other efforts to evaluate urban ecological capital (Costanza et al., 2006; Peng, 2012; Gómez-Baggethun and Barton, 2013). Although urban residents are usually seen solely as the recipients of the ecosystem services provided by natural elements within the landscape (Krasny and Tidball, 2015) they represent a key functional ingredient of urban social-ecological systems. Research into civic ecological movements has demonstrated that stakeholder stewardship of natural resources in urban areas can lead to significant gains in terms of ecosystem services production (Krasny and Tidball, 2015; Dennis and James, 2016a) and governance (Ernstson et al., 2008) but studies have neglected to investigate the implications of such social-ecological action in terms of value added to urban green space. Studies have shown that the production of a range of ecosystem services increases proportional to user participation in the management of urban green commons (Dennis and James, 2016a) and that human and environmental health present a significant level of interdependence (Burls, 2005; Bird, 2007; Fuller et al., 2007; Dennis and James, 2016b). Little work has been conducted, however, which seeks to place meaningful monetary values on urban green space in which social-ecological interactions are heightened through user participation in its management.

The civic stewardship of natural resources, particularly in urban areas, has become an important topic of research in its own right with studies disentangling the various potential benefits in the form of food security (Metcalf and Widener, 2011); improved diet (Alaimo et al., 2008; Kazmierczak et al., 2013); participant health (Hynes and Howe, 2004; Pudup, 2008); reduced crime (Kuo et al., 1998; Kuo and Sullivan, 2001); sense of place (Krasny and Tidball, 2015) and social capital (Okvat and Zautra, 2011) as well as adding to and preserving local ecological memory (Barthel et al., 2010). Policy statements have likewise asserted the contribution to be made by stakeholder-led stewardship to green infrastructure and ecosystem services in the urban landscape (Defra, 2011; UK NEA, 2011). The positive effects of green space as a buffer against the stresses of urban living and as a boon for human well-being have been well documented (De Vries et al., 2003; Mitchell and Popham, 2007; Tzoulas et al., 2007; Hartig et al., 2014) and research suggests that interaction with, and cultivation of, green space is particularly beneficial to participant health (Townsend, 2006; Wakefield et al., 2007; Okvat and Zautra, 2011; Tidball and Stedman, 2013; Krasny and Tidball, 2015).

Such positive effects may be due to the particular physical activities which take place in, for example, collectively managed gardens. Francis (1987) first highlighted that community managed spaces offered alternative activities to those available in municipal city parks and that such activities were particularly attractive to certain user groups. Moreover, community gardens encouraged continuing participation and place attachment amongst users. The specific benefits arising from such common natural assets have still not been effectively addressed in terms of the production and valuation of ecosystem services. A more in-depth approach to assessing and valuing such services may reveal them to be significant in terms of planning and environmental accounting in

Download English Version:

<https://daneshyari.com/en/article/6463665>

Download Persian Version:

<https://daneshyari.com/article/6463665>

[Daneshyari.com](https://daneshyari.com)