



Original Articles

Perceptions of cultural ecosystem services in urban green spaces: A case study in Gwacheon, Republic of Korea

Hajung Ko^{a,*}, Yonghoon Son^b^a Interdisciplinary Program in Landscape Architecture, Seoul National University, Seoul, Republic of Korea.^b Department of Landscape Architecture, Graduate School of Environmental Studies, Seoul National University, Seoul, Republic of Korea

ARTICLE INFO

Keywords:

Cultural ecosystem services
 Urban ecosystems
 Urban parks
 Urban green spaces

ABSTRACT

Green spaces provide a variety of ecosystem services. Urban green spaces have particular value because they offer the benefits of cultural services to those living in urban areas. This study analyzed perceptions of cultural ecosystem services in the urban context of Gwacheon, Republic of Korea. We analyzed the cultural services provided by green space by surveying 240 residents of Gwacheon about which green spaces they frequently visit and what their major activities are in these green spaces, in order to find out how green spaces are utilized by urban residents. Since forests and large parks in Gwacheon are easily accessible from downtown areas because of the city structure, they play major roles in providing cultural ecosystem services. This study suggests that people find diverse cultural value in their everyday surroundings, not just in spaces with excellent ecosystems. This study has significant implications because of its quantification of current cultural services by a survey approach.

1. Introduction

As a result of rapid urbanization in the 1960s and 1970s, the geographical distribution of populations has become increasingly concentrated and the quality of urban ecosystem services in the city has been decreased. In the busy modern urban environment, there is a growing demand for the restorative power of nature and leisure time, but it is difficult to secure new green areas in cities where the necessary resources are lacking. Recently, as greenbelt deregulation has further continued, the city has become an environment where it is increasingly difficult to enjoy the benefits of the natural environment due to a decrease in the total amount of urban green spaces and fragmentation of these areas (Colding, 2013; Sagong, 2004).

Green spaces provide an array of ecosystem services. Urban green spaces have particular value because they provide beneficial cultural services to those living in urban areas, playing important roles in stress relief and health promotion for urban citizens (Bolund and Hunhammar, 1999; Jennings et al., 2016; TEEB, 2010; Tzoulas et al., 2007; Ulrich et al., 1991). For this reason urban well-being, as well as urban ecosystem diversity, can be promoted by improving the quality of ecosystem services in the city, through approaches such as identification of existing urban green space resources and discovery of potential green spaces that could be better utilized (Bertram and Rehdanz, 2015; Bolund and Hunhammar, 1999; MEA, 2005).

Since the integration of ecosystem services into the Millennium Ecosystem Assessment (MEA) in 2005, these services have been considered from a variety of perspectives. The various categories of ecosystem service reflect the range of benefits that ecosystems bring to human beings either directly or indirectly. Among these, cultural services denote ecosystem use for human enjoyment and well-being. Unlike other ecosystem services, cultural services are hard to quantify and the meaning ascribed to this term varies within and between cultures. While the importance of cultural services has been recognized, they are not yet fully defined or integrated within the concept of ecosystem services (Daniel et al., 2012).

Urban ecosystem service research, considering urban ecology, landscapes, urban forests and environmental health, has been taking place since the 1990s (Hubacek and Kronenberg, 2013), but research into cultural services has mainly focused on evaluations of recreation and tourism (Abildtrup et al., 2013; de Groot et al., 2010; Haab and McConnell, 2002). This is because many of the other aspects of cultural services, such as spiritual fulfillment, cognitive development, and aesthetic experience (MEA, 2005), are non-physical and not easy to explain in a quantitative way. In addition, because of factors creating a variety of sociocultural environments (such as geography, language, and lifestyle), study approaches and indicators used for evaluation are not consistent; unlike for other indicators of ecosystem services, this diversity needs to be better understood in order to better understand

Abbreviations: MEA, Millennium Ecosystem Assessment; HCA, hierarchical cluster analysis; PCA, principal component analysis

* Corresponding author at: Interdisciplinary Program in Landscape Architecture, Seoul National University, Seoul 08826, Republic of Korea.

E-mail address: tweety1229@snu.ac.kr (H. Ko).

cultural services.

Some studies have compared use patterns characteristic of parks in four European cities, revealing differences in individual preferences as well as local culture and habits (Bertram and Rehdanz, 2015). Ecocultural services also differ according to local environmental conditions (Riechers et al., 2016).

In the Republic of Korea, a variety of studies on ecosystem services have been carried out, particularly since the late 2000s, mainly focusing on measurement of the economic value of supply and control services. Recently, studies evaluating and quantifying cultural services have been increasing in number. For example, by conducting a quantitative evaluation of the function of ecosystem services in urban green spaces, researchers found that urban graveyards (Lee and Oh, 2013) and urban parks (Kim et al., 2017) are being used as spaces to provide cultural services.

This study aims to better identify the function that urban green spaces provide and explore their value from the perspective of users, by focusing on cultural services. Specifically, this paper will attempt to highlight new feasible urban green spaces, including green areas governed by the Republic of Korea's *Act on Urban Parks and Green Areas*, and study their features and value as cultural services. We aim to determine what kind of cultural service functions are performed by different types of urban green spaces. We selected the entirety of Gwacheon City, Republic of Korea, as our study area, as it contains both a high number and variety of green spaces.

2. Material and methods

2.1. Study area

Gwacheon City is located in the center of the Seoul metropolitan area in Gyeonggi Province, bordering Seoul, Anyang, Uiwang and Seongnam, and was planned as an administrative center in the late 1970s. The ratio of parkland to total city area in Gwacheon is the highest in the country, with most of this area being forests and development-restricted areas, although the amount of green space is decreasing (from 22.87 km² in 2011 to 22.76 km² in 2014) due to the expansion of urban areas. However, there remain many green spaces within the urban area, especially when compared with other Korean cities. The total study area covers 35.86 km² and has a population of 67,157. While 15% of the total city area is urbanized area, the remaining 85% consists of natural environments including forests, farms and streams. Mountains such as Mt. Gwanak and Mt. Cheonggye, and Seoul Grand Park, a metropolitan park, take up a large part of this area. Farmland in Gwacheon differs from typical farmland as a significant flower farming industry means that many farms have built greenhouses. In Gwacheon City, there are many green spaces that are frequently visited as a result of the city's proximity to Seoul, with walking trails and bicycle paths by the Yangjae Stream. In addition, many people from neighboring regions visit Seoul Grand Park, even though this is legally defined as a neighborhood park.

Despite quantitative assessments showing that there are a large amount of green spaces in Gwacheon, particularly since the creation of Seoul National Park and Racing Park in the mid-1980s, healthy ecosystem services have not been considered; the focus has been on utilization-oriented improvements. In addition, consideration of ecosystem services has been absent in other areas such as settlements, commercial districts, rivers, reservoirs, and agricultural land adjacent to Seoul.

In this study, we consider conventional green areas such as those in parks, as well as non-statutory green areas including agricultural land and provided public cultural/educational facilities. We created a visualization map using ArcGIS 10.2 software, using the land cover map and the cadastral map provided by the Ministry of Environment, supplemented by referring to the *Gwacheon City Basic Plan and Statistical Yearbook, 2016*. Cultural properties have small areas and have not been displayed separately because they typically overlap with other areas

such as forests. However, since users can perceive the areas surrounding cultural properties to be green areas, such properties are included as green areas in the survey that forms the basis of this study. In total, 29 locations were included.

2.2. Data collection and analysis

This study first categorized the types of urban green space based on their cultural services, and identified major cultural service types through a literature review. Based on these findings, residents of Gwacheon were then surveyed.

A preliminary survey was carried out on October 14, 2016, followed by a field survey on October 18 and an online survey on October 18–22. Field surveys were conducted at Gwacheon E-mart (Wholesale Mart), Government Complex Gwacheon Station, Central Park, Munwon Sports Park, and Gwacheon Citizens' Hall for adults over 18 years of age living in Gwacheon City who consented to participate. In addition, we conducted an online survey for people residing in Gwacheon; participants were field survey respondents and acquaintances of the researchers.

The survey was divided into two parts: one part considered ways of using green areas, and the other part considered their cultural service functions. In order to associate the survey results with the relevant green spaces, the questionnaire included a question asking respondents to select which green area of Gwacheon their answers referred to. Data were collected from a total of 242 respondents (79 in the field survey and 163 online), with the 240 valid questionnaires (excluding 2 unfaithful responses) analyzed using Excel and SPSS 20.

We analyzed how well urban green spaces provide cultural services and investigated correlations. To analyze the relationship among pairs of cultural ecosystem services, Spearman's rank correlation coefficient was applied. In order to identify possible bundles of cultural ecosystem services based on interviewees' perceptions, we ran an agglomerative hierarchical cluster analysis using Euclidian distances and Ward's method, choosing this approach because of its widespread use.

2.3. Urban green spaces

In the city, green spaces are defined in various ways from both academic and legal perspectives. From an academic perspective, "urban green spaces" can be defined as a broad concept covering open spaces, with specific use varying according to the research field in question. As well as obvious examples of green spaces (such as forests), the broad concept of urban green spaces also encompasses open non-forested spaces, as well as land and water that is not covered by buildings or structures (Goodman and Freund, 1968). In addition to contributing general functions such as atmospheric purification, meteorological circulation, and natural disaster prevention, the urban green space performs various cultural functions, and is thus a key element required to create a pleasant urban environment (Landsberg, 1981). In addition, urban green spaces provide spaces for rest and healthy activities for urban residents.

Urban green spaces can take various forms. Cities in the Republic of Korea typically have a relatively large number of natural and green areas within their administrative areas, but have little green space within urbanized areas, except for greenbelt areas. Bolund and Hunhammar (1999) classified seven types of urban ecosystem that provide ecosystem services: tree-lined, lawn/park, urban forest, cultivated land, wetland, lake/sea, and stream ecosystems; Plieninger et al. (2013) identified six types of ecosystem that provide cultural services: forest, water body, cropland, grassland, settlement, and quarry. In the Republic of Korea, Sagong (2004) used the "land cover map" and "numerical land use map" classification systems to divide land into forest area, grassland, water area, park green area, and production green area; Eom and Lee (2008) conducted a study on the functions and accessibility of green spaces by categorizing them into urban green spaces, urban parks, plazas, rivers, residential green areas and outside

Download English Version:

<https://daneshyari.com/en/article/8845326>

Download Persian Version:

<https://daneshyari.com/article/8845326>

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