Applied Geography 38 (2013) 76–85

Contents lists available at SciVerse ScienceDirect

Applied Geography

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

Integrating space, spatial tools, and spatial analysis into the human dimensions of parks and outdoor recreation

J. Adam Beeco [a,*], Greg Brown [b]

[a] Clemson University, 137 Lehotsky Hall, Clemson, South Carolina 29634, USA
[b] University of Queensland, Australia

Keywords:
Protected areas
Parks
GPS tracking
Landscape values
Space
Time

A B S T R A C T

The analysis of space and the use of geographic information systems (GIS) have long been important to natural resource applications. More recently, social scientists have been exploring ways to integrate spatial concepts with social science data related to natural resources for theoretical, practical, and methodological reasons. This trend is particularly evident with research in park and protected area (PPA) management and outdoor recreation. The purpose of this paper is to present an updated review of how space has been incorporated into PPA research, integrate concepts and methods, identify gaps, and propose future directions for research. Overall, this review suggests that the incorporation of spatially-related social science data is advancing the field PPA research in an effective and viable way.

© 2012 Elsevier Ltd. All rights reserved.

Park and protected area (PPA) management seeks to balance human use and influence with the protection of ecosystems and natural resources. Most public lands within the U.S. provide recreational access for society while at the same time trying to preserve natural resources for future generations. This dual mandate has created issues for public land managers seeking to sustainably manage such places. Public land managers and researchers focused on PPAs recognize and dedicate much of their efforts to addressing contradictions that arise from trying to provide use opportunities that inherently impact resources.

For the past four decades, the concept of carrying capacity has been used as the primary conceptual basis for managing this dual mandate in PPAs. Carrying capacity has been defined as "the level of use beyond which impacts [on the biophysical resource and experiential quality] exceed levels specified by evaluative standards" (Shelby & Heberlein, 1984, p. 441). Carrying capacity at its most basic level seeks to identify the number of people and accompanying use types an area can accommodate without degrading the resource upon which the experience is dependent (Whittaker, Shelby, Manning, Cole, & Haas, 2011).

How much and which types of use can take place without the deterioration of the resource and visitor experience is dependent on spatial and temporal variables. As such, carrying capacity is a spatial construct which requires understanding of the space available and its uses. Spatial variables have been underexplored within the concept and practice of carrying capacity and related planning frameworks (e.g., Visitor Experience and Resource Protection [VERP; National Park Service, 1997]; Limits of Acceptable Change [LAC; Stankey, Cole, Lucas, Peterson, & Frissell, 1985]). Where visitors recreate has been considered for recreational planning (Gobster, Gimblett, & Kelly, 1987); however, newer spatial technologies may offer unique, effective, and better approaches to determining recreation use distribution and incorporating this data into management techniques.

Understanding the spatial context of both ecologically-based measurements and social data are needed to maintain a quality experience for visitors and adequate protection of resources. Space is a platform where different types of data can be integrated, including economic, ecological, and social data (Goodchild & Janelle, 2004). Specifically, spatial mapping and geographic information systems (GIS) are valuable planning tools when balancing multiple use claims on natural resources (Vries & Goossen, 2002). However, integrating spatially-related social science data into GIS-based PPA planning is challenging because of measurement issues. In particular, social science data are rarely location specific and analysis of social science data are often difficult to integrate within spatial planning models (McIntyre, Moore, & Yuan, 2008).

Despite these difficulties, the need to incorporate spatial data in planning is evident because recreational experiences in protected areas are a spatially-conditioned process. Páez and Scott (2004) review four spatially-conditioned processes that reveal a relationship between space and human-related phenomena. Three of the four of these processes influence the visitor distribution in PPAs.

* Corresponding author. Tel.: +1 864 979 1926; fax: +1 864 656 2226.
E-mail address: jbeeco@clemson.edu (J.A. Beeco).

0143-6228/$ – see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.apgeog.2012.11.013

- Spatial diffusion. Diffusion is a geographical pattern of spatial distribution from concentration to dispersion. Recreational use in parks is highly concentrated in certain areas (e.g., parking lots) but highly defuse in other areas (e.g., trails; D'Antonio et al., 2010).
- Spatial segmentation. Segmentation is the partitioning of a formerly homogeneous region (protected area) into two or more sub-regions (e.g., primitive, rustic, or concentrated). The Recreation Opportunity Spectrum (ROS) and related zoning management practices are an example of spatial segmentation within PPA management (Manning, 2011).
- Spatial interaction. A spatial interaction process is evident when one area of space affects other areas. Yogi Berra's oxymoronic quote "Nobody goes there anymore. It's too crowded," exemplifies the spatial interaction of visitor use in PPAs. PPAs are generally known for specific features many visitors seek to experience, while other visitors seek to experience areas that are less crowded.

A fourth spatially-conditioned process that is highly relevant to PPA planning is impacts to the resource. While the amount of visitor use impacts the resource, impacts are also dependent on other spatial factors independent of use levels. For example, the recreational impacts on trail systems demonstrate the importance of spatial considerations when understanding visitor use. On trails, visitors are likely to encounter varying levels of trail degradation; however, volume or type of use is likely to appear consistent. In other words, while use is consistent across a space (i.e., the trail), impacts vary across that same space. This has led researchers to identify that impacts along a single trail vary according to spatial dimensions (e.g., landform and trail design; Weber, 2007).

Despite these four logical spatial processes, the examination of space from a visitor use perspective has generally been limited. While other fields, such as urban planning, have made a swift adoption of spatially-related social science data for planning and analysis (Páez & Scott, 2004), researchers of PPAs have lagged behind. This is perhaps largely due to the type of data needed for analysis in each field and the ease of access to relevant spatially-related social science data. For example, census data is readily accessible and useful for urban analysis, yet its utility is limited for PPAs. However, in the past decade park and conservation area research has seen a growth in the integration of spatial-related social science data and analysis.

The objectives of this paper are to identify how social science theory has approached visitors' spatial movement, review some of the more pertinent attempts of PPAs to incorporate spatially-related social science data, outline some of the conceptual and analytical difficulties with the inclusion of spatially-related social science data, and address the importance of incorporating spatially-related social science data into current management frameworks. First, this paper will review some of the theoretical attempts to conceptualize visitor travel patterns including typologies, space-time budgets, and landscape values. Next, this paper will examine some of the current methods for mapping visitor use: 1) the utilization of GPS for visitor tracking (D'Antonio et al., 2010; Hallo, Manning, Valliere, & Budruk, 2005); 2) the spatial modeling of recreation terrain suitability indexes (borrowed from conservation biology; Kliskey, 2000); and 3) the mapping of recreational impacts (this is actually the mapping of ecological indicators, so it is only loosely considered a social variable). Finally, we will discuss the current state of the field with respect to the integration of spatial considerations into recreation carrying capacity models.

Space and recreation use

The importance of space and time in PPA management has been recognized (Berkes & Folke, 1998). Understanding the locations of visitors, their travel routes, and the amount of time spent at these locations are some the most basic, but relevant data on recreation (Hallo et al., 2012). The spatial extent of visitor use has impacts both on the physical resource (Hammitt & Cole, 1998) and the social experience (Manning, 2011) of visitors to PPAs. However, much of the theoretical attempts to conceptualize visitor behavior come from tourism research. Nevertheless, researchers of recreation and tourism management have had mixed success identifying variables that consistently account for differences in the spatial patterns of visitors (Shoval & Isaacson, 2010). There is, however, consistent conceptual support that landscape characteristics and spatial behavior are connected (Brown & Reed, 2009; Kliskey, 2000; Shoval & Isaacson, 2010).

Spatial diffusion, segmentation, interaction, and spatially-related impacts all suggest that recreation in PPAs is a spatially-conditioned process. Additionally, early PPA research suggests that visitor use concentration and related impacts can be understood in the concept of 'nodes and linkages' (Manning, 1979). Nodes and linkages suggest that visitors concentrate in specific destination areas, known as nodes (e.g., waterfalls, campsite, river put-ins), that are connected by trails or roads (linkages). Furthermore, uneven spatial distribution is nearly a universal finding in user distribution research (Manning, 2011). As such, researchers have attempted to understand and conceptualize visitor use in a number of ways. These include non-spatial and spatial typologies (Lew & McKercher, 2006; Shoval & Isaacson, 2010), space-time budgets (Fennel, 1996), and landscape values (Brown, 2005).

Typologies. Devising tourist typologies has long been an interest of tourism researchers. Starting with Cohen's (1972) four-fold typology of the drifter, explorer, individual mass tourist, and organized mass tourist, researchers have generally approached tourist typologies from both psychological (Plog, 1972) and sociological (Cohen, 1972) perspectives.

Tourist typologies have also focused on destination choice and travel style. Plog proposed that travelers' personalities fell on a spectrum ranging from more confident, independent, and curious allocentric to more insecure, dependent psychocentric personalities that prefer familiar destinations and take part in package tours (1991). As the literature has grown, more complex typologies have been proposed and sub-categories have been developed within existing typologies. For example, twenty different travel styles were identified by Park, Tussyadiah, Mazanec, and Fesenmaier (2010). They condensed the most common travel styles into 'Sight Seeker,' 'Family Person,' and 'Beach Bum' such that 99.9% of all respondents chose at least one of these three as among their top travel personalities.

For theoretical and practical purposes, tourism researchers have continued to group tourists into various types and categories. However, the majority of these studies have been based on non-spatial data, while fewer studies have dealt with the spatial activity of tourists (Shoval & Isaacson, 2010). Therefore, combining spatial movement patterns with non-spatial visitor characteristics provides a powerful and insightful tool for understanding tourist behavior and how psychological and sociological typologies affect or align with travel patterns. Traditional non-spatial typologies classify tourists based on their personality, interaction with the destination, or other characteristics (e.g., Cohen, 1972; Plog, 1972). Spatial typologies, however, group tourists according to how they "consume the space" at the destination. Although tourist typologies can be spatial or non-spatial, the two are not necessarily mutually exclusive. Research on spatial tourist typologies can use non-spatial data (e.g., demographics) to explain the difference in people's travel patterns. Likewise, spatial data can also increase the breadth and depth of non-spatial typologies by adding an understanding of travel behavior, as well as validate or expand upon existing tourist typologies.

Download English Version:

https://daneshyari.com/en/article/6538954

Download Persian Version:

https://daneshyari.com/article/6538954

Daneshyari.com