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# Examining the Role of Community Participation in Biological Resource Management: Human Dimensions of Deer Issues in Northeastern National Park Service Units

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## Introduction

Wildlife management is becoming increasingly complex for land resource management agencies. White-tailed deer (*Odocoileus virginianus*) have been a major concern in many national parks the northeastern United States for over two decades. Biological studies have been undertaken at a number of parks to determine deer population density, movement, and impacts on park resources (Underwood and Porter 1991; Warren 1991; Frost et al. 1997; Shafer-Nolan 1997; Porter and Underwood 1999).

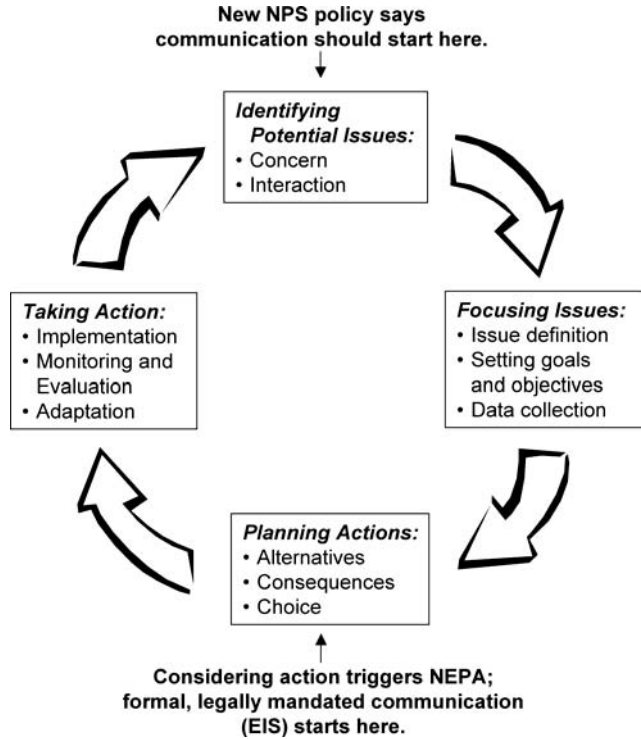
While biological knowledge improves the understanding and predicting of ecosystem responses to management actions, human dimensions insight enhances the understanding and predicting of social responses to management actions. The human dimensions of wildlife management are defined as insights about “how people value wildlife, how they want wildlife to be managed, and how they affect or are affected by wildlife and wildlife management decisions” (Decker et al. 2001:3). Consideration of human dimensions broadens the traditional definition of wildlife management from its focus on manipulation of wildlife and habitat to “the guidance of decision-making processes and implementation of practices to purposefully influence interactions among and between people, wildlife, and habitats to achieve [valued] impacts” (Riley et al. 2002:586).

Because of the relative wealth of biological knowledge about deer and growing resource management concerns that are perceived to involve them in some way, deer issues in northeastern parks were identified as a “model” system for developing human dimensions insight and expertise related to biological resource management in the National Park Service (NPS). This paper describes managers’ perceptions of deer issues and their management in northeastern parks and develops an approach for future inquiry to aid management practice and policy interpretation.

## Methods

Discussions with NPS science staff resulted in the development of a model representing the evolution of wildlife issues in national parks. According to this model, wildlife issues evolve through four main phases (Figure 1):

Figure 1. Issue evolution model of NPS wildlife management and policy implications (adapted from Hahn 1988). "New policy" includes *Management Policies 2001* (2000), *Director's Order #75A* (2003) and *Director's Order #52A* (2001).



- **Identifying potential issues.** Concerns are voiced and activity from concerned individuals increases; the issues are not yet fully formed in this phase.
- **Focusing issues.** The issues are formally defined,<sup>1</sup> goals and objectives (specific to the issues) are set, and data are collected, laying the groundwork for effective program evaluation.

- **Planning action.** Potential actions to address the issue are identified based on the outcome of data collection. These are evaluated with respect to variables such as cost, efficacy, and social acceptability. Traditional scoping processes related to the National Environmental Policy Act (NEPA, passed in 1969) may be invoked at this phase. Management alternatives are selected.
- **Taking action.** Management alternatives are implemented, evaluated, and adapted as necessary. Activities may be refined as a result of evaluation through monitoring, as an adaptive management strategy.

As a first step in understanding NPS resource managers' perspectives on deer issues throughout the northeastern USA, a brief questionnaire was developed to determine sources and impacts<sup>2</sup> of concern with respect to deer, as well as the level of action parks were taking, with reference to the issue-evolution cycle. Regional NPS science staff identified 52 parks in the Northeast and National Capital Regions that had experienced or had the potential to experience impacts from deer; representatives of these parks were asked to respond to the questionnaire via the internet.

Forty-four rangers, biologists, natural resource managers/specialists, superintendents, and others representing 49 parks responded. Responses reflect professional judgments of the individuals responding. Most respondents (N=32, or 73%) had current deer concerns

and were at various stages of taking action related to these concerns. Only two parks were implementing management activities and four parks were planning action, whereas ten were collecting data and were poised for future action planning.

A subset of 22 parks was selected for follow-up site visits. Parks visited represent a range of NPS designations (i.e., national park, national historic site, national recreation area, national battlefield, etc.), sizes, and phases in the issue-evolution cycle. Between May and October 2004, semi-structured informal discussions were conducted with 47 natural resource managers and staff at these parks. These discussions helped to: (1) identify the extent and general nature of deer impacts in parks of the northeastern USA; (2) gain an understanding of how these situations have been approached, especially with respect to the public engagement and knowledge about the human dimensions of deer management; and (3) identify common themes or experiences with respect to successes and problems related to deer issues for further in-depth inquiry.

## **Results**

Discussions with managers revealed three main insights with respect to deer issues: a multi-tiered complex of influences shaping the management environment; differences in perceived impacts of deer on parks, stakeholders, and relationships, and elements necessary for successful natural resource management.

### **Influences on the management environment**

Parks are governed and influenced by political, sociological, ecological, and economic considerations (Decker et al. 2001) acting at multiple scales, ranging from within the park to local, regional, and national levels. An individual park's management environment will thus depend on the specific combination of influences experienced at each scale, resulting in a management environment unique to each park. Managers identified most deer issues as originating at the interface between parks and local communities. Yet with one exception, managers did not identify any NPS staff whose primary role is to address local-level influences on an on-going basis. Instead, NPS staff charged with managing resources within park boundaries also addressed cross-boundary influences if and when primary, intra-park responsibilities were affected. When official public scoping efforts were required, as in the development of an environmental impact statement (EIS), contractors or NPS regional offices were recruited to spearhead these efforts. The one park with permanent staff focused on local-level influences was unique because it houses an institute founded on collaborative leadership and community-based conservation involving cooperation and partnerships.

### **Extent and nature of deer impacts**

The management environment, in turn, appears to affect what managers interpret as negative impacts on the park. The suite of impacts experienced by a park and its stakeholders may interact and develop into broader issues. Impacts of primary concern to managers focused on aspects of the parks' natural resources and cultural landscapes. In contrast, managers believed that most stakeholder concerns related to private property damage, health and safety, or recreational opportunities. Thus, managers described a management environment

in which parks and stakeholders were concerned about different impacts, with parks primarily focused on impacts within park boundaries and stakeholders focused on impacts outside park boundaries. Given this perception, it is not surprising that almost every park noted negative impacts on their relationship with neighboring communities and landowners. The few parks that did not note negative impacts to these relationships believed that their neighbors did not expect the park to take a leading role in managing deer populations, either due to the small size of the park and number of staff, the purposes for which the park was established, the history of inaction on the part of the NPS, or the fact that deer impacts had not yet reached a high level of concern for the local community.

### **Key elements for successful management of deer issues**

While deer issues have been a concern and focus of study in northeastern parks for over two decades, very few parks have developed or implemented formal activities related to deer. In our discussions with managers, a number of areas emerged as barriers to taking action on deer issues. Each of these barriers also represents a necessary element in developing an effective program to manage deer and deer issues. The following discussion identifies an example for each element that was perceived to be a barrier, as well as proposed or actual solutions suggested for overcoming these barriers.

**Understanding the uniqueness of the management environment.** Because negative impact to resources is defined by the overall management environment, managers who described similar levels of deer browse, complaints from neighbors, or deer-vehicle accidents often had very different interpretations as to how soon, or how important it would be, to take action related to deer. Some managers observed that this “uniqueness” made it difficult to learn from other parks’ experiences.

Others believed that understanding the unique management environment of the park helped determine appropriate actions and partners to include. One manager stated that the success of management activities related to deer issues depended on the engagement of all divisions of the park, as well as external stakeholders, such as cooperators, concessionaires, volunteers in trail management and backcountry hut management, and state wildlife agencies.

**Internal NPS coordination.** Many managers indicated that internal communication among park staff often was weak, citing a need for coordination and common goals among the different divisions within a park. Activities of different divisions often were described as being at cross-purposes; for example, salting roads in winter or eliminating weekend trash removal exacerbated wildlife-human conflicts. Other parks actively fostered internal communication. Some natural resource managers and interpreters collaborated in designing messages to further natural resource objectives, and one park even developed a formal partnership between natural resource managers, law enforcement officers, and educators to focus on deer issues.

**Coordination with external stakeholders.** All parks that were considering a formal deer management plan were concerned about external stakeholders, either because stakeholder complaints were a major impetus behind considering management or because of concerns about stakeholder reactions to management decisions. Most managers believed that the

public neither understood park management goals and planning processes nor recognized the difference between city parks, county parks, state parks, and national parks. Many managers remarked that stakeholders often were frustrated at perceived park inaction, even though the park had been involved in the initial, albeit internal, processes of action-planning for a long time (sometimes years). Some parks were attempting to increase public awareness by developing relationships with local universities, journalists, and state wildlife agencies. In addition, one park was involving local community members in gathering deer movement data. One manager noted that it is instrumental to have partners, both external and internal.

**Effective planning processes.** Discussions of deer management planning focused mainly on understanding and implementing legal and policy requirements, especially related to NEPA. Managers referred to NEPA as a double-edged sword: while it ultimately allows parks to move forward with preferred management activities, the associated planning process was often described as a hurdle that delays action. This perspective is most obviously reflected by the term “NEPA compliance,” which is often used as a synonym for “planning.” Alternatively, one manager believed that the culture of “compliance” gave planning an unjustly negative connotation. Others suggested that early planning meetings with the public, *before* formal public scoping activities required by NEPA, could not only provide earlier opportunities for public involvement, but could also ensure that both management and public concerns were represented, or at least acknowledged, in the definition of the problem.

**Adequate resources.** Almost all managers mentioned lack of staff and funding as impediments to managing deer issues. Most managers who mentioned lack of funds spoke in terms of funds to increase staffing, although some also expressed a need for guidance in writing proposals that would be approved for NPS funding and/or technical assistance. Their concern was not that past proposals had been rejected, but rather that they did not receive enough feedback to improve future proposals. Some managers interacted regularly with their natural resource colleagues who provided feedback on experiences with funding projects, what worked, who they liked to interact with, etc. Others noted supervisors as key resources in helping identify funding sources, supporting proposals for additional staff, and facilitating information sharing between NPS employees.

## Discussion

Unlike many public issues that have been studied at parks, deer issues are not primarily driven by visitor concerns, but instead involve local communities. The NPS currently has teams focusing on basic biological, geological, and cultural landscape inventories, as well as visitor surveys. However, less work has been done assessing local communities, their attitudes toward park actions, and their effect on management activities. Parks face many trans-boundary issues that may affect local communities, such as fire management, invasive species management, ecosystem restoration, and disease outbreak management. A technique to better understand how local communities relate to parks and management issues would be applicable in these types of situations as well as to deer issues. While national stakeholder groups may become involved after an issue is defined and action is being planned, local stakeholders often play a crucial role in the initial identification and development of these issues.

Under NEPA, NPS managers are required to include public input only when a park considers or approves an action whose impacts on the human environment are significant enough to warrant an EIS, i.e., when the issue has reached the phase of “Planning Actions” (Figure 1). However, to some managers interviewed, it is clear that stakeholders can have a significant role much earlier in the cycle, and even play a crucial part in defining the overall context in which the issue evolves. The federal government currently is placing greater emphasis on including stakeholders in policy-making from the beginning of, and continuing throughout, the issue-evolution cycle, and recent NPS policies explicitly call for active, on-going public participation in the planning process (National Park Service 2000, 2001, 2003).

Future research will examine the role of communication and public participation in enhancing biological resource management. This approach assumes that understanding not only the beliefs and attitudes of stakeholders, but also the degree of mutual understanding between stakeholders and NPS staff, can be used to design more appropriate, and therefore more successful, communication and education initiatives related to public participation. In turn, tailoring participation strategies throughout all phases of the issue-evolution cycle will ultimately result in more informed, equitable, and sustainable management decisions. These assumptions must be tested; future work will develop a framework and methodology for doing so, with the intention that these products can be applied whenever the NPS faces management issues that originate in local communities.

## Endnotes

1. An “issue” is a statement that can be acted upon (Kent and Preister 1999).
2. “Impacts” are the socially determined important effects of events or interactions involving wildlife, humans and wildlife, and wildlife management interventions (Riley et al. 2002).

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