

BIOLOGICAL RESOURCE MANAGEMENT IN A CHANGING WORLD:
CAPACITY FOR LOCAL COMMUNITY PARTICIPATION IN
WILDLIFE MANAGEMENT PLANNING FOR NATIONAL PARKS

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National parks have been called America's best idea, and the U.S. National Park Service serves as a model for protected area management in many other nations. As the National Park system approaches the 100-year mark, this model needs to be examined with respect to the changing societal and land-use interface between parks and surrounding communities. Analyzing the role of parks in a landscape experiencing such large-scale changes requires park professionals to understand the human dimensions of natural resource management and evaluate public participation policies and practices. This study addressed capacity for local community participation in biological resource management decisions on federal reserves by focusing on the issue of white-tailed deer (*Odocoileus virginianus*) management in National Park Service units across the northeastern U.S.

Based on interviews with National Park Service managers, a public issues education model was refined for application to wildlife issues in National Parks. A typology of philosophical approaches to public participation was expanded to capture a new category then examined with respect to conceptions of community, revealing shifts in paradigms for conceptualizing both communities and public participation at a community level. Interviews with public participation practitioners surfaced additional insight about approaches within the different paradigms.

Extensive interviews with residents of communities near parks revealed deer issues to be “wicked” or “messy” problems, indicating the need for clear problem framing when park managers engage in dialogue with stakeholders. A feedback loop was identified between the reactions of people to deer and vice versa that can lead to a “tragedy of becoming common” whereby a wildlife species that is initially highly valued becomes regarded as a pest.

Finally, the communication concept of coorientation was expanded from a measurement tool to a theoretical foundation for choosing among various formats for participatory processes. A quantitative method for assessing coorientation contexts was developed for use with small groups of decision makers and large groups of publics. Collectively, this set of papers assists natural resource managers in conceptualizing and implementing robust public participation efforts to address complex and controversial biological resource management issues in a changing world.

BIOGRAPHICAL SKETCH

Kirsten Mya Leong is a Biologist for the National Park Service's Biological Resource Management Division. She received an Sc.B. with honors in Biology and an A.B. in Anthropology from Brown University and an M.S. in Wildlife Ecology and Conservation and Graduate Certificate in Environmental Education and Communication from the University of Florida. She has over fifteen years of experience in wildlife management, research and education at national parks, zoos and museums, including: the National Park Service, Disney's Animal Kingdom, the Florida Museum of Natural History, the Providence Children's Museum, the Smithsonian Institution's National Zoological Park, and the Roger Williams Park Zoo, and served as a Peace Corps Volunteer for Parks and Wildlife Management at Isalo National Park in Madagascar. Her interests include human-wildlife interactions, conservation biology and education.

to my family and friends

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CHAPTER 1

HUMAN DIMENSIONS OF BIOLOGICAL RESOURCE MANAGEMENT IN THE NATIONAL PARK SERVICE

National Parks: America's Best Idea

The world's first national park was established in 1872 when Congress created Yellowstone National Park (Mackintosh, 2005). Over time, additional public lands were reserved by the federal government for specific purposes as parklands and monuments (e.g., Sequoia National Park, Mesa Verde National Park, Devil's Tower National Monument, Dinosaur National Monument; for full list, see Mackintosh, 2005). In 1916 a federal agency, the National Park Service (NPS), was established to administer these units as a National Park System, conserve their natural and cultural resources and provide for their enjoyment by current and future generations (National Park Service Act 1916, 16 U.S.C. § 1). National parks have been called "...the best idea we ever had" (Stenger, 1983, p. 5) and the NPS has since served as a model for many other nations that have developed systems of protected areas to preserve their natural and cultural heritage.

Early parks were inspired by romantic notions of unspoiled wilderness depicted in the paintings of George Catlin, Thomas Cole, and Frederick Edwin Church, and by writers such as James Fenimore Cooper and Henry David Thoreau (Mackintosh, 2005). Like Yellowstone, many of these early parks were preserved largely for aesthetic qualities and managed as scenic pleasuring grounds (Mackintosh, 2005; Sellars, 1997). Over the last century, NPS units have expanded from parks created to preserve America's scenic treasures to include parks with a variety of purposes in a variety of settings, including: recreation areas, wild rivers, heritage areas, and historic sites. Parks are being created in more urban and urbanizing settings that present

increasingly complex management challenges. At the same time, protected areas management is moving away from a single species, island of habitat approach to an ecosystem based, landscape approach. As a result of both physical proximity and a more comprehensive ecosystem perspective, the interface between parks and surrounding communities is receiving greater management attention. The NPS recognizes it can no longer view parks as isolated or insulated from their broader communities, and that actions in parks affect these broader communities just as actions in communities affect parks (National Park Service, 2001). The interdependence of parks and park-proximate communities is of growing importance.

A dominant theme throughout the history of NPS natural resource management has been balancing the “dual mandate” for preservation and enjoyment, with periodic efforts to manage parks based primarily on ecological (e.g., George Wright’s Fauna Report, the Leopold Committee Report) or recreational (e.g., Mission 66) concerns (Sellars, 1997). Recent policies clearly state that ecologically-based management considerations are given priority, as resources cannot be enjoyed if they are not preserved:

Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act (National Park Service, 2006, p. 11)

At the same time, within the sideboards of ecologically sound management, many possible ends and means can be considered for any complex management issue. The growing interdependence of parks and surrounding communities is reflected in recent policies that adopt a more integrative perspective on preservation and enjoyment. In 1999, the Natural Resource Challenge was established to increase substantially the

role of science in decision-making, revitalize and expand natural resource programs, and gather baseline data on resource conditions, as well as strengthen partnerships with the scientific community and share knowledge with educational institutions and the public (National Park Service, 1999). Other recent policies emphasize proactive ongoing relationships with the public to ensure that parks remain relevant and responsive to diverse public viewpoints, values and concerns (National Park Service, 2003). In essence, these new policies collectively outline a management philosophy that strives to understand better all elements of the management system, including both the ecological components and human dimensions that lead to prioritization of these components.

A Systems Theory Perspective on Biological Resource Management

Systems theory addresses the concept of organizational boundaries and is a useful framework for examining biological resource management in national parks. According to this theory, systems are capable of self-regulation and adapt to both internal and external change (Fisher, 1982). Systems: (1) receive input (either information or matter-energy) from the environment, (2) process these inputs (known as throughput), (3) release outputs into the environment in an attempt to restore equilibrium, or solve problems, and (4) seek feedback from the environment to determine effects of the output, with the process continuing until a satisfactory equilibrium is reached (Figure 1.1 Grunig & Hunt, 1984). Organizational systems can be reactive, when the environment forces it to change, or proactive, when the organization tries to change other systems in its environment even if equilibrium has not yet been disturbed (Grunig & Hunt, 1984).

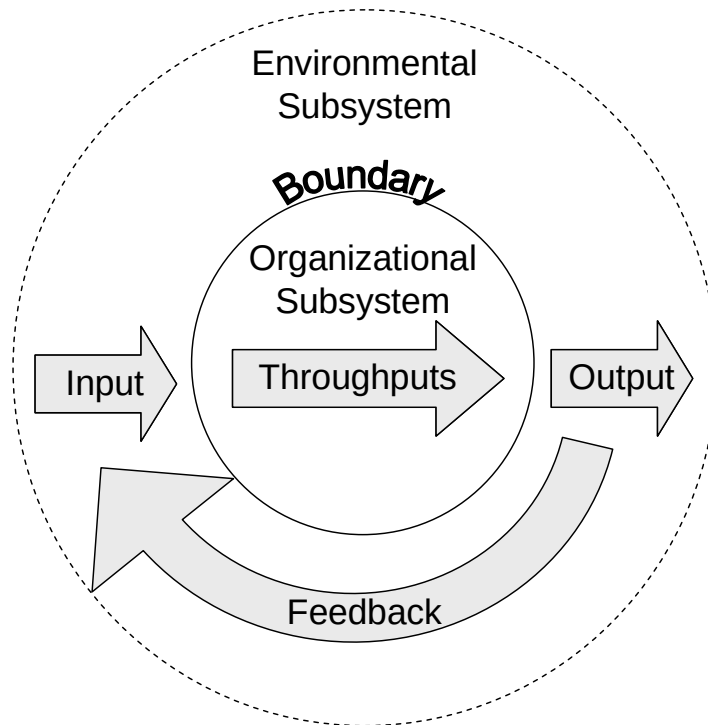


Figure 1.1. Major systems concepts (adapted from Grunig & Hunt, 1984). The organizational subsystem is the organization itself (here, NPS unit), while the environmental subsystem is the external management context. Inputs enter the organizational subsystem as information or matter-energy, are processed during throughput, and released as outputs. Feedback is then used to determine the effects of the outputs.

This open-systems model is illustrative of many biological processes managed by the NPS. Diverse natural resources and ecological processes (such as wildlife, fire, and invasive plants) are mobile and do not respect administrative boundaries. In addition, with increasing urbanization and habitat fragmentation, activities surrounding parks are likely to have greater impacts on resources within NPS units, and vice versa. Even in 1961, a report described parks as rapidly becoming islands surrounded by lands managed for different purposes (Sellars, 1997). The full set of biological resource management issues (i.e., actionable concerns, see Kent & Preister, 1999) facing parks are described in Table 1.1.

Table 1.1. Classes of biological resource management issues in NPS units. Each category may influence NPS biological resource management objectives, either in terms of determining ends or preferred means.

Within NPS Unit Boundaries	A: Resource to Resource	B: Visitor to Resource	C: Resource to Visitor	D: Visitor to Visitor Related to Resource
Outside NPS Unit Boundaries	E: Resource outside NPS Unit to Resource in NPS Unit	F: Stakeholder to Resource in NPS Unit	G: Resource from NPS Unit to Stakeholder	H: Stakeholder to Stakeholder Related to Resource from NPS Unit

There are four main classes of biological resource issues within NPS unit boundaries:

- A. Resource to Resource: e.g., deer herbivory pressure on forest regeneration
- B. Visitor to Resource: e.g., visitors harass wildlife, trample sensitive plants
- C. Resource to Visitor: e.g., visitors experience negative interactions with wildlife
- D. Visitor to Visitor: e.g., conflicts between consumptive and non-consumptive users (hunters vs. hikers)

Similarly, there are four classes of issues that interact with surrounding environment:

- E. Resource outside NPS unit to Resource inside NPS unit: e.g., insect or fungal infestations on neighboring forest land threaten resources within NPS unit
- F. Stakeholder to Resource inside NPS unit: e.g., exotic landscape vegetation escapes into NPS unit, urbanization causes wildlife to use NPS unit as a refuge
- G. Resource from NPS unit to Stakeholder: e.g., wildlife populations expand from NPS unit into local community causing human-wildlife conflicts
- H. Stakeholder to Stakeholder related to Resource from NPS unit: e.g., hunters vs. animal rights activists concerned about management alternatives for ungulates in NPS units, local residents vs. conservationists concerned about restoration of predators in NPS units

Figure 1.2 illustrates the placement of these issues in a systems diagram and indicates the fundamental open-systems nature of biological resource management issues in parks.

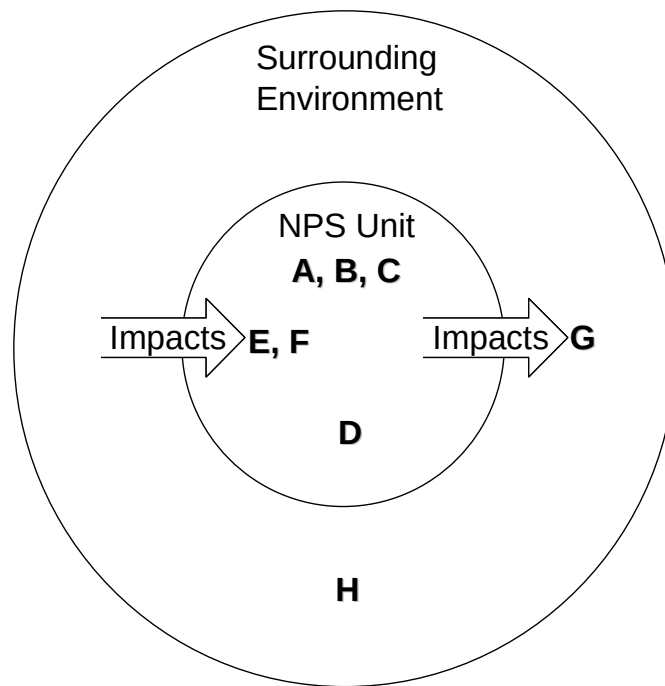


Figure 1.2. A systems diagram of biological management issues faced by an NPS unit. Letters refer to classes of issues described in Table 1.1. Placement of letter indicates where impact is experienced; arrows labeled “impacts” identify effects that originate in parts of the subsystem different from where they are experienced.

Type A-C and E-G issues concern preservation of resources, while types B-D and F-H concern enjoyment. The human dimensions of biological resource management, i.e. how people value resources, how they want them to be managed, and how they affect or are affected by management decisions (Decker et al., 2001), span all eight types of issues. Human dimensions scholarship applies theory, empirical data and insight from the various social science disciplines to biological resource issues to inform and improve the practice of biological resource management.

Rather than prioritize preservation or enjoyment, human dimensions research seeks to understand the interface between the two; i.e., how human values, attitudes, interests, and priorities shape stakeholder and manager perceptions of: resource condition, recreation and other experiences, and management actions. Wildlife professionals have been concerned with interactions with stakeholders for over half a century, yet systematic research to understand the human dimensions of wildlife management began only in the 1970's (Decker et al., 2001). Although still a young and growing discipline, many state fish and wildlife agencies in the U.S. have at least one human dimensions specialist. The NPS has an established social science program that facilitates social science research on topics such as: visitor use and evaluation, comprehensive surveys of the American public, and cultural resource issues, as well as natural resource issues. However, there is not yet human dimensions expertise within the NPS Biological Resource Management Division (BRMD), the Washington D.C. policy office charged with providing "...expert scientific, planning, and evaluation assistance on management actions and biological resource management issues" (National Park Service, 2004). This study was initiated to address the need to integrate human dimensions into the BRMD in response to societal changes.

Scope of Research

Human dimensions research is conducted at scales ranging from local to global and is used to develop understanding about topics such as: human beliefs, attitudes and behaviors with respect to biological resources, their environments, and human valuing of such resources; traits of management stakeholders at individual, group, community and societal levels of human organization; and institutional policies and processes vis-à-vis biological resources and their management. Biological resource management issues in parks span a variety of taxa, ecological and temporal scales, and

types of NPS units. To gain insight on integration of human dimensions in NPS management, this study focuses on white-tailed deer (*Odocoileus virginianus*), in the northeastern U.S. Studies of white-tailed deer management issues have amply demonstrated that management of this species elicits a wide array of human responses to the impacts of deer and their management, making deer management a fertile area to study the array of human dimensions components that might be encountered for other wildlife management issues (e.g., community involvement, Decker et al., 2004; gender differences, Lauber et al., 2001; ethical considerations, Lauber et al., 2007; competing values, Underwood & Porter, 1991; the effect of experience on attitudes, West & Parkhurst, 2002; the tension between population recovery and negative impacts Woolf & Roseberry, 1998). Mobile wildlife species epitomize open systems concerns and therefore can serve as an instructive model for addressing other natural resources and ecological processes that span jurisdictional boundaries. In addition, white-tailed deer biology has been studied in parks in the northeastern U.S. for over two decades (for example, see Frost et al., 1997; Porter & Underwood, 1999; Underwood & Porter, 1991; Warren, 1991) in NPS units with different designations (e.g., National Park, National Historical Park, National Seashore).

As previously mentioned, human dimensions research covers a variety of social science disciplines, including: sociology, anthropology, psychology, economics, geography, political science, education, communication and planning. Chapters 2 and 3 examine NPS policy and the experience of NPS natural resource managers to identify specific human dimensions research that has potential to add the most value to management of complex biological resource management issues such as deer in the northeastern U.S. This line of inquiry revealed the central role of local communities in the evolution of public issues requiring management attention and the desire of

managers to improve their capacity for comprehensive management planning that includes local (as well as national) publics throughout all phases of planning.

Chapter 4 examines philosophical approaches to community and participation. The chapter identifies three different paradigms for approaches to public engagement that practitioners may consider. These paradigms are discussed in the framework of NPS policies that focus on procedural vs. substantive aspects of public participation and have implications for the goals and outcomes associated with successful participatory processes. Public participation practitioners were then interviewed to gain insight about strategies for engaging the public. Chapter 5 describes their experiences with both procedural and substantive approaches to public participation, and lessons learned in negotiating between resource conservation and managing in the public trust.

Research also was conducted with residents of local communities near parks to learn about their experiences related to deer and deer management in and around parks, the role of parks in deer and other wildlife management, and the influence of public input in wildlife management at parks. An ethnographic research approach illustrated the complexity and messiness of deer issues in parks, revealing the need for clear problem framing when engaging in dialogue with stakeholders (Chapter 6). In addition, conflicts about deer and deer management appeared to be related to interviewees' expectations for deer in suburban environments. Chapter 7 describes a feedback loop between the reactions of deer to people and people to deer in urbanizing landscapes that can lead to a "tragedy of becoming common" whereby a wildlife species that is initially revered and treasured becomes regarded as a pest.

Finally, the communication concept of coorientation between managers and stakeholders was expanded from a device to measure ease of communication to a tool to inform design of participatory processes. Chapter 8 develops theoretically based

goals, objectives, and participatory techniques for the four possible coorientation contexts, or climates for communication. Chapter 9 demonstrates the use of a mail survey to measure coorientation contexts and the implications of designing participatory processes without an assessment of coorientation.

This line of research was based on a number of fundamental operational assumptions. First, a hermeneutic research philosophy (Patterson & Williams, 2002) underpins each stage of inquiry. This philosophy assumes that there is structure to the environment but that individuals of different backgrounds or cultures may assign meaning to this structure. Second, the field of human dimensions is grounded on the assumption that social science methodologies can allow insight into the different meanings people assign to the environment. Third, improved understanding of human dimensions can improve wildlife management theory, method, policy, and practice. Finally, the disciplines chosen—public participation, planning, and communication—are timely and relevant, and the NPS has potential to adopt innovative approaches to wildlife management in these areas. Collectively, this group of papers describes human dimensions considerations that can enhance natural resource managers' ability to implement policy related to public participation, foster innovation in natural resource management, and help resolve conflicts around natural resource issues in a changing world.

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CHAPTER 2

APPLICATION OF AN ISSUE EVOLUTION MODEL TO WILDLIFE ISSUES IN NATIONAL PARKS *

Introduction

The often quoted purpose of the National Park Service (NPS) is:

“...to promote and regulate the use of...national parks...which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations”
(National Park Service Act 1916, 16 U.S.C. § 1).

Within the legally defined boundaries of a particular park, NPS resource managers face the challenge of simultaneously attending to both the conservation and public enjoyment of resources. Adding to this challenge, parks encounter many natural resource management issues,¹ such as those related to wildlife, that are not limited by park boundaries. Among these, human-wildlife interactions can elicit strong positive and negative emotions in people. Park actions affecting wildlife can evoke equally strong and often disparate public reactions. These commonly evolve into public issues as managers deal with the practical aspects of responding to wildlife concerns that extend beyond park boundaries or involve controversial management practices that attract larger regional or national dialogue.

Because of the range and intensity of cognitions about wildlife extant in the American public (Bright et al., 2000; Kellert, 1996), wildlife management actions may

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¹ An issue is a statement that can be acted upon (Kent & Preister, 1999).

become the focus of public controversy when any subset of stakeholders² perceives a negative impact³ from a management intervention. This possibility has led many agencies to involve stakeholders more openly in wildlife management⁴ decision-making. Greater public involvement in controversial issues requires managers to apply their understanding of the social and political contexts for management in addition to their knowledge of wildlife biology and ecology. Understanding the sociopolitical factors that fuel the progression of wildlife issues from vague concerns about human-wildlife interactions into full-blown public issues therefore is of practical value to the wildlife manager.

Policy analysts, public issues educators, and political scientists have long been interested in articulating the process whereby the spark of a concern becomes a fully engulfed public issue. Models have been developed to describe the evolution of public issues and help guide practitioners in issue resolution (Dale & Hahn, 1994). Using the model promoted by Hahn (1988), we describe four stages in the evolution of

² Stakeholders are individuals who will be affected by, or will affect, wildlife management (Decker et al., 2001; Decker et al., 1996). NPS sometimes refers to people who meet this definition as “interested parties”; however, we use the term “stakeholder” as it is more widely applied in the natural resource management profession. The term “stakeholder” should not be confused with “special-interest group” or only those people cognizant of their stake (especially in planning activities), as it is possible for someone who may be affected by wildlife management decisions and actions to be unaware of the consequences, or for someone who will not be directly affected by management decisions to show a genuine interest.

³ Impacts are the socially-determined important effects of events or interactions involving wildlife, humans and wildlife, and wildlife management interventions, and are defined broadly in terms of human values with respect to wildlife (Decker et al., 2001; Decker et al., 1996; Riley et al., 2002). Perceptions of impacts also are affected by the context in which they occur, with social norms relevant to that context influencing the interpretation of events and interactions (Decker et al., 2006; Zinn et al., 1998).

⁴ We use the term “wildlife management” broadly to include planning, decision-making and actions where wildlife is the primary focus of the management goal, and management of wildlife enables achievement of objectives for other resources. Management actions also may include interventions solely directed towards people to affect human-wildlife interactions.

public issues with respect to wildlife, adapted to address wildlife management in national parks (Figure 2.1):

- **Identifying potential issues:** Concerns are voiced and activity from concerned individuals increases, although issues are not yet fully formed.
- **Focusing issues:** Issues are formally defined, goals and objectives are set, and data are collected (laying the groundwork for program evaluation).
- **Planning action:** Potential actions to address issues are identified based on data collected. These are evaluated with respect to variables such as efficacy, social acceptability and cost.
- **Taking action:** Chosen management alternatives are implemented, evaluated and adjusted. Activities may be refined as a result of evaluation through monitoring, as an adaptive management strategy.

This model reflects our understanding of emerging ideals of practice with respect to issues education. These ideals include early and frequent dialogue with the public (National Park Service, 2003a; 2006; Wilsdon & Willis, 2004), which may be adopted in practice to varying degrees. In our treatment of the model, we separate NPS and the public to identify potential tension points between natural resource managers and stakeholders, as well as among stakeholders themselves. The four stages are not a prescriptive, step-by-step formula for decision-making, but rather serve as a general guide to help managers reflect on questions such as: Where are we in the public or political “life” of an issue? What steps are needed to reach good decisions about objectives or management actions? Is the outcome likely? How do we know whether we are making progress toward resolving the issue?

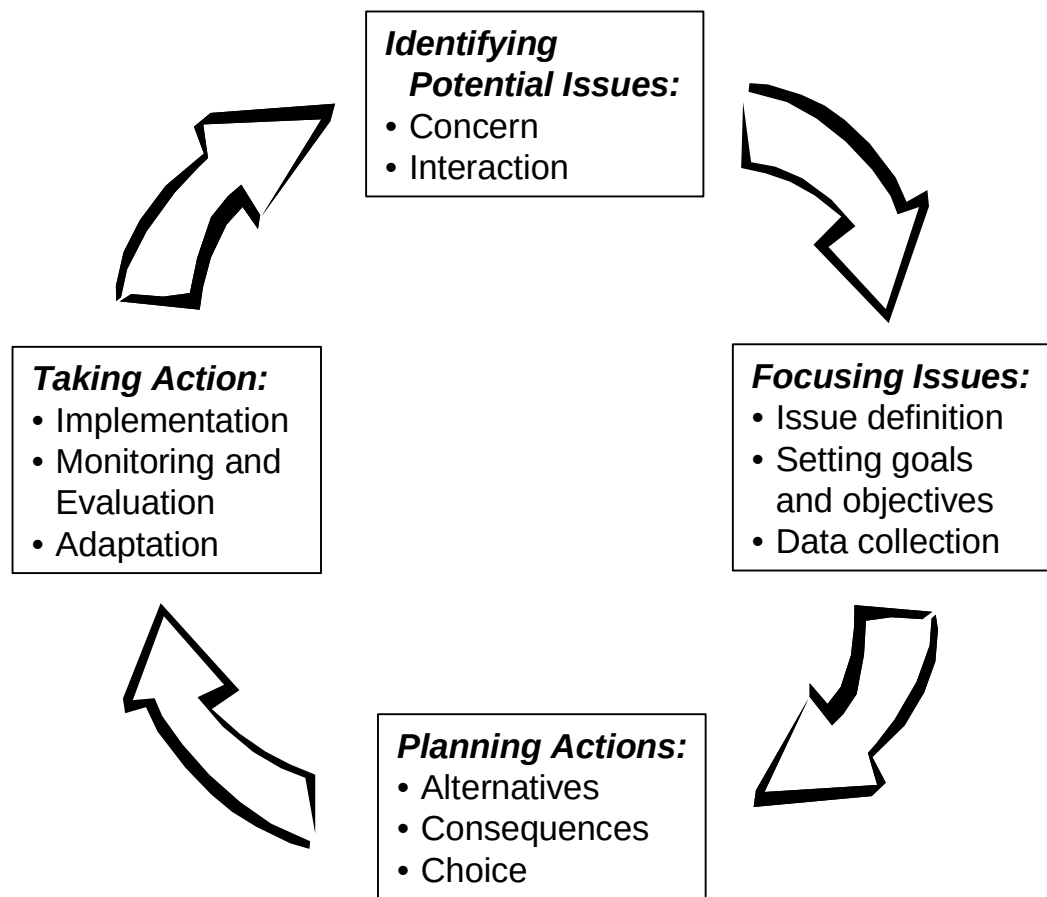


Figure 2.1. Issue evolution model in wildlife management (adapted from Hahn, 1988).

Stages of Wildlife Issue-Evolution in National Parks

Identifying Potential Issues

This stage is characterized by the emergence of voiced concerns and increased activity from stakeholders (Table 2.1).

Table 2.1. The “identifying potential issues” stage of the model.

CONCERN	
<i>Concerns surface about overabundance, scarcity, or behavior of wildlife in a park. Recognition develops that concerns are not simply harbored by one or a few individuals.</i>	
NPS	Public⁵
Park managers or other employees begin to identify impacts associated with the presence/absence/behavior of wildlife on park management objectives. Concerns may emerge as topics of discussion among colleagues.	Park visitors, members of gateway communities, scientists, other natural resource managers, special interest groups, and/or other stakeholders begin to identify impacts from presence/ absence/behavior of wildlife in a park. Concerns may be voiced informally to park employees.
INTERACTION	
<i>Some people with concerns about wildlife seek support from one another and inform officials of their concerns. At this early stage, differing views about the nature of the concerns often are expressed and likely remedies are suggested. The potential for controversy becomes apparent. Interaction among individuals also leads to the realization that a quick fix does not exist and sets the stage for issue definition.</i>	
NPS	Public
Groups of natural resource managers, rangers, interpreters, or other park employees may meet to assess the extent and nature of their wildlife concerns; regional or Washington Office consultation may be sought. Consensus or differing views as to the nature and severity of concern may emerge among NPS employees.	Park managers may start receiving official complaints from the public. Letters to the editor may appear in the local newspaper as the concern becomes increasingly “public.” Inquiries may be received from congressional offices responding to constituent complaints. Grass-roots interest groups may form. Established groups may show interest in the concerns expressed by some stakeholders.

⁵ We use “public” as a term of convenience to refer to a variety of stakeholders and affected interests, as well as the general public.

Focusing Issues

When issues develop to this stage, the nature of the issue typically is formally defined, goals and objectives are set for wildlife management, and data are collected, laying groundwork for effective program evaluation. Ideally, park managers and stakeholders work together to discover areas of commonality and differences; input from non-vocal stakeholders is actively sought (Table 2.2).

Table 2.2. The “focusing issues” stage of the model.

ISSUE DEFINITION	
<i>General agreement on issue definition forms among a critical mass of park managers and/or stakeholders, although each group may hold different opinions about the best way to proceed. The value of identifying common fundamental objectives to guide discussion, analysis and decisions becomes evident. To continue towards possible action by the NPS, issues are defined in terms of impacts to park resources as described in enabling legislation, policy, or park planning documents.</i>	
NPS	Public
General agreement is sought among park representatives about the nature of the impacts of wildlife on park management objectives or the park’s relationship with stakeholders. NPS representatives help the public understand park priorities and federal planning processes.	General agreement is sought within various segments of the public about the nature of wildlife impacts on their community, visiting experience, or personal interests. Through dialogue with the NPS, stakeholders determine whether their concerns fall under NPS jurisdiction.

Table 2.2 (Continued).

SETTING GOALS AND OBJECTIVES	
<i>Specific management goals and objectives are defined, with an emphasis on understanding perspectives of the various stakeholder groups and identifying common purpose. Effective communication is critical to clearly understand the interests underlying stakeholder positions. Desired conditions are identified.</i>	
NPS	Public
Park managers articulate wildlife needs and interests in terms of park goals mandated in enabling legislation and defined in park planning documents (e.g., in relation to “desired conditions”). Park managers explain mandated processes and research needs to facilitate accomplishing necessary objectives.	Stakeholders articulate their needs and interests with respect to impacts of wildlife (e.g., through early planning sessions similar to public scoping activities).
DATA COLLECTION	
<i>Biological and sociological data are collected to document whether and how wildlife significantly prevent the park from meeting management objectives.</i>	
NPS	Public
Park staff, partners, and/or contractors typically conduct biological and sociological studies and analyze wildlife impacts with respect to defined objectives.	The public is informed about data collection. Stakeholders and partners also may develop complementary studies in communities bordering the park.

Planning Action

If research does not show negative impacts of wildlife on park management objectives, interpretive and/or outreach programs that explain the situation may be implemented to improve correlation between public perception and scientific analysis.

If research reveals that wildlife is preventing the park from fulfilling management objectives, park managers likely begin internal dialogue and discuss potential alternatives with respect to applicable NPS policy. Initial, informal analysis

of alternatives (as in developing resource stewardship plans) may reveal the need to consider more controversial alternatives that legally require formal stakeholder-involvement processes in compliance with the National Environmental Policy Act (NEPA, 42 U.S.C. § 4321 *et seq.*). Regardless of compliance requirements, at this stage managers and stakeholders typically discuss alternative actions and analyze consequences, with respect to both short- and long-term management goals and objectives. Park managers consider stakeholder input when selecting the preferred alternative for implementation. New alternatives may become apparent through discussion of consequences or evaluation of the different choices. Emphasis is placed on effective communication, public participation and creative thinking (Table 2.3).

Table 2.3. The “planning action” stage of the model.

ALTERNATIVES	
<i>Different actions to meet objectives are suggested and discussed within the framework of NPS policy guidelines. Discussion of alternatives may amplify public controversy and may be challenging for park managers. Clear goals and objectives are key in addressing alternatives.</i>	
NPS	Public
Park managers explain potential alternatives to stakeholders. Education and interpretation help the public understand the feasibility, appropriateness, and efficacy of alternatives.	Through informal and/or formal processes, stakeholders help evaluate different alternatives and offer additional solutions based on their own interests and needs.

Table 2.3 (Continued).

CONSEQUENCES	
<i>Consequences of proposed actions are evaluated on criteria, including: environmental, cultural and social impacts; effectiveness; costs and benefits; and trade-offs of each alternative. NPS and different stakeholders are likely to have different perspectives on costs and benefits.</i>	
NPS	Public
Park managers have an understanding of the biological, cultural and sociological consequences of each alternative. Education and interpretation are important in helping the public understand costs and benefits of each alternative.	Stakeholders have an understanding of any management alternatives that might impact them or require their involvement. Stakeholders communicate concerns and help evaluate which alternatives are feasible to implement.
CHOICE	
<i>As park managers and stakeholders approach making a choice, they deliberate about which alternative(s) to adopt. New alternatives may be discovered in this process. Final decisions rest with the park managers, but chosen alternatives are more likely to meet with public support in the long run if stakeholder input is considered.</i>	
NPS	Public
Park managers are ultimately responsible for the alternative(s) chosen for implementation in the park, ideally considering both stakeholder interests and coordinated, complementary management activities by partners outside the park in the final decision.	Stakeholders typically seek to make their interests known in the evaluation process. Landowners, local communities, or other public agencies may decide to undertake management activities in areas bordering the park.

Taking Action

This stage involves implementation, evaluation and adaptation of the chosen management alternative(s). Evaluation is aided by clear goals and objectives.

Activities may be refined as a result of progress evaluation, informed by data acquired

through monitoring. Modifications or fine-tuning of management activities may occur as part of an adaptive management strategy (Table 2.4).

Table 2.4. The “taking action” stage of the model.

IMPLEMENTATION	
<i>Actions are taken as part of a wildlife management program.</i>	
NPS	Public
The NPS is responsible for implementation of management activities in the park and establishing a plan that includes periodic public notice of progress.	Stakeholders may decide to undertake complementary management activities in communities or on public lands bordering the park.
MONITORING AND EVALUATION	
<i>The impacts of wildlife management actions are monitored and assessed. Evaluation is a vital component for assessing progress and key to fine tuning and adjustment.</i>	
NPS	Public
Park staff monitor and evaluate the effects of wildlife management actions throughout each iterative action in the program's implementation.	The public is kept informed throughout the monitoring and evaluation process. Opportunities to include stakeholders in monitoring and evaluation are encouraged.
ADAPTATION	
<i>Activities are modified based on the outcomes of monitoring and evaluation, perhaps as part of a formal adaptive management strategy.</i>	
NPS	Public
Wildlife management actions are modified as necessary throughout the program's implementation based on the outcomes of evaluation.	Public input is included in any substantial subsequent decisions about modifying or even continuing the management program.

Extending the Model

The stage-to-stage progression of public issues depicted in the model is an approximation of how many public issues evolve, but issue evolution often is not a linear process. In fact, recent application of the Hahn model to ten cases of suburban deer management revealed that issues often progressed in a start-and-stop fashion, advancing but then reverting back to earlier stages of the cycle (Raik et al., 2004). This phenomenon often is related to the disparity in knowledge and understanding of various stakeholders, a situation that may be overcome using strategic communication. For example, when natural resource managers and/or various stakeholder groups are not at the same phase of the cycle, communication between groups can improve alignment to assure that all parties understand the issue in the same way before progressing to the next phase. Improving stakeholder understanding, attitudes and input at all phases of the cycle is a key activity in this approach. Yet, because the NPS ultimately is responsible for its natural resource management decisions, dialogue between managers and stakeholders technically is not required at all phases of issue evolution. Varying degrees of stakeholder involvement, perhaps especially in early stages, may partially explain why public wildlife issues do not always evolve in a linear fashion.

Under NEPA, NPS managers are required by law to include public input only when a park proposes or approves an action whose impacts on the human environment are significant enough to warrant an Environmental Impact Statement (EIS); i.e., when the issues have reached the phase of “Planning Actions” (Figure 2.2).

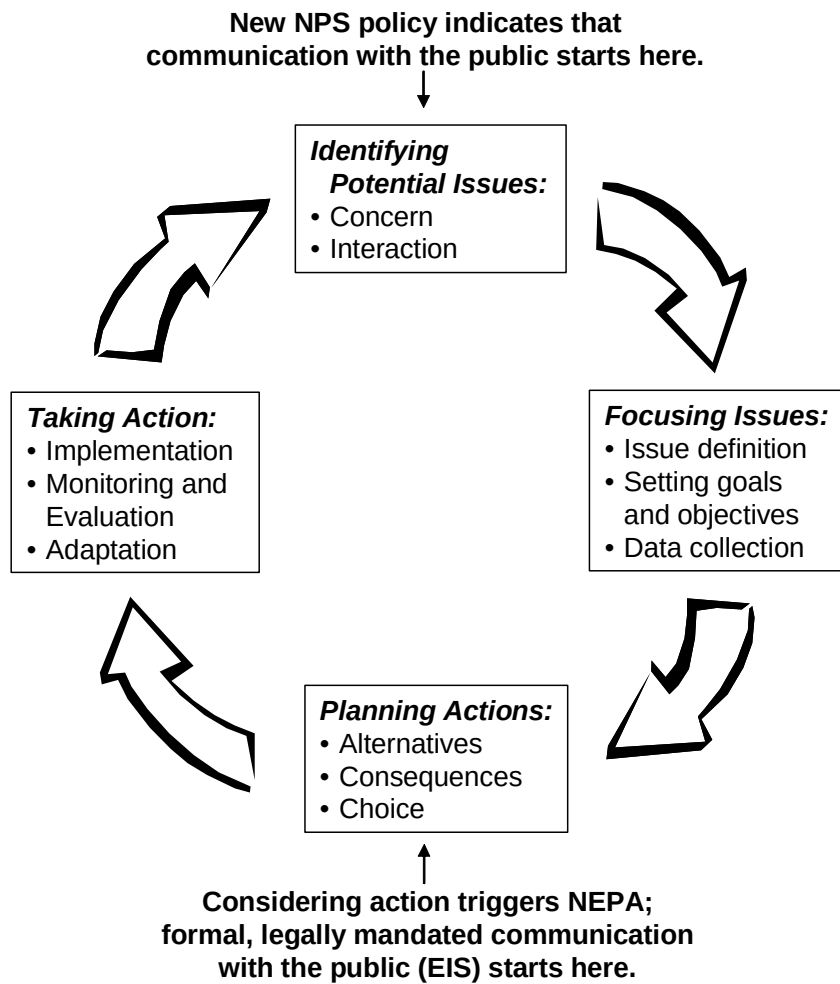


Figure 2.2. Policy implications for communication with respect to the issue evolution model. “New policy” includes *Management Policies 2006* (National Park Service, 2006) and Director’s Order #75a (National Park Service, 2003a).

Reaching consensus or formal agreement with the public during action planning is not legally mandated, and courts have upheld NEPA as imposing only procedural requirements, preventing uninformed, rather than socially unacceptable, agency action (Robertson v. Methow Valley Citizens Council. 1989. 490 U.S. 332). Operating strictly under this approach, the public is asked for input on alternative solutions to NPS-defined issues, goals, and data. Although managers may have addressed each of

the earlier phases in depth through internal NPS scoping, there is no guarantee that members of the public have reached the same level of understanding of the issue, or share NPS perspectives about reasonable solutions. The Department of the Interior recently addressed this discrepancy by issuing requirements that interested community members be offered training in both community-based planning and the NEPA process (Office of Environmental Policy, 2003). Nevertheless, public input processes that meet NEPA's procedural requirements frequently have resulted in court challenges to EIS's. Lawsuits may result in a return to early phases of the issue-evolution cycle, requiring parks to reassess the nature of the problem and appropriate solutions, as in the case of deer management at Cuyahoga Valley National Park (National Park Service, 2003b).

The federal government is placing greater emphasis on including stakeholders in policy-making from the beginning of, and continuing throughout, the issue-evolution cycle (Figure 2.2), a practice known as "upstream" public engagement (Wilsdon & Willis, 2004). Recent NPS policies explicitly call for active, on-going public participation in the planning process (National Park Service, 2006), re-emphasized in a Director's Order:

"The purpose of this Director's Order (DO) is to articulate our commitment to civic engagement, and to have all National Park Service (NPS) units and offices embrace civic engagement as the essential foundation and framework for creating plans and developing programs...This philosophy means that we do more than meet the minimum legal requirements for public involvement in our decisions and activities. It means a regular, natural and sustained level of interaction with people, both from within and outside the NPS. This, in turn, will enhance our ability to achieve our mission, which is conserving park resources unimpaired for the enjoyment of present and future generations" (National Park Service, 2003a, p. 1-2).

Engaging the public early may help managers establish a common foundation for constructive discussion of alternatives when the planning phase is reached.

Utilizing a model such as the one outlined above may assist thinking about complex wildlife issues by encouraging attention to each element in the issue-evolution progression. Park managers who incorporate such thinking into their practice are likely to be well-poised to engage stakeholders in learning, deliberation and, eventually, decision-making. Managers may find that educating stakeholders about wildlife issues and engaging them in analysis of the management situation, as well as during development of solutions, enhances public acceptance and effectiveness of wildlife management practices in NPS units.

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CHAPTER 3

WHITE-TAILED DEER ISSUES IN NPS UNITS: INSIGHTS FROM NATURAL RESOURCE MANAGERS IN THE NORTHEASTERN U.S.*

Executive Summary

The Biological Resource Management Division of the National Park Service and the Human Dimensions Research Unit at Cornell University are collaborating to study human dimensions of white-tailed deer issues in NPS units in the northeastern U.S. By using deer as a model to examine the integration of biological and human dimensions of wildlife management, this project seeks to improve NPS ability to respond to wildlife management needs of park units in general. This report focuses on research in the first phase of the project, which consisted of a web-based questionnaire and semi-structured informal interviews with natural resource managers throughout the Northeast and National Capital Regions of the NPS. Managers described a multi-tiered complex of influences shaping a park's management environment and identified five key elements for the foundation of successful management plans: understanding the park's unique management environment, internal NPS coordination, coordination with external stakeholders, effective planning processes, and adequate resources. In each of these areas, local communities were seen as significantly affecting management activity. Future inquiry will examine managers' approaches to decision-making, effectiveness of techniques for engaging the public, and differences between the specific values for which a park is managed and those held by stakeholders. The

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results are anticipated to improve NPS ability to respond to other issues that, like deer, primarily originate in local communities.

Introduction

Wildlife management is becoming an increasingly complex task for land resource management agencies. Some locally or regionally abundant species cause marked impacts on ecosystems and introduce economic and human health and safety risks. The biological dimensions of wildlife management have been a focus of inquiry for nearly a century, and while it is acknowledged that more biological science knowledge is desirable, the greatest need in some situations is for knowledge about the social aspects, or human dimensions of wildlife management. The human dimensions of wildlife management are defined as, "...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, p. 3). This definition considers both managers' and stakeholders' values. The Biological Resources Management Division of the National Park Service seeks to improve its ability to respond to wildlife management needs of park units across the country by gaining human dimensions expertise and enhancing its capacity to integrate the biological and human dimensions of wildlife management issues faced by NPS.

White-tailed deer have been a major concern in many park units of the northeastern U.S. for over two decades, and biological studies have been undertaken at a number of parks to determine deer population density, movement, and impact on park resources (Frost et al., 1997; Porter & Underwood, 1999; Shafer-Nolan, 1997; Underwood & Porter, 1991; Warren, 1991). Because of the relative wealth of biological knowledge about deer and growing resource management concerns that are

perceived to involve deer in some way, deer issues in northeastern parks was identified as the “model” system for developing initial human dimensions insight and expertise in the BRMD.

The research project consists of three main phases:

Phase I: In collaboration with BRMD and northeastern NPS units, describe the deer situation in northeastern parks and develop an approach for inquiry to aid in management practice and policy interpretation, resulting in a study plan.

Phase II: Conduct study(ies) in collaboration with BRMD staff, NPS regional staff, specific park unit staff, and NPS partners to determine how public participation and civic engagement methods fit within NPS wildlife management, including (but not limited to) processes associated with the National Environmental Policy Act (NEPA, 1969, 42 U.S.C. § 4321 *et seq.*).

Phase III: Conduct study(ies) in collaboration with BRMD staff, NPS regional staff, and specific park unit staff to describe and understand the differences in values and assumptions of NPS managers and stakeholders with respect to deer issues, and to suggest how NPS staff might utilize this understanding to enhance management practices.

This report focuses on results of Phase I inquiry.

Methods: Phase I

Discussions with NPS regional scientists and BRMD staff resulted in the development of a model representing wildlife issue-evolution in NPS units (Chapter 2). According to this model, wildlife issues evolve through four main phases (Figure 2.1):

Identifying potential issues: Concerns are voiced and activity from concerned individuals increases, although issues are not yet fully formed.

Focusing issues: Issues are formally defined,¹ 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 efficacy, social acceptability and cost.

Taking action: Chosen 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 U.S., a brief questionnaire was developed to determine sources and impacts of concern with respect to deer, as well as the level of action parks were taking, in terms of the issue-evolution cycle (Appendix 3.A).² Representatives from 52 NPS units in the Northeast and National Capital Regions that were known to have experienced or thought to have the potential to experience impacts from deer in the near future were asked to respond to the questionnaire. Forty-four rangers, biologists, natural resource managers/specialists, superintendents, and others representing 49 NPS units responded. Respondents were not asked to

¹ An issue is a statement that can be acted upon (Kent & Preister, 1999).

² In the survey instrument, we used the vernacular of most managers with whom we spoke prior to implementing the survey, which notably referred to natural resource management issues involving deer simply as "deer management" issues. As our investigations deepened, we came to learn that many deer management issues were actually focused primarily on management of another resource element in a park unit that deer were perceived to be affecting. For convenience, we refer to "deer issues," to avoid implying that the primary focus of natural resource management was fundamentally a deer objective.

provide official park position statements based on data, thus responses were considered to reflect professional judgments of the individual responding.

Most respondents (N=32, or 73%) had current deer concerns and were at various stages of taking action related to these concerns. While only four parks were planning action and two were implementing management activities, ten were collecting data and were poised for future action planning (Figure 3.1). Figure 3.2 shows level of action for each park, in map format.

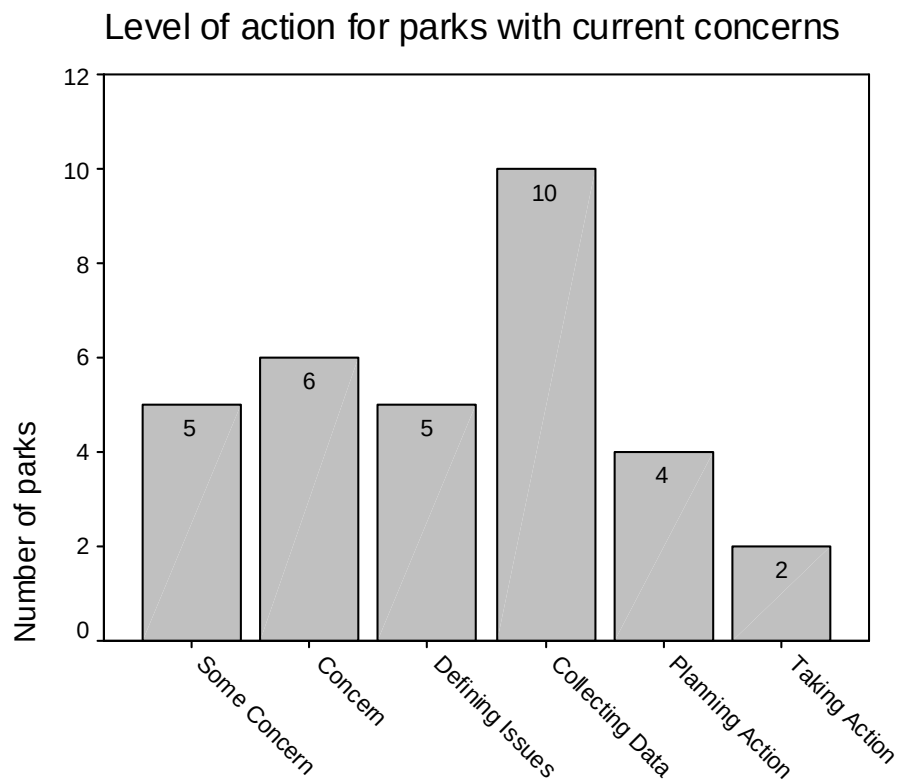


Figure 3.1. Level of action related to negative deer impacts, summarized. Categories reflect phases and sub-phases of the issue-evolution cycle. Parks that responded they were not sure how to rate current level of activity were categorized as “some concern.”

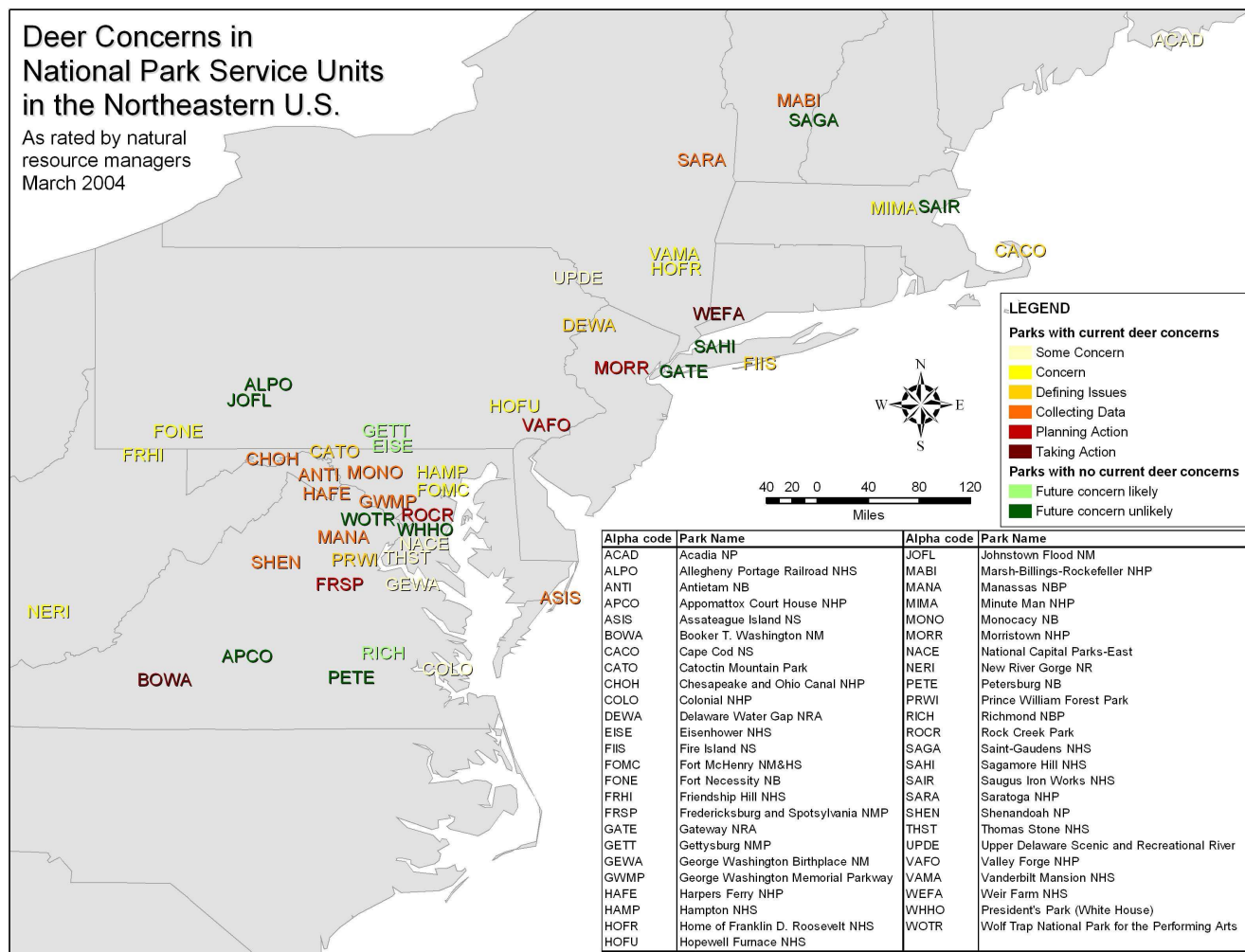


Figure 3.2. Level of action related to negative deer impacts, by NPS unit. Warm colors reflect parks that reported negative impacts. Cool colors reflect parks that reported no current deer concerns.

A subset of 22 parks (Table 3.1) was selected for follow-up site visits. Parks were chosen to 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 NPS units.

Table 3.1. NPS units visited for follow-up discussions (in alphabetical order). All NPS units were visited by K. Leong. Asterisk denotes parks visited by both K. Leong and D. Decker.

NPS Unit
Antietam National Battlefield
Cape Cod National Seashore
* Catoclin Mountain Park
* Chesapeake and Ohio Canal National Historic Park
Colonial National Historic Park
* Delaware Water Gap National Recreation Area
* Fire Island National Seashore
Fredericksburg and Spotsylvania National Military Park
* Gettysburg National Military Park
* Harpers Ferry National Historic Park
Hopewell Furnace National Historic Site
Manassas National Battlefield Park
* Marsh-Billings National Historic Park
Minute Man National Historic Park
Monocacy National Battlefield
* Morristown National Historic Park
* Prince William Forest Park
* Rock Creek Park
* Shenandoah National Park
* Saratoga National Historic Park
* Valley Forge National Historic Park
Weir Farm National Historic Site

A set of guiding discussion questions was e-mailed to managers in advance to familiarize managers with our major areas of interest: the history of deer issues at the park, perceptions of differences between manager and stakeholder concerns, the influence of the public on park management planning, and strategic natural resource communication efforts (Appendix 3.B). This set of questions was not used as a formal interview instrument, but merely as a way to guide discussions and ensure that major topics of interest were covered.

These discussions helped to: (1) identify the extent and general nature of deer impacts in NPS units of the northeastern U.S., (2) gain an understanding of how these situations have been approached, especially with respect to the public engagement and human dimensions of wildlife management, and (3) identify common themes or experiences with respect to successes and problems related to deer issues that would be fruitful for further in-depth inquiry.

Results: Insights from Managers

For this discussion, the following definitions will be used:

Wildlife Management: "...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, p. 586). In contrast to other approaches that focus primarily on the manipulation of wildlife populations and habitat (Bolen & Robinson, 1995; Caughley & Sinclair, 1994), this definition also incorporates the importance of activities directed toward people in meeting management goals. As noted by Decker et al. (2001), wildlife management exists because of the values people place on wildlife as a resource, an assertion consistent with the observation of

Fazio and Gilbert (1986) that wildlife management can be 10% managing the resource and 90% managing the public.

Impacts: The socially-determined important effects of events or interactions involving wildlife, humans and wildlife, and wildlife management interventions (Riley et al., 2002). Impacts are thus defined broadly in terms of human values with respect to wildlife, including professional values informed by science.

Stakeholder: Any person who will be affected by, or will affect, wildlife management (Decker et al., 2001; Decker et al., 1996). Although the National Park Service has recently begun to refer to people who meet this definition as “interested parties,” we are continuing to use the term “stakeholder” as it is more widely used in the natural resource management profession. “stakeholder” should not be confused with “special-interest group” or only those people cognizant of their stake (especially in planning activities); it is possible for someone who may be affected by wildlife management decisions and actions to be unaware of the consequences, or for someone who will not be directly affected by management decisions to show a genuine interest.

Extent and Nature of Deer Impacts

Discussions with managers identified a broad range of both actors and situations that constituted 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. A range of possible influences on the management environment related to deer issues was described by managers (Table 3.2).

Table 3.2. Influences on management decisions related to deer issues in NPS units in the northeastern U.S. Broad categories of management environment components were modified from Decker et al. (2001). Grey box indicates sphere of influence for focus of future research. See Appendix 3.C for definition of acronyms.

Scale	Components of the Management Environment				
	Political: Law, Policy	Sociological: Internal, NPS/Government	Sociological: External, Stakeholders	Ecological	Economic
National	• NEPA • ESA • FACA • GRPA • NHPA • NAGPRA • NPS Policy • Director's Orders	• President and Congress • DOI • OMB • NPS Leadership • NRPC (e.g., BRMD, EQD, NRID, etc.)	• National Interest Groups • Other Federal Agencies		
Regional	• State "NEPA" (e.g., NY State SEQRA) • Programmatic Planning Documents	• NPS Regional Offices • NPS National advisors (e.g., WASO, NRPC, etc.)	• State/Federal Agencies • Universities • Regional Interest Groups	• Deer meta-population structure • Habitat connectivity	
Local	• Local ordinances	• NPS Regional Planning Office/Consultants (When EIS is involved)	• State/Federal Agencies • Universities • Local Interest Group • Congressmen • Friends Groups • Adjacent Landowners	• Deer population density • Immigration/emigration • Predation (hunting/poaching) • Adjacent land matrix • Local landscaping practices • Agricultural practices	• Cash crops • Cost of landscaping • Cost of agricultural practices
Park	• Designation • Enabling Legislation • Park Planning Documents (e.g., GMP's, Resource Stewardship Plans) • Superintendent's Compendium	• Superintendent • Natural Resource Managers • Other Park resource managers • Other Park staff • Other NPS advisors	• State/Federal Agencies • Universities • Citizen Advisory Committees • Park Visitors • Inholdings	• Size of park • Contiguity of park parcels • Deer population density • Immigration/emigration • Predation (hunting/poaching) • Habitat structure of park • Agricultural practices • Landscaping practices	• Cash crops • Cost of preventing/repairing deer damage • Cost of EIS's/lawsuits

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/when primary, intra-park responsibilities were affected. When official public scoping efforts were required, as in the development of an Environmental Impact Statement, contractors or NPS regional offices were recruited to spearhead these efforts. The one park that had 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.

The management environment, in turn, appears to affect what managers interpret as negative impacts to the park. The suite of impacts experienced by a park and its stakeholders may interact and develop into broader issues. On the preliminary questionnaire, negative impacts from deer were reported most often to park natural resources (N=28), cultural resources (N=19) and relations with local communities (N=15, Figure 3.3). Discussions with managers corroborated these findings, and also elaborated on the specifics within each category. Table 3.3 presents the categories of impact on parks and stakeholders mentioned by managers at each park. The table was created by first listing all categories of impact noted by managers at Park 1. Each of these categories was then checked for impact at Park 2. If managers at Park 2 noted new categories of impact, they were then added to the table. After categories from the final park were added, each park was re-scored to assure that categories were interpreted uniformly over all parks. Managers were not asked to systematically enumerate a list of impacts, therefore, those listed in the table should not be viewed as an exhaustive list, but rather as reflecting the most prominent impacts affecting decision-making for each park.

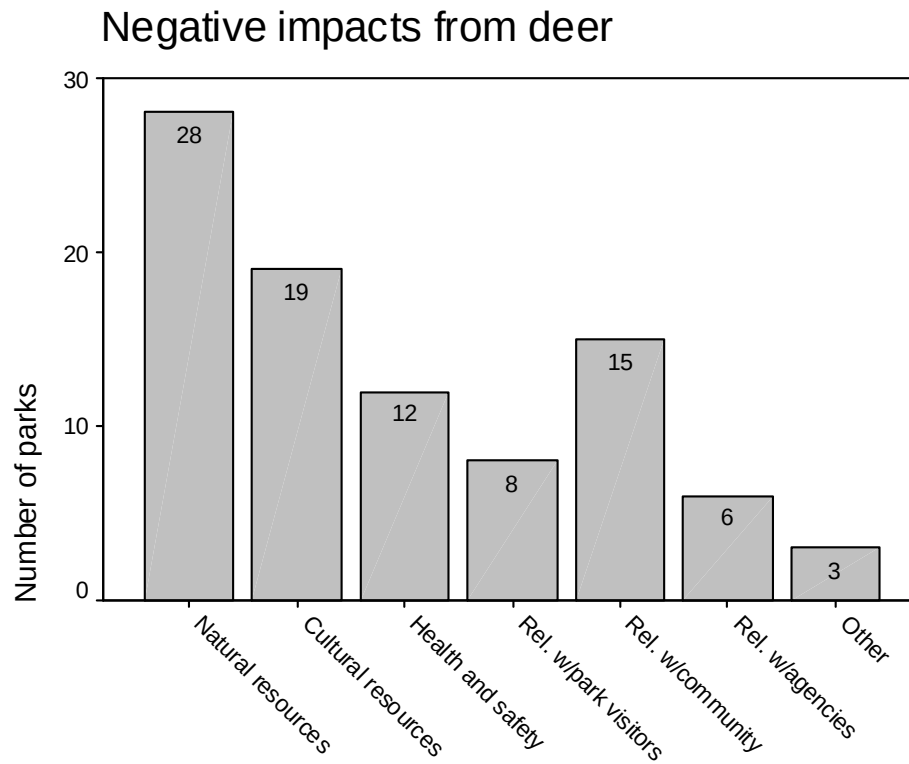


Figure 3.3. Negative impacts from deer on park management. Deer were seen to have negative impact primarily on natural and cultural resources, but relationship with local communities was also a large concern. Other negative impacts included: relationships with farmers, living history farm experience, and park reputation as resource stewards.

Table 3.3. Deer impact profiles for parks, based on discussions with managers. A park's unique set of impacts may interact to become a suite of "issues." Each number represents one of the 22 parks visited, placement in cell indicates managers' perceived areas of impact for that park.

Impact Area	Affected Parties	
	Park	Stakeholder
Direct Impacts		
Natural Resources		
• Forest/plant regeneration	1, 2, 3, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22	
• Forest composition	1, 2, 5, 12, 18, 19, 20	
• T&E Plants	2, 5, 13, 15, 18, 19, 20	
• Exotic species management	3, 5, 6, 14, 18, 19, 20	8
• Forest understory	4, 5, 12, 14, 18, 20	
• Plant and animal diversity	2, 5, 18, 20	2
• Erosion	5	7
Impacts to deer		
• Feeding	16, 20, 22	22
• Behavioral	5, 22	
• Population		21
Cultural Resources		
• Cultural landscape	1, 5, 6, 7, 9, 11, 15, 18, 19, 20, 22	7
• Agricultural damage	1, 2, 9, 15, 18, 19	1, 2, 3, 9, 11, 15, 18, 19, 22
• Ornamental plantings/landscaping	2, 5, 7, 10, 21, 22	2, 3, 5, 7, 9, 10, 13, 14, 16, 17, 21
• Other property damage	6	
Health and Safety		
• Deer-vehicle collisions	3, 5, 6, 10, 18, 19	3, 5, 6, 9, 10, 12, 13, 14, 17, 18, 19
• Lyme disease	6, 7	5, 6, 7
Other		
• Park reputation as resource stewards	5, 21	
• Communicating park significance	5	
• Hunting (poaching)		6, 8, 13, 14, 16, 17, 18, 19, 22
• Wildlife viewing		2, 5, 16, 18, 19, 20, 22
Impacts to Relationships		
• Neighboring Communities and Landowners ³	1, 2, 3, 5, 6, 7, 8, 10, 11, 13, 14, 17, 18, 19, 20, 22	
• Other State/Federal Agencies		2, 5, 6, 12, 15, 20
• Park Visitors		5, 7, 8, 20, 22
• National Stakeholder Groups		1, 8, 20

³ In many cases, local community members also visited parks on a regular basis. They were categorized as "neighboring community" relationships when their views more accurately reflected area resident issues vs. one-time visitor issues.

Patterns emerged when managers' responses were viewed in this way. Managers perceived almost twice as many common impacts (i.e., mentioned by 3 or more managers) to parks (N=11) as to stakeholders (N=6). Given managers' primary responsibility to park resources, it is reasonable to expect they would have more detailed knowledge of impacts to park resources than do stakeholders. Also, managers' knowledge of the extent of stakeholders' recognition of impacts may be limited, for reasons discussed later.⁴

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 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 to their relationship with neighboring communities and landowners. The few parks that did not note negative impacts to these relationships generally felt their neighbors did not expect them 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, 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.

Impact categories identified in Table 3.3 were subjected to hierarchical cluster analysis using SPSS software (version 11.5, SPSS, Inc.) to determine which impacts

⁴ Chase et al. (2002) indicate that agencies may broaden their understanding of stakeholder concerns by being inquisitive rather than simply receptive to stakeholder input.

were most strongly related to each other. The resulting dendrogram is shown in Figure 3.4.

Dendrogram using Average Linkage (Between Groups)

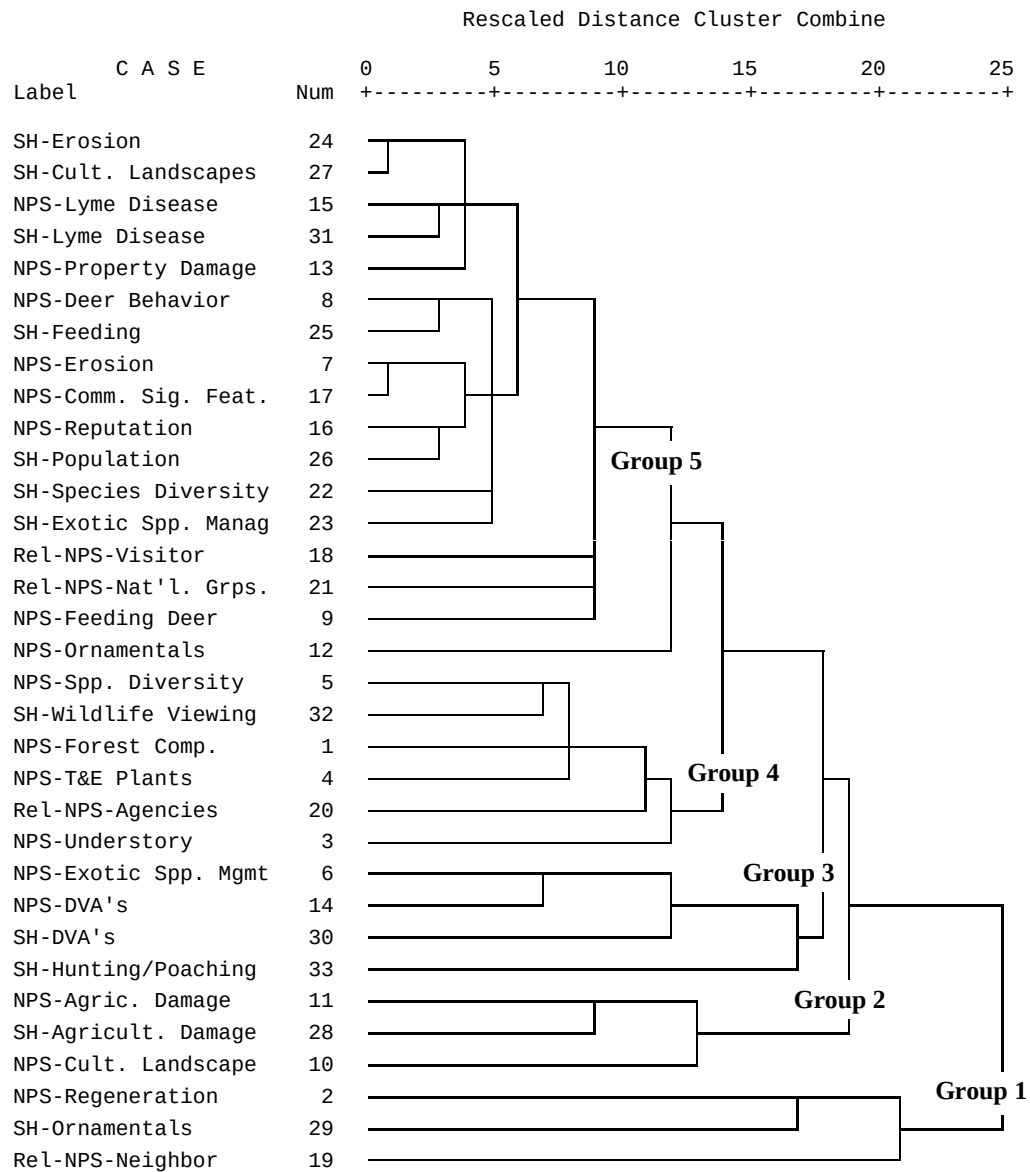


Figure 3.4. Hierarchical cluster analysis of impacts to parks and stakeholders. Major branches show clusters of impacts that are related to each other. Branches that occur at larger distances are more different than branches at shorter distances. Prefix SH indicates impacts to stakeholders, prefix NPS indicates impacts to park (as described by managers). Num refers to variable number and indicates the order in which impact areas were entered into the database.

The first major branch separated three variables (Group 1) from all the rest: parks experiencing impacts to forest regeneration, stakeholder impacts to ornamentals and impacts on park-neighbor relations. Again, this pattern suggests that parks believed their relationships with neighbors were affected when parks and stakeholders were primarily concerned with different kinds of impact. Other major branchings appeared to represent the following: Group 2: impacts related to agricultural and other cultural landscape damage; Group 3: impacts related to deer mortality; Group 4: more detailed areas of impact related to forest health; Group 5: impacts noted by only one or two parks.

Key Elements for Successful Management of Deer Issues

While deer issues have been a concern and focus of study in northeastern NPS units 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 with respect to deer issues. Each of these barriers also represents a necessary element in developing an effective program to manage deer issues. The following discussion identifies aspects of each element that were perceived to be barriers, as well as proposed or actual solutions managers suggested for overcoming these barriers.

1) Understanding the Uniqueness of the Management Environment

Each NPS unit was created by the President or an act of Congress to preserve an area of national significance. By definition, each represents a unique natural or cultural resource. Indeed, almost all discussions with managers started with an explanation of the park's unique features. Elements of a park's management environment (Table 3.2) were seen to determine not only the extent and nature of

wildlife issues, but also the appropriateness of various solutions. It became clear that the definition of “deer issues” varied, sometimes substantially, from park to park. While deer issues were set within a context of ecological and economic constraints, the political and sociological elements of the management environment appeared to be stronger influences on how issues were approached.

Much of the disagreement over issue definition arose from different interpretations of impairment, based on the management environment. The fundamental purpose of the NPS, as described in its Organic Act is “...to conserve the scenery and natural historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (National Park Service Act, 1969, 16 U.S.C. § 1). Congress and the courts have consistently given priority to the conservation mandate, as resources cannot be enjoyed if they are impaired (National Park Service, 2006). However, neither the word “unimpaired” nor the phrase “unimpaired for the enjoyment of future generations” are defined by the Organic Act; managers must determine not only what constitutes impairment in their unique context, but also how both the duration and severity of the impairment are to be evaluated or weighed against the park’s public use value (Southern Utah Wilderness Alliance v. Dabney, 2000, 222 F. 3d 819). Thus, one of the main challenges facing managers is to determine the threshold at which negative impacts on resources become severe enough to threaten impairment. Because impairment 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 indicated that focusing on “deer management” *per se* detracted from overall park goals, namely “resource health,” which they considered the real

focus of management planning. They believed that understanding the unique management environment of the park determined the 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 management. If deer were moving out of park, this manager also included adjacent landowners and believed that circumstances determine how broad a net to cast in the identification of stakeholders and partners.

A number of managers also cited the importance of individual personalities in shaping a park's unique management environment. Indeed, attitudes of the managers themselves seem to range from "risk averse" to "risk taking" with respect to implementing various forms of management. Managers often perceived barriers to effective planning when their views did not match with those of their supervisors/Superintendents. Many described situations where managers and their supervisors placed different emphasis on the NPS's public enjoyment vs. natural resource preservation mandate, or took different approaches to implementing management actions. Not surprisingly, managers who reported more success had support from influential actors, such as Superintendents, congressmen, or heads of other management divisions. Understanding the personalities responsible for management decisions seemed to be as important as understanding the political, sociological, ecological and economic forces acting on a park at various scales, since these individuals ultimately determine the trajectory of park planning.

2) Internal NPS Coordination

At the park level, many managers indicated that internal communication among park staff often was weak. Lack of coordination between different departments within a park and lack of natural resource training for non-resource management staff were reported as two major impediments to effective natural resource management. Many managers at parks with a primarily cultural focus reported that educators and interpreters were not receptive to incorporating natural resource messages into their communication efforts. Others believed that NPS staff in general did not have enough background in natural resource issues and cited a need for common goals among park staff in different divisions. Activities of different divisions were often seen as being at cross purposes; for example, salting roads in winter, or eliminating weekend trash removal exacerbated wildlife-human conflicts. Managers also suggested that increased information-sharing by supervisors and across divisions could improve management efforts.

Some parks actively fostered internal communication. Some natural resource managers and interpreters collaborated in designing messages to further natural resource objectives. One park even developed a formal partnership between natural resource managers, law enforcement officers, and educators to focus on deer issues. Many managers noted that cross-training and education of NPS staff on natural resource management issues would be helpful in furthering support for natural resource management activities. In one park, providing researchers with magnetic “NPS Researcher” signs for vehicles helped facilitate research by avoiding conflicts with law enforcement officers (i.e., parking tickets). Smaller parks with natural resource managers who also acted as interpreters, or parks that housed natural resource managers and interpreters in the same building, tended to report more success in integrating natural resource messages in interpretive materials. Many of these

managers spoke of the small number of staff as an advantage in fostering information-sharing and facilitating discussion among divisions.

In general, managers attributed many difficulties with internal coordination to the traditional distinction between “cultural resource” and “natural resource” staff within NPS culture. Parks seemed to suffer from the bureaucratic paradox that as staff grew in number, divisions became more compartmentalized for efficiency, yet each division became less informed about the others’ activities, decreasing efficiency in dealing with issues that cross domains. For larger parks, the role of top management (management chiefs, superintendents, or regional officers) in encouraging and facilitating internal communication as well as providing cross-training opportunities was seen as key in establishing and maintaining good internal NPS coordination.

3) Coordination with External Stakeholders

All parks that were considering development of a formal management plan with respect to deer 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. Managers identified a number of areas related to stakeholders that could assist in management: increasing public understanding of park management activities, increasing public interest in issues before they become polarized, understanding the full range of public views (vs. only the vocal extremes), and coordinating management activities with partners.

Most managers were of the opinion that neither visitors nor community members understood park management goals. In fact, many managers believed that the public generally did not recognize the difference between city parks, county parks, state parks, and national parks, but treated them all as (increasingly urban) green space. In addition, managers thought the public was unaware of park planning

processes. For example, many managers stated that stakeholders were often 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). Another manager mentioned that the public does not understand why national parks do not consider public hunting as an option, considering that some state parks allow hunting. The Department of the Interior has issued requirements that interested community members be trained in both community-based planning and the NEPA process (Office of Environmental Policy, 2003). However, there currently is no one at the park level that is specifically charged with educating the public on either of these topics; natural resource managers felt that this did not fall within their area of responsibility, or that of park interpreter/educators. Notably, the managers who had strong personal ties to the local community outside of their professional roles tended to report better understanding and respect from community members toward management, even when community members disagreed with the park's final decisions.

Managers were also concerned with better understanding the public's concerns. A number of managers indicated they lacked the skills necessary to engage the public before issues became contentious, but that understanding stakeholder perspectives from an early stage would help them move toward issue resolution. In addition, almost all managers said that they only heard from the vocal extremes. As one manager stated, "People who are happy don't tell you about it." Some seemed to accept this as fact, while others desired guidance in how to determine the full range of stakeholder viewpoints. In general, managers often described action-planning scenarios that garnered little public interest until alternatives were being considered, at which point diametrically opposed groups formed and gathered support for their positions, drawing from both local and national interest groups. Some managers also

indicated that issues changed when the dialogue expanded from a local scale to include national stakeholders.

Managers also indicated a general lack of coordination between park activities related to deer and activities occurring outside the park. All managers either stated explicitly or implied that deer overabundance is a regional issue and not solely a “park problem,” however when discussing potential solutions, very few considered including regional partners. NPS management policies recognize the importance of cooperation between parks and other local and regional agencies and organizations in managing these issues (National Park Service, 2006), yet managers often discussed managing for deer issues only in terms of NEPA requirements, which seemed to result in a park-centric perspective. One manager identified the operational environment of the NPS (its focus on national level planning requirements and increasingly narrow and topical management plans) as contributing to this effect and resulting in a public perception of the NPS as too focused on planning.

While most managers did not refer to developing collaborative management plans with other agencies or organizations, they did engage in other partnerships to address deer issues. One park began reporting farmer complaints to the local state wildlife management agency, which helped determine the number of hunting permits to issue in neighboring wildlife management areas. Another park reported that actively developing strong ties with the state agency tremendously aided management, as both agencies became more comfortable looking to each other as a resource. This park is also actively seeking to develop a long-term relationship with a local journalist so that their activities will be more accurately portrayed in the press. In addition, this park is involving local community members in gathering deer movement data. A number of parks partnered with local universities or other federal agencies to collect data on deer populations or visitor behavior. Two parks mentioned that local

community groups had organized to reduce deer in areas adjacent to parks. Although these parks were not considering deer reduction on park property, managers from these parks attended the community planning sessions and gave input.

Most managers seemed to equate the term “management” with “population reduction.” In contrast, when asked about feasible management alternatives, one park listed: population and impact monitoring (including engaging stakeholders in citizen-science), close coordination with the state agency, neighbors, visitors and stakeholders, education on park mandates and scale of deer issue, and finally the possibility of a program that may include a reduction of deer population. This perspective treats external stakeholders as a resource to assist in management rather than as potential adversaries. To implement effective external coordination, managers also emphasized the need for trust among the parties, public awareness/understanding of the park’s mission and management processes, developing relationships with influentials in the local community, the importance of long-term relationships (especially in highly transient communities), better understanding of public expectations for park management, and better education of and communication with the public in general. One manager noted, it is instrumental to have partners, both external and internal.

4) Effective Planning Processes

Discussions of deer management planning focused mainly on understanding and implementing legal and policy requirements. Managers appeared to be concerned mainly with fulfilling requirements of the general NPS approach to NEPA outlined in the NPS Director’s Order 12 and Handbook for Conservation Planning, Environmental Impact Analysis, and Decision Making (2001a), which parallels the issue-evolution cycle outlined in Figure 2.1. Most activities related to NEPA planning were discussed

in terms of defending agency actions to the public. But public participation more broadly was also discussed with respect to new policy guidelines that require an effort to sustain partnerships and involve the public as a general way of doing business, beyond legal requirements (National Park Service, 2003; 2006). Managers were of the opinion that streamlining the process of developing planning documents and better guidance in how to effectively meet public input requirements would help wildlife planning.

Managers generally described the planning process as laborious, both in terms of the typical 3-5 years of planning prior to implementing action(s), and in terms of funding evaluation requirements, which they felt resulted in more time spent tracking funds than evaluating management action(s). Two main types of planning documents, General Management Plans (GMP's) and Environmental Impact Statements (EIS's), were typically referred to as illustrations of natural resource planning in parks. A GMP is a guidance document that specifies how a particular park will manage its resources, based on its enabling legislation and the park's mission. Many parks either did not have a GMP or were in the process of developing a new GMP (required every 10-15 years), and therefore did not have clear guidelines for overall park management, let alone specifics for deer management. While most parks were in the process of collecting data related to deer, in a number of cases, parks had not yet established specific objectives for these studies because the overall park plans had not yet been written. As noted by members of the Inter-Regional White-tailed Deer Team, without clear goals and objectives as standards, it is impossible to evaluate the degree of impact indicated by biological data (M. Coffey and J. Karish, pers. comm.).

Newer GMP's tend to be written as a combined GMP/EIS. According to the National Environmental Policy Act, an EIS is required whenever a federal agency considers any action that may significantly impact the human environment or may be

highly controversial (NEPA, 1969, 42 U.S.C. § 4321 *et seq.*). The NPS Director's Order 12 and Handbook for Conservation Planning, Environmental Impact Analysis, and Decision Making (2001a) outlines the process by which NPS adheres to this statute, complementing regulations issued by the Council on Environmental Quality. Managers indicated the belief that a decade or so of data typically was necessary to support an EIS related to a controversial issue such as management actions directed toward deer. NEPA provides no specific guidance as to the amount of data necessary to make a decision, aside from the mandate to "study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources" (NEPA, 1969, 42 U.S.C. § 4332 (E)). However, if challenged in court, agencies must be able to show that they have taken a "hard look" at the action and that their decision was not arbitrary and capricious (Administrative Procedure Act, 1946, 5 U.S.C. § 551 *et seq.*). Indeed, case law establishes that the purpose of NEPA is to ensure that an agency has at its disposal all relevant information about environmental impacts before embarking on a project (*Friends of Endangered Species, Inc. v. Jantzen*, 1985, 760 F. 2d 976; *Robertson v. Methow Valley Citizens Council*, 1989, 490 U.S. 332; *Salmon River Concerned Citizens v. Robertson*, 1994, 32 F. 3d 1346). Also, courts have ruled against the NPS on the basis of lack of sufficient data in EIS's (*Coalition for Canyon Preservation v. Slater*, 1999, 33 F. Supp. 2d 1276; *The Fund for Animals v. Norton*, 2003, 294 F. Supp. 2d 92).

Clearly, park managers are justifiably concerned about having adequate baseline data. However, in many cases, managers believed they were replicating biological studies that had already been performed repeatedly at other parks. Some thought that a programmatic EIS or a broad policy statement on NPS knowledge of deer biology would help managers move forward with action planning in a more timely fashion.

Data to support such policy may already exist, as many managers from different parks indicated that they began using common techniques to estimate deer population density a few years ago. However, because discussions of management objectives and actions that involve deer will always be locally controversial, an EIS at the regional or national level would only provide an analysis of alternative methods, it would not guide individual parks in determining which methods were most appropriate to their unique management environment.

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 attitude is most obviously reflected by the fact that NPS culture has developed the term “NEPA compliance” which is taken to be synonymous with “park planning.” One manager felt that the culture of “compliance” gave planning in general an unjustly negative connotation. Most managers seemed to hold three main assumptions with respect to NEPA (in relation to deer): (1) it allows parks to implement their preferred action (2) it is time consuming and costly to write an EIS (3) a lawsuit is inevitable. A number of parks cited the lawsuit regarding deer reduction at Gettysburg National Military Park as evidence (Davis v. Latschar. 2000. 202 F.3d 359). The court ruled in favor of the park, and interestingly, managers spoke of the lawsuit in both positive and negative terms. The lawsuit was seen as further proof that parks can implement any actions they deem necessary as long as they follow the correct procedural proscriptions, yet the inevitability of a lawsuit was also used as a reason to avoid planning for deer management (where most managers again equated “management” with “population reduction”). One park felt the lawsuit illustrated a need for better communication with the public, especially local landowners, and as a result, this park focused efforts on fostering relationships with the local community members.

When asked directly about public participation in planning, most managers immediately responded in terms of public scoping efforts related to NEPA. According to NPS NEPA procedures, parks must solicit public input once they begin planning actions (National Park Service, 2001a), which occurs halfway through the issue-evolution model (Figure 2.1). However, 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. One manager even believed that any future management activities targeting deer issues could not be spearheaded by the park, but would have to be part of a larger community effort, precisely because of the controversial nature of the issue. Two managers suggested that early planning meetings with the public, *before* formal NEPA public scoping activities, 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. These managers also believed that alternatives presented for discussion should be informed by public input. Other managers felt the NPS already did a good job of involving the public, by providing a number of avenues to receive public input such as letters, faxes, e-mail, the new Planning, Environment and Public Comment (PEPC) website, and public meetings. They thought it was appropriate to let EIS contractors take charge of the public participation element because these contractors focus on NEPA and therefore have more capacity to engage the public than do park natural resource managers. One park that is entering into a GMP intends to assign a staff member as a community planner, to set up public outreach meetings and otherwise engage the public. This was not the norm for most parks we visited. Instead, most parks relied on ad hoc contacts with public information officers, interpreters, and natural resource managers to transmit information to local community members.

As mentioned, most managers did not believe that the public understood either park missions or the park planning process, both of which impede constructive public participation in planning. A recent NPS Director's Order (National Park Service, 2003) calls for active on-going public participation throughout the planning process, beyond legal requirements. Some managers believed that this requirement would weaken NEPA by preventing the park from implementing *any* action. Others thought that it was superfluous, since "...once in the formal planning process, you're already doing it." Many managers were wary of public participation because of experiences with public processes that became arguments about polarized positions unrelated to park goals. They were also concerned that consensus-based management would lead to a situation in which all parties lose because there are compromises all around. They believed that "...no matter what action is chosen, someone will complain," and "...people will think they're not being heard if it doesn't go their way." Managers wanted guidance in how to fulfill public participation requirements but still maintain good relations with stakeholders. A few managers suggested that social science studies on both internal NPS and external stakeholder attitudes would help parks prepare for scoping related to NEPA.

Other managers were concerned with the level of attendance at public meetings and whether attendees were representative of the broader public. Some managers observed that public meetings typically drew only a few people, usually the same people with specific interests, and were concerned that this resulted in plans that catered to only fringe users. Other managers had the opposite problem, with such a large turnout at public meetings that it was hard for moderators to keep comments on topic. Managers stated that the public didn't understand that the volume of replies, in terms of either loudness or number, was not necessarily going to determine the action taken. Again, this points to the need to manage public expectations of the

participatory process. Other managers were concerned with how to reach people in the middle ground, how to address the small percentage of people who they believe will (almost inevitably) challenge the park's decision, how to reach national advocacy groups, and how to deal with the fact that Congress can complicate local attempts to engage the public in planning by creating laws and riders, bypassing NEPA entirely. A number of managers noted that even if local communities agreed with or at least respected the park's perspective, national stakeholders often changed the tenor of issues once a Notice of Intent was posted in the Federal Register. While many managers were skeptical of public participation in planning, a few parks felt otherwise. One manager noted that, "[public engagement is] critical... Deer bring out many emotions on all ends of the spectrum. Public information, press, communications with neighbors, state and local agencies [are] a key component of all of our deer work."

Regardless of public participation activities, one manager noted the key role of planning in wildlife management, "The most important aspect of dealing with deer issues in national parks will be the thread of consistency not in how we manage the populations, but in the process of developing management goals, objectives, strategies and the planning process that gets the parks to implement 'management' programs regarding their populations."

5) Adequate Resources

Adequate resources are necessary to implement any type of management action, and managers focused on a number of key resources, including: funding, sufficient staff, regional support, access to literature, access to funding sources, and staff capacity.

Almost all managers mentioned lack of staff and funding as impediments to management of deer issues. Most of the managers who felt they lacked adequate staff indicated a need for increased support related to natural resource research, such as full-time botanists, biologists, or technicians. Some also mentioned a need for interpreters dedicated to natural resource interpretation. Only one park mentioned a need for a community outreach planner. Most managers who mentioned lack of funds spoke in terms of funds to increase staffing. Many managers described short-term grants that had increased dedicated staff for natural resource projects to illustrate this point. All managers felt they barely had enough resources to meet current management needs, let alone allocate resources for future management planning.

A number of managers expressed a need for guidance in writing proposals that would be approved for NPS funding and/or assistance. Their concern was not that past proposals had been rejected, but rather that they did not receive enough feedback to improve future proposals. Many of the managers who believed they had adequate access to small project funding sources had worked with NPS offices that oversaw those funds (either full time or through short-term details) so had better knowledge of how the funding process worked, who to contact for guidance, or even that these funding sources existed. Managers specifically mentioned funding sources such as the Natural Resource Preservation Program (NRPP) and other sources accessed through Program Management Information System (PMIS). A few parks relied on partnerships with university researchers or local community groups for funding and other resources.

With respect to internal NPS coordination, managers also reported a need to increase NPS staff capacity for integrating natural resource concerns into other areas of park management and operation. Other capacity concerns related to a need for tools to better understand, engage, and communicate with the public. Many of these

concerns were outlined above in terms of both coordination with external stakeholders and effective planning processes.

Managers in the National Capital Region felt that they had an advantage of being able to interact regularly with their natural resource colleagues, which they do formally through bi-monthly meetings. Managers felt that this type of regular contact fostered a “tight natural resource group,” and allowed them to give each other feedback on experiences with funding projects, what worked, who they liked to interact with, etc. While geographic proximity facilitated this type of regular interaction, managers also noted supervisors as key resources in helping identify funding sources, supporting proposals for additional staff, and facilitating information sharing between NPS employees.

Discussion

While park managers are ultimately vested with decision-making power with respect to natural resource management in parks, the agency recognizes that “[the NPS] mission-both in 1916 and today-has been entrusted to us by the American public. We have a fundamental responsibility to ensure that the public understands and supports what we do on their behalf” (National Park Service, 2001b). Fulfilling this responsibility begins with an understanding of how, why, and when publics (such as local communities) influence or are influenced by park resources and management actions performed on their behalf.

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 impact local communities, for example: fire management, invasive species management, ecosystem restoration and managing disease outbreaks. A technique to better understand how local communities relate to parks and management issues would be applicable in these types of situations as well. While national stakeholder groups may become involved once 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.

Future research will therefore examine: the framework managers use to approach decision-making, alternate techniques for engaging the public, and differences between the specific values for which a park is managed and those held by stakeholders. By focusing on these areas, in the context of deer issues in NPS units, it is the intent of research Phases II and III to yield insight that will help strengthen NPS ability to respond to other issues that involve local communities. This research plan assumes that a strong understanding of not only the target audience (stakeholders) but also the degree of understanding between the audience and change agent (agency) 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. While these assumptions must be tested, research related to Phases II and III of this study will develop a framework and methodology with the intention that it can be applied whenever the NPS faces management issues that originate in local communities.

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APPENDIX 3.A

Questionnaire: Assessing Deer Impact in NPS Units in the Northeastern U.S.

The Biological Resource Management Division of the National Park Service (NPS) and the Human Dimensions Research Unit at Cornell University are collaborating to study human dimensions of white-tailed deer (*Odocoileus virginianus*) management in NPS units in the northeastern U.S. (for background on this effort, please read more [about us](#)). Our first step is to identify the extent and general nature of deer impacts in NPS units of the northeastern U.S.

We are requesting your help in determining whether deer issues affect your park, if at all. (*Note: even if you have not had and do not anticipate attention to deer management, we'd like your input*). Many park service units have, to varying degrees, considered or pursued actions to address impacts associated with deer. Still others are contemplating management of deer. Research and experience indicate that deer management issues, like other public issues, develop through phases, a process referred to as an [issue-evolution cycle](#).

Eventually, we would like to examine the development of deer management strategies for a variety of NPS units in various phases of the issue-evolution cycle. We hope to gain understanding of how these situations have been approached, especially with respect to the public engagement and human dimensions of management. It is assumed that the collective experience of NPS units is a rich source of insight into deer management in parks. As our project progresses, we will seek representation of parks facing different management situations and with different management mandates (cultural, natural, etc.).

In this early stage of our project we need to determine the scope of deer management issues throughout NPS units in the northeastern U.S. We request your

cooperation by sharing just a few pieces of information concerning deer management in your park. This brief questionnaire (just 7 questions) will help us gain an initial understanding of NPS management perspectives on deer management issues. It is being distributed only to natural resource managers in parks throughout the northeastern U.S.

Before we move to the 7 questions, please provide the following background information:

Your name: _____

Your e-mail address: _____

Name of your park: _____

Your current position at park: _____

1. Generally, which of the following statements best describes your opinion of your park's current situation with respect to deer?

(Check one)

☐ I believe that deer are having some negative impact on our park resources, visitor safety, or park relations with adjacent landowners.

(Continue with questions 2-5.)

☐ I do not believe that deer are having any perceptible negative impact on our park resources, visitor safety, or park relations with adjacent landowners.

(Skip to question 6.)

2. How have you determined there is negative impact caused by deer? (Please check all that apply.)

- ☐ Personal observation
- ☐ Data from deer-related research in the park
- ☐ Reading scientific literature about deer and their impacts
- ☐ Complaints from visitors
- ☐ Complaints from local community members
- ☐ Complaints from other state/federal agencies
- ☐ Other *(Please specify):* _____

3. Please indicate which aspects of park management are being negatively affected as a result of impacts caused by deer: (Please check all that apply.)

- ☐ Natural resources
- ☐ Cultural resources
- ☐ Health and safety
- ☐ Our relationship with park visitors
- ☐ Our relationship with neighboring communities and landowners
- ☐ Our relationship with other state/federal agencies
- ☐ Other *(please specify)*: _____

4. Are impacts caused by deer keeping you from meeting any park management objectives?

- ☐ Yes
- ☐ No

If you answered YES, which specific objectives are being impacted? Please identify the planning document that is the source of each listed objective.

5. Which of the following statements *best* describes your current activity with respect to negative deer impacts and park response? (Please check only one response)

- ☐ We have begun to notice negative impacts from deer but have not yet initiated any response.
- ☐ We have begun to define issues, goals and objectives related to deer impact on our park.
- ☐ We are collecting data to determine whether deer negatively impact management objectives.
- ☐ We have a planning process underway to develop a strategy for deer management in our park.
- ☐ We are currently implementing deer management activities at our park.
- ☐ We believe deer impact our park, but are not sure where we fall in the above list.

[Skip to question 7.]

6. Do you anticipate experiencing any impacts from deer within the next 2 years?

- ☐ Yes
☐ No

7. Do you have any general observations you'd like to share regarding deer management in national parks? *(Please enter your comments in the space provided below.)*

Thank you for your input!

If you have any questions, please [contact us](#).

APPENDIX 3.B

Guiding Questions for Discussions with Managers About Human Dimensions of Deer Issues

1. Please describe the history of deer issues and interest in deer management at your park as it has evolved to date.
2. Please describe your experiences with deer management with the National Park Service, at your park and elsewhere.
3. How do you believe deer affect park management at your park?
4. What do you think are the primary concerns of local community members with respect to deer at your park?
5. What types of differences do you see in community member perceptions of deer as a focus of management compared to NPS employee perceptions of deer management at your park?
6. What management alternatives do you believe would be feasible to implement at your park?
7. How do the public (e.g. local community or interest groups, national interest groups, etc.) influence deer management activities at your park? At other parks?
 - a. Which groups are most/least successful and why?
8. How does public engagement in management planning affect the effectiveness of deer management at your park? in National Parks in general?
9. What types of communication/education/outreach efforts has your park designed to address deer management? What about other parks?
 - a. Which of these do you consider to be the most successful and why? What are the management objectives these public engagement efforts serve to achieve?
 - b. What doesn't seem to work? Why?

APPENDIX 3.C

List of Acronyms Used in Table 3.2

BRMD: Biological Resource Management Division, NPS, NRPC

DOI: Department of the Interior

EIS: Environmental Impact Statement

ESA: Endangered Species Act

EQD: Environmental Quality Division, NPS, NRPC

FACA: Federal Advisory Committee Act

GMP: General Management Plan

GPRA: Government Performance Results Act

NAGPRA: Native America Graves Protection and Repatriation Act

NEPA: National Environmental Policy Act

NHPA: National Historic Preservation Act

NPS: National Park Service

NRID: Natural Resource Information Division, NPS, NRPC

NRPC: Natural Resource Program Center, NPS

OMB: Office of Management and Budget

SEQRA: New York State Environmental Quality Review Act

WASO: Washington Office, NPS

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CHAPTER 4

PHILOSOPHICAL APPROACHES TO COMMUNITIES AND PARTICIPATION IN NATURAL RESOURCE MANAGEMENT

Abstract

Laws and policies increasingly direct natural resource managers to involve the public in management decisions, including publics at local and regional or national scales. Approaches to public participation have been described as a continuum of increasing public power in decision-making. This paper enhances one model, defining six philosophical approaches to public participation: authoritative, passive-receptive, inquisitive, intermediary, transactional, and co-managerial. The intermediary approach often is described by managers, yet it was not identified in the original typology. Theory from community sociology applied to these participatory approaches identified three distinct paradigms currently used by managers to identify and interact with stakeholders, illustrating that different approaches represent fundamentally different types of participation, not just varying amounts of participation. Certain paradigms are more suited to engagement with communities of interest while others are more suited to communities of place. National Park Service policies regarding public participation reflect the evolution of these paradigms. These policies and paradigms do not replace each other, but are used contemporaneously, depending on the context, scope, and nature of the management issue. Recognizing assumptions underlying each of these paradigms can assist natural resource managers who strive to meet their public trust mandate in selecting among stakeholder engagement processes that more effectively reach communities of interest or communities of place.

Introduction

This paper examines theoretical implications of the relationship between conception of the public and approach to public participation and illustrates these concepts in the evolution of National Park Service (NPS) policies related to public participation. By describing assumptions about the public and public participation associated with these different policies, this paper may help managers select among philosophical approaches to public participation that are more effective with different stakeholder groups.

Wildlife management fundamentally involves managing wildlife-related impacts, the socially-determined important effects (e.g., ecological, economic, psychological, health, safety) of events or interactions involving wildlife and other natural resources, humans and wildlife, and wildlife management interventions (Riley et al., 2002). State and federal natural resource management agencies are charged with managing wildlife under their stewardship as a public trust resource; i.e., a resource that is to be protected and preserved in trust by the government for the benefit of current and future generations (Baer, 1988). In some instances, mandates for both wildlife conservation and provision of public benefit associated with wildlife cannot be maximized simultaneously (e.g., managing ungulate numbers for effective disease control vs. providing wildlife viewing opportunities). In addition, different stakeholders (i.e., people who will be affected by, or will affect, wildlife management, Decker et al., 2001; Decker et al., 1996) may have different desires for management based on their direct or indirect experiences with wildlife or wildlife management interventions. This situation indicates one paradox of wildlife management; it typically seeks straightforward management actions to address complex, wicked or messy problems (Allen & Gould Jr., 1986; Forester, 1989; Patterson & Williams, 1998; Rittel & Webber, 1973).

Much complexity stems from different emotional reactions to human-wildlife interactions or to proposed or implemented wildlife management actions that move stakeholders to take action. This potential has led agencies to involve stakeholders more proactively in wildlife management decision-making. Experience also has demonstrated that many stakeholders welcome involvement in management issues and expectations are growing for public participation in wildlife management decision-making (Decker et al., 2001; Patterson et al., 2003).

Federal policies have addressed short-term, or episodic, public inclusion in decision-making since the creation of the Administrative Procedures Act in 1946 (5 U.S.C. § 551 *et seq.*), and, for environmental decisions, the National Environmental Policy Act in 1969 (NEPA, 42 U.S.C. § 4321 *et seq.*). Recently, the federal government has begun to place greater emphasis on longer-term stakeholder engagement in decision-making, as evidenced by laws, such as the Negotiated Rulemaking Act (5 U.S.C. § 561 *et seq.*, 1996), and policies, such as the Executive Order Facilitation of Cooperative Conservation (Exec. Order No. 13352, 69 Fed. Reg. 52989, Aug. 26, 2004). Thus, natural resource managers are operating at the junction of: (a) raised public expectations for involvement and (b) government policy responding to this expectation by directing agencies to engage the public more proactively in natural resource management decisions.

Despite this trend, many natural resource managers are limited in their capacity to implement these newer legal and policy directives for several reasons. First, the stakes and stakeholders involved in wildlife management decisions are dynamic and change over time (Decker et al., 2001; Marshall & Roberts, 1997; Schectman, 1978). In addition, there may be communities of place (related to the physical context of wildlife issues) and communities of interest, such as regional or national publics, with different sets of concerns (Patterson et al., 2003). Identifying the public to engage

thus depends on manager perceptions of the relevant characteristics of stakeholder groups. The difficulty of identifying different publics, or stakeholder communities, can be illustrated by the field of community sociology, a discipline that focuses on understanding the relationship between the individual and the collective. In this arena, studies have identified 94 different definitions of community (Bell & Newby, 1971; Hillery, 1955). While some of these are esoteric or no longer used, a number of competing conceptions of community have emerged and persisted throughout the last century.

In addition, the term “public participation” can be applied to many forms of interaction and communication between government and citizens or communities. Indeed, even the environmental planning literature does not precisely distinguish between skills, desired outcomes, and process designs required for dialogues, debates, mediated negotiations or consensus building (J. Forester, Cornell University, personal communication). Philosophical approaches to public participation have been described as a continuum that reflects the degree of citizen engagement and power in the decision-making process, ranging from nonparticipation, where the goal is providing information and building awareness, to co-management, where citizens are embraced as partners in the final decision and management implementation (Arnstein, 1969; Chase et al., 2002; Decker & Chase, 1997; National Park Service, 2003; Smutko & Garber, 2001). These approaches have not been examined with respect to implied assumptions about community structure, function, and capacity for collective action—three dimensions that potentially influence interactions between natural resource management agencies and communities of stakeholders.

Over time, the NPS has adopted policies that reflect changes in philosophical approaches to public participation in environmental decision-making. Thus NPS policy will be used to examine implications of conceptions of community on design of

stakeholder engagement processes. Like other federal land management agencies, the National Park Service is mandated to serve communities of interest (i.e., the national public) that may be broader than communities of place (i.e., those directly impacted by park resources or management activities). Many NPS policies related to public participation were created to help managers meet legal requirements, and therefore focused on the broadest audience, communities of interest. Recent policy additions call for active and on-going dialogue and deliberation between parks and communities of place, with local community partnerships and active participation as a standard component of resource management planning. This philosophy explicitly exceeds legal requirements for public involvement in NPS decisions and activities (National Park Service, 2003). Rather than replacing earlier policies, these more recent policies require managers to add to their understanding of the questions: 1) “Who is the public?” and therefore, 2) “What does public participation mean?” A similar shift in philosophy more broadly throughout the Department of the Interior (DOI) is evidenced by recent emphasis on cooperative conservation, as well as the development of a DOI Director’s Order influenced by the NPS Director’s Order-75A: Civic Engagement and Public Involvement (National Park Service, 2003, M. Keener, National Park Service, personal communication). Therefore, implications of recent NPS public participation policies may serve as a useful frame of reference for other DOI agencies and wildlife managers who must negotiate between serving communities of interest and communities of place.

I. Theoretical Framework

Who is the Public?

The public is rarely formally defined in studies of public participation. In natural resource management, the public is most often contrasted with agency

decision-makers and collaborating experts; for example, NPS management policies define members of the public as “...including existing and potential visitors, park neighbors, American Indians, other people with traditional cultural ties to lands within the park, concessioners, cooperating associations, other partners, scientists and scholars, and other government agencies...” (National Park Service, 2006, p. 24). Alternately, the public may be defined based on certain characteristics: “A public is any segment of the population that can be grouped together because of some recognized demographic feature or common set of interests” (Kent & Preister, 1999, p. 9). Yet, neither of these definitions specifies whether these groupings of publics should be treated simply as an aggregate of individuals or as organized entities (and if so, what kinds of organizations).

The field of community sociology focuses on understanding the relationship between the individual and the collective. For the purposes of this paper, the term “community” will be used generically to refer to any group of individuals with the ability to act collectively, such as stakeholder groups, issue publics, or local communities. Sociologists have yet to agree on one standard definition of community and a number of both macro and micro approaches to community have been documented (Bell & Newby, 1971). Differences between macro and micro approaches to community are based on competing views of three dimensions--group structure, function, and capacity for collective action--which result in different assumptions about ways to identify and interact with community groups. Likewise, each of these three dimensions has implications for public participation in decision-making by natural resource management agencies like the NPS.

When viewed from a macro perspective, the social structures and institutions that make up a community are of primary importance. To ensure representative participation from the community (i.e., the public) one would need to identify its

component structures and engage representatives from each of these structures. Sociologists debate whether social structures are best conceived as webs of concentric or intersecting associations (Pescosolido & Rubin, 2000), sets of institutional services that show systemic properties (Warren, 1978), or aggregates of land-based interests (Molotch, 1976). For natural resource managers, a macro approach would consider all of these possibilities and would focus on identifying organized special interest groups, town councils, non-governmental organizations, community associations, and the like.

A micro perspective instead focuses on social interactions. Rather than community structure, the social-psychological aspects of community, or sense of belonging, becomes the focus. Community is seen as a mental construct based on shared symbols and beliefs, and should be interpreted in terms of the ways these beliefs and symbols are sustained and have meaning within social groups (Cohen, 1985; Hummon, 1990). While individuals may become involved in wildlife issues because of a specific set of stakes (a single-stranded, or simplex relationship), they are whole people with diverse histories, identities, dreams, education, and experiences who interact in multi-stranded (multiplex) relationships that simultaneously serve many purposes, such as parent, neighbor, property owner, religious communicant, and citizen (Bell & Newby, 1971; Selznick, 1992). A micro approach to participation would therefore focus on improving understanding between the agency and the public regarding not only each other's stakes and interests, but also their systems of beliefs vis-à-vis the resource and other community members.

In addition to structure, community function is often debated. From a macro perspective, communities can be seen as institutionalized problem-solving entities that fulfill a number of specific functions, epitomized in Tocqueville's discussion of associations as goal-oriented artificial creations that enable democracy to persist (Tocqueville, 1945 [1845]). At the other extreme, communities are described as

having “generic functions but no special purpose” (Selznick, 1992, p. 359-360).

Another way of conceptualizing this distinction is in terms of task versus maintenance functions. Task functions are undertaken to control a group’s social and physical environment and yield a high outcome for its members, while maintenance functions are the activities that maintain interdependence among group members (Warren, 1978). Public participation focusing on task functions would be concerned about process criteria, such as the timing of involvement, representativeness of participants, whether the process was fair, and how many comments were received. Participation focusing on maintenance functions would be concerned about process-related outcomes, such as whether the process influenced agency decisions, achieved more acceptable solutions, or improved public relations (Chess & Purcell, 1999; McComas, 2001).

Finally, the conception of a community’s ability to act, or its capacity for collective action (Luloff & Swanson, 1995), is instrumental in designing processes to encourage public participation. Collective action can be thought of as being either internally-driven or externally-driven, with internally-driven collective action related to maintenance functions and externally-driven collective action related to task functions (Warren, 1978). According to the community field approach, community boundaries are not static but emerge dynamically and change continuously via interactions of participants (Wilkinson, 1970). Thus, even though a natural resource management unit may be politically separated from other elements of the community, it may still be considered part of the community field for certain issues. From this perspective, when the natural resource management agency is considered a part of the community field, engaging communities in decision-making would imply an emphasis on understanding how its decisions may affect other aspects of the community, with primacy placed on downplaying individual interests in favor of the collective. When

the agency is considered to be wholly outside the community field (i.e., an external force) its attempts to engage the local community could be seen as threatening and could actually mobilize the community to action against it, reinforcing boundaries between the community and the agency rather than reaffirming interdependence of the two. As noted by one study, positive agency image within a community is likely to lead to more successful program implementation (Winchell, 1996).

What Does Public Participation Mean?

Similar to confusion surrounding the term “community,” “public participation” has been used to refer to a wide variety of techniques, ranging from input via letters, faxes, or e-mail, to public meetings, focus groups, mediation, or citizen task forces. Each of these techniques can be designed to fulfill a number of goals, and determining the appropriate mix of techniques is related to the natural resource management agency’s policy, dominant philosophy of leadership, and organizational culture, all of which affect the agency’s relationship with the public. Decker and Chase (1997) defined five broad philosophical approaches to public participation along a continuum that reflects the degree of citizen engagement and power in the decision-making process: authoritative, passive-receptive, inquisitive, transactional, and co-managerial. The continuum is expanded here to include a sixth category, intermediary, which often is described by managers but was not captured in the original taxonomy. The intermediary approach falls between the inquisitive and transactional approaches (Figure 4.1). Its addition expands the taxonomy to more accurately reflect management practice. Each of these philosophical approaches has implications for the forms of participation subsequently considered by a natural resource management agency (Table 4.1).

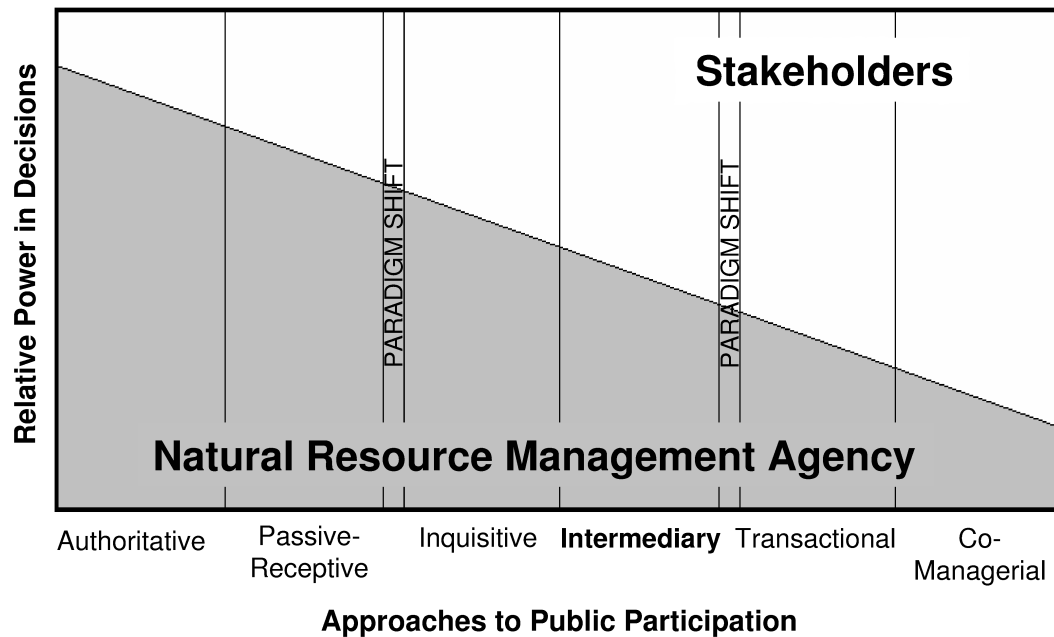
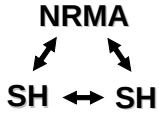
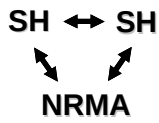


Figure 4.1. Management approaches to stakeholder input and involvement (modified from Decker & Chase, 1997). Bars indicate relative degree of influence on policy and natural resource management decisions by stakeholders and managers. The intermediary approach is added as refinement of original taxonomy. Paradigm shifts refer to changes in conception of community structure, function and capacity for collective action reflected in the different approaches to participation.

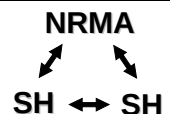
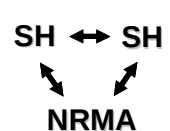
Table 4.1. Approaches to public participation and corresponding: models of communication, objectives, decision-making power, and forms of participation (adapted from Chase et al., 2002; Smutko & Garber, 2001). NRMA = natural resource management agency, SH = stakeholder groups. Arrows designate flow of information; single-headed arrow indicates one-way communication, double-headed arrow indicates dialogue.

Approach	Model	Objectives	Decision-Making Power	Form of Participation
Authoritative (non-participation)	NRMA → SH	Improve management climate, provide information, build awareness	Decision by NRMA alone	One-way communication, to inform the public
Passive-Receptive	NRMA ← SH	Improve management climate, consider stakeholder input	Decision by NRMA alone, with minimal input from public for informed consent	One-way communication, receive unsolicited comments from the public
Inquisitive	SH ↔ NRMA ↔ SH	Improve management climate, solicit stakeholder input	Decision by NRMA alone, with opportunities for public to provide input	Two-way asymmetric communication, actively solicit comments from representative SH groups
Intermediary	SH ↔ NRMA ↔ SH	Improve management climate, solicit input, stakeholders help make decisions	Decision by NRMA, based on recommendations from the public	Two-way symmetric communication, dialogue between NRMA and representative SH groups
Transactional		Improve management climate, solicit input, stakeholders help make decisions	Decision by NRMA, may share some responsibility for decision with the public	Two-way symmetric communication, dialogue between NRMA and stakeholders, as a group
Co-managerial		Improve management climate, solicit input, stakeholders help make decisions and implement actions	Decision shared by NRMA and the public	Two-way symmetric communication, dialogue between NRMA and stakeholders, as a group

Assumptions about community structure, function, and capacity for collective action are not explicit in this mapping of approaches; however, they are implied (Table 4.2). Differences in these dimensions reinforce the idea that rather than describing an increase in the *amount* of public participation as the continuum progresses, the philosophical approaches belong to different paradigms, or *types*, of public participation. Kuhn (1996) described a paradigm as an exemplar, a tradition or worldview that provides a model for defining acceptable problems, rules for how to approach them, and acceptable solutions. The term “paradigm shifts,” or transitions between competing paradigms, has since been used to describe other radical transformations in ways of thinking. Some examples of paradigm shifts in science include shifts in belief from: Lamarckian inheritance of acquired characteristics to Darwinian natural selection; single species management to ecosystem management; and classical, or frequentist, statistics to Bayesian statistics. Each of these paradigms influences the way managers view resources under their stewardship, as well as the most appropriate approaches for managing them. Similarly, whichever paradigm is used to identify the public necessarily affects approaches considered for public participation.

Unlike in Kuhn’s usage of the term, in some instances, new paradigms may not completely replace older paradigms; both may be used contemporaneously with the choice of paradigm dependent on the context, individual preference, or other factors. As noted earlier, wildlife managers are addressing increasingly complex public wildlife management issues and have responsibilities to multiple publics at different scales (i.e., communities of interest and communities of place). Thus, a manager’s ability to apply different paradigms of public participation to different facets of public wildlife management issues is likely to be an increasingly important skill.

Table 4.2. Approaches to public participation; implied assumptions about community structure, function, and capacity for collective action; and paradigms for understanding the public. NRMA = natural resource management agency, SH = stakeholder groups, MU = wildlife or public land management unit. Arrows designate flow of information; single-headed arrow indicates one-way communication, double-headed arrow indicates dialogue.

Approach	Model	Community Structure	Community Function	Community Capacity for Collective Action
PARADIGM 1: AGGREGATE VIEW OF THE PUBLIC				
Authoritative (non-participation)	NRMA → SH	The public who interact with the NRMA is an aggregate of individuals, not a collective. These individuals also may belong to groups with specific interests, but they do not act collectively in their direct interactions with the NRMA.		
Passive-Receptive	NRMA ← SH			
PARADIGM 2: MACRO UNDERSTANDING OF THE PUBLIC				
Inquisitive	SH ↔ NRMA ↔ SH	Social structures and institutions	Specific/task functions	MU is separate from community—
Intermediary	SH ↔ NRMA ↔ SH			Participation is collective action in response to external forces (represented by NRMA)
PARADIGM 3: MICRO UNDERSTANDING OF THE PUBLIC				
Transactional		Shared systems of beliefs and symbols	General/maintenance functions	MU is part of community—
Co-managerial				Participation is a manifestation of internally-driven collective action

In the continuum of six participatory approaches in Table 4.2, the first paradigm of public participation views the public as an aggregate of individuals who do not act collectively. A second paradigm focuses on the public in terms of social structures and task functions, with the natural resource management unit seen as outside the community (i.e., a macro conception of the public). A third paradigm focuses on shared beliefs and symbols, maintenance functions, and a view of the natural resource management unit as part of the community (i.e., a micro conception of the public, Table 4.2). Rather than imply that one approach to public participation is inherently better than another, application of a community sociology perspective further illustrates the utility of certain approaches over others depending on specific public participation goals and target publics.

Adopting an authoritative or passive-receptive approach to participation implies that the public is made up of an aggregate of individual stakeholders. These stakeholders are not considered in terms of the collective; thus, community structure, function, and capacity for collective action are not considered. In the authoritative approach, the agency disseminates information to stakeholders but does not actively seek input. While informational communication is an important element of most outreach efforts, the authoritative approach has been criticized when it becomes a decide-announce-defend process, where public meetings are used ritualistically to announce and defend policies and the public comes with only the opportunity to vent (McComas, 2001; Walesh, 1999). In the passive-receptive approach, individual stakeholders may take initiatives to provide input to an agency, but the natural resource management agency does not facilitate this process. Any input received in this process should not be considered representative of broader publics or the result of a systematic inquiry.

Moving to an inquisitive approach corresponds to a different paradigm that considers the public in terms of collective activity from a macro perspective. In this approach, managers actively solicit stakeholder input but do not necessarily engage in dialogue. For example, stakeholders may be asked to respond to questionnaires, provide written comments about specific topics, or attend public meetings where their comments are recorded. An effort is made to reach stakeholders with different interests, such as members of recreational user groups, local community leaders, tour operators, or environmental organizations. This approach assumes a focus on the component social structures and institutions that make up stakeholder communities, with an emphasis on specific or task functions of these associations. The wildlife or public land management unit is thought of as separate from the community, setting up social as well as physical boundaries between the agency and stakeholders. This emphasis on social structures and specific functions establishes an environment based on “us” and “them”; the natural resource management agency and various stakeholder groups can be aligned either in terms of “us” with “them,” or “us” versus “them.”

The intermediary approach introduces symmetric communication between stakeholders and the natural resource management agency (i.e., dialogue that leads to mutual learning for both parties). Dialogue is encouraged between individual stakeholder groups and the natural resource management agency, for example when managers or park superintendents attend regular meetings of stakeholder associations, or when one-on-one discussions are initiated at open house-style meetings. However, there is less emphasis on dialogue between stakeholder groups with different concerns. Instead, managers act as intermediaries in deciphering similarities and differences in stakeholder positions and interests, and the status of the management unit as being outside the local community is reinforced. Managers may feel as though they are pulled in many directions by various stakeholder groups (Decker et al., 2001), with

social science research related to participatory activities used as market research to inform managers of what the different groups desire (A. Cheng, Colorado State University, personal communication). This approach can improve relations between the agency and individual stakeholders, yet it has been criticized when it is used as a divide and conquer tactic that does not give stakeholders with disparate viewpoints the opportunity to learn from each other about the broader context of the issues (K. McComas, Cornell University, personal communication), thereby reducing the ability of stakeholders to provide well-informed input and leaving the agency with power of interpretation of various inputs.

The transactional approach to participation represents another change in conception of the public on all three dimensions, indicating the third paradigm, or a micro view of the public. An important feature of the transactional approach is interaction among stakeholder groups and between them and natural resource managers (Decker et al., 2002). Emphasis is placed on developing trust between the agency and the public; learning about the issues and various viewpoints held about them; debating the pros and cons of alternative goals, objectives and actions; and reaching compromises that reflect a balance between articulated stakes and impacts (Decker et al., 2001; Decker et al., 2002). This approach is interpersonal and subjective, and one of its goals is to create a context conducive to productive future interactions between the agency and stakeholders (Decker et al., 2002). Thus, participation is seen as fulfilling both specific and general community functions, with the assumption that the management unit is embedded within the larger community of stakeholders, and that specific management decisions may have broader community implications. Because the management unit is part of the community, discussions between the agency and the community are conceived in terms of “we.” This approach often is used in developing citizen task forces or advisory committees who

provide guidance and develop long-term relations with the agency. Some concerns with this approach include: doubts about effective representation of all critical interests; marginalization of national environmental groups by the increasing prevalence of local partnerships; and reinforcement of existing power hierarchies and the status quo (Leach, 2004; Pelstring, 1999; Peterson et al., 2005). In addition, there is the concern that citizens who are involved in long-term planning processes may eventually become more similar to one another in their viewpoints and may no longer be representative of the stakeholder groups from which they were originally drawn and whose views they were intended to reflect (D. Decker, Cornell University, personal communication).

The co-managerial approach is similar to the transactional approach in terms of community structure, function, and capacity for collective action. However, in this approach, decision-making power is shared with stakeholders, as is responsibility for implementation (including evaluation). Essential working relationships, effective local leadership, and sufficient credibility have been shown to be important to the success of citizen-state agency partnerships (Decker et al., 2004). Federal natural resource management agencies are subject to a number of administrative regulations that can become costly and time consuming to facilitate (such as the Federal Advisory Committee Act of 1972, 5 U.S.C. App.) yet also have a history of success implementing this approach (Chase et al., 2000; Wondolleck & Yaffee, 2000).

II. NPS Policies Related to Public Participation

The mission of the U.S. National Park Service that has been in place since 1916 is “...to promote and regulate the use of...national parks...which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will

leave them unimpaired for the enjoyment of future generations” (National Park Service Act of 1916, 16 U.S.C. § 1). While this core mission has remained unchanged, the types of units administered by the National Park Service have broadened from scenic parks typified by Yellowstone National Park and Yosemite National Park (Runte, 1997) to include such designations as National Recreation Areas, National Historic Sites, and National Battlefields, many of which are in increasingly urban areas. As parks have become more embedded in human-dominated landscapes, the NPS has adopted public participation policies following a progression similar to the paradigms described above.

While the federal government has adopted provisions to accept public input (corresponding to Paradigm 1: Aggregate view of the public) since the Administrative Procedure Act in 1946 (5 U.S.C. § 551 *et seq.*), policies requiring active solicitation of public participation in environmental decision-making were introduced with the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. § 4321 *et seq.*). NEPA contains legal mandates for NPS units to engage the public in planning whenever a federal agency considers any action that may significantly impact the human environment. Case law supports the historical NPS policy emphasis on NEPA’s procedural requirements (outlined in NEPA Section 102, 42 U.S.C. § 4332); “...it is well settled that NEPA itself does not impose substantive duties mandating particular results, but simply prescribes the necessary process for preventing uninformed--rather than unwise--agency action” (Robertson v. Methow Valley Citizens Council. 1989. 490 U.S. 333). These processes can be fulfilled by a macro approach to public participation (i.e., Paradigm 2), such as the intermediary approach described in Director’s Order #12 Handbook for Conservation Planning, Environmental Impact Analysis, and Decision Making (National Park Service, 2001a). The handbook clearly states that this approach meets only minimum requirements for public input and

encourages managers to “Be diligent and creative in your efforts to involve the public in your NEPA procedures and resource planning” (National Park Service, 2001a, p. 63); however, examples of alternate approaches to public participation are not provided.

Recent NPS policy guidelines indicate a shift in agency perspective to include participation that focuses on NEPA’s substantive policy, outlined in NEPA Section 101, “...to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans” (42 U.S.C. § 4331). Newly added policies take a micro, transactional approach to public participation (Paradigm 3) and call for an effort to sustain ongoing partnerships with local communities and involve the public as a general way of doing business, beyond legal requirements (National Park Service, 2001b; 2003; 2006). Specifically, NPS Director’s Order 52A encourages managers to look beyond park boundaries when making management decisions: “Parks are part of broader communities; actions in parks affect their communities just as actions in communities affect parks” (National Park Service, 2001b, p. 1), and NPS Director’s Order 75A states that, “The foundation of civic engagement is a commitment to building and sustaining relationships with neighbors and communities of interest” (National Park Service, 2003, p. 1).

It is important to note that these policies have not replaced one another, but exist simultaneously. Rather than reflecting a fundamental change in conception of the public for whom parks are managed, each added NPS policy acknowledges one of multiple ways to view the public, all of which must be considered by managers at the appropriate phase of decision-making and have different implications for the type of participatory process that is designed.

Policy Implications for NPS Units, the Public, and Participation

Paradigms 2 and 3 address active solicitation of public input, therefore, differences between these paradigms is the focus. Macro and micro approaches (corresponding to policies related to NEPA's procedural and substantive guidelines, respectively) place emphasis on different aspects of park function, relationship between the park and the public, conception of the public, goals of public participation, and characteristics of participatory processes (Table 4.3).

In terms of the primary park function, the two paradigms emphasize differently the complementary elements of the NPS Organic Act (16 U.S.C. § 1, 1916): preserving resources and providing for enjoyment. It is generally agreed that ecologically-based wildlife management considerations are the underlying priority; resources cannot be enjoyed if they are not preserved (National Park Service, 1999; 2001b; 2003; 2006). Yet, within the constraints of ecologically sound management, many possible ends and means can be considered for any complex management issue. Procedural policies focus on identifying alternate ends for resource preservation, while providing for enjoyment. For example, alternatives described in an Environmental Impact Statement must reflect distinctly different levels of impact to the environment, rather than distinguishing alternatives based on technical, logistical, or economic considerations (National Park Service, 2001a). On the other hand, a dialectical approach (Juanillo & Scherer, 1995), like that described in substantive policies, emphasizes identifying alternate means to provide for enjoyment while preserving the same end state of the resource. From this perspective, discussions about techniques, timing, costs, and logistics (means) become equally as important as the preferred ends themselves. Discussions about means typically arise in public scoping related to an EIS; however, the process evaluates alternatives with distinct differences in environmental, rather than sociological impact. Substantive policies emphasize

discussions with the public outside of legally mandated processes, creating a forum for discussion of these sociological impacts, which may be as contentious (if not more so) as choosing among a range of environmental impacts.

Procedural policies also focus on fulfilling specific functions of parks as mandated in their enabling legislation and on serving the national public as a whole—any community of interest should have an equal ability to provide input on resource management decisions. Substantive policies emphasize that parks also have general responsibilities to local communities within which they are embedded (such as being a good neighbor and host), in addition to their other responsibilities to the national public (National Park Service, 2003), as communities of place may be disproportionately (or differently) impacted by management actions. For example, many managers of NPS units in urban settings recognize the growing recreational value of these parks with increasing urbanization (Chapter 3). Although NPS units such as National Battlefield Parks or National Historical Parks were designated as monuments to nationally significant historic events, many are increasingly utilized for other community functions, such as jogging, dog walking, and even corridors for commuting. Managers must constantly negotiate between a park's mandate and its role as a community resource. For instance, are kite flying, rollerblading, and road races appropriate activities in National Battlefield Parks, or are they disrespectful, constituting visual impairment of the resource? Should dogs be allowed off-leash (which is against NPS policy) in a newly designated NPS unit that was historically an area where dogs were allowed to run free?

Table 4.3. Implications of procedural and substantive policies related to NEPA.

Procedural Policy Paradigm: Macro view of “the public”	Substantive Policy Paradigm: Micro view of “the public”
NEPA Section 102: Procedural Requirements	NEPA Section 101: Productive Harmony
DO-12 Handbook	DO-75A and DO-52A
Function of Park	
Identify alternate ways to preserve the resource while providing for enjoyment	Identify alternate ways to provide for enjoyment while preserving the resource
Park has specific functions mandated by law	Park also fulfills more general functions
Focus on serving national public (communities of interest)	Focus includes serving local public (communities of place)
Relationship between Park and the Public	
Park is an island, independent	Park is part of community, interdependent
Local community = adjacent landowners + interested parties	Local community= park + adjacent landowners + interested parties
“us” and “them”	“we”
Conception of the Public	
Focus on special interest groups, stakeholders with specific concerns	Stakeholders are whole people who fill many roles, beyond their specific stake
Diversity in views leads to adversity/conflict	Diversity in views leads to creativity
Goals of Public Participation	
Compliance	Planning
Public gives input to park problem	Park help solves aspect of community problem (shared cultural meanings)
Focus on process criteria	Focus on outcomes of processes
Characteristics of Participatory Processes	
Need to regulate process, formal	Addition of informal communication
Learning=what stakeholders want	Learning=range of possibilities
Listen (2-way asymmetric comm.)	Dialogue (2-way symmetric comm.)
Negotiation=zero sum bargaining	Negotiation=mutual gain discussions
Position based	Interest based
Consensus=all parties must agree on substance of outcome	Consensus=all parties must be able to live with substance of outcome

The relationship between the park as an institution and the public also is conceptualized in markedly different ways from the two perspectives of procedural policy versus substantive policy. Procedural policies, with their focus on the national public, regard a park as an independent entity, thereby separating the park from the local community. Thus a collective community response could be stimulated by park actions, but the park would be external to this process. This separateness also occurs when the park is considering a resource management action. When a park is planning an initiative, the procedural policy perspective is evident in the often-used term “NEPA compliance” and the typical focus on creating EIS’s that are defensible (Chapter 3). This language frames public involvement primarily in terms of its potential to discover adversaries, even though the terms are used to describe public input processes that ultimately help managers determine which management alternative best fulfills their mandates. Given the wide range of potential stakeholders who are solicited to provide input (i.e., the American public), the potential for adversaries is always a possibility. Substantive policies, on the other hand, focus on the interdependence of parks and communities, emphasizing the park’s role as a local community member. This approach frames public participation from the perspective of long-range planning, focusing on finding common ground and mutually supported objectives and actions with other community members. Depending on the situation, actions might be taken by other actors in the community, in addition to or rather than the park. Managers who view the public from this perspective speak of wildlife management in terms of regional initiatives, in which the NPS might be a principal player but would not necessarily take the lead. This approach, by definition, cannot include every possible stakeholder, as it would be impossible to engage in a deliberative dialogue with all stakeholders on a national level. Yet, an effort is made to identify all interested parties and build lasting relationships.

Members of the public also are viewed differently by the two paradigms. The procedural paradigm focuses on identifying special interest groups or stakeholders with specific concerns. To ensure all voices are heard, participatory processes would emphasize identifying and including diverse interest groups, such as sporting organizations, gardening clubs, or farmer associations. While a diversity of views must be represented and considered by the park, desires of different constituencies can create conflicts between them. On the other hand, the substantive paradigm views community members as individuals who fulfill a number of roles and have a variety of interests. The diversity of human experiences is viewed as a resource rather than a problem in management planning, with potential for leading to new approaches for understanding and resolving management issues. Some influential community members may not represent specific stakes related to wildlife issues; however, successful implementation of management actions may depend on their support. Because they do not have direct stakes in the issues, these individuals may not be identified through traditional channels used to advertise opportunities for public input, such as newspapers, newsletters and mailing lists. Instead, they may be discovered through discussions with community members in local gathering places, such as coffee shops and local parks (Kent & Preister, 1999). In one township, this method revealed that support from the water board and town grandmothers, two groups unlikely to attend public meetings, would be essential in implementing resource management actions (R. Whitley, Bureau of Land Management, personal communication). These methodologies are regularly used by NPS ethnographers to engage traditionally associated peoples in park planning processes.

In addition to concepts related to community, the procedural and substantive paradigms also have different implications for the goals of participation. The procedural paradigm seeks input from the public on alternatives, with the assumption

that the park has properly framed the problem based on a variety of scoping activities. Public participation focuses on designing alternate solutions to the park's problem, and successful participation is judged by process criteria that can be shown to comply with NEPA. Alternatively, the substantive paradigm views the problem as having implications beyond park boundaries and involves the local community in framing the problem. Outcomes of participatory processes, such as enhancing agency trust and credibility or improving relationships among different segments of the community, are important in identifying solutions that can be implemented and that are sustainable in the long-term. A focus on durable (i.e., acceptable to stakeholders) decisions frames the process in terms of planning rather than compliance.

Finally, the two paradigms have different implications for many characteristics of participatory processes. Based on an assumption of inevitable conflict, the procedural paradigm often attempts to diffuse potential conflict proactively by utilizing formal and regulated processes to learn what individual stakeholders desire without engaging in multi-stakeholder dialogue. The manager's role in this paradigm is to elicit unbiased input from stakeholders. Negotiations are assumed often to be zero-sum (i.e., if one party wins, the other loses), and stakeholders are offered multiple means to state their positions (what they say they must have) with little discussion to elicit underlying interests (the underlying reasons, needs or values that explain why they take the positions they do, Susskind et al., 1999). The substantive paradigm takes a decidedly different tack by assuming that dialogues aimed at revealing underlying interests may identify areas of mutual gain, allowing all parties to reach a solution that may not be perfect for everyone, but that all (or perhaps most) can live with. Thus, the latter approach starts by finding a common goal and developing mutually acceptable strategies for achieving it, whereas the former approach starts with articulation of disparate positions and uses iterative compromises to agree on the final solution.

Preliminary discussions with NPS natural resource managers supported these observations about differences in the two underlying paradigms with respect to public input and participation (Chapter 3). Managers who emphasized the procedural paradigm often spoke of preventing participatory processes from getting out of hand, describing successful participatory processes as offering numerous means for stakeholders to provide input on an individual basis (e.g., letters, faxes, web sites), with public meetings considered more successful when they provided only limited opportunities for interaction between stakeholders in a public forum. In contrast, managers who emphasized the substantive paradigm spoke of encouraging informal input from community members, in addition to formal processes. They were interested in learning from stakeholders, and from interactions between stakeholders, by engaging in dialogue that helped identify alternate possibilities and ensure public concerns were acknowledged in the definition of the problem before attention was shifted to seeking acceptable solutions. Interestingly, many of the managers who spoke from a substantive paradigm perspective referred to public issues that were emerging or not yet fully formed, while managers who described a procedural paradigm often referred to established, highly controversial issues.

Conclusion

By examining relationships between theories of community sociology and public participation, this paper: (1) expands on the taxonomy of approaches to public participation described by Decker and Chase (1997), (2) identifies and describes three underlying paradigms in conception of community structure, function and capacity for collective action with increasing public power in agency decision-making, and (3) describes implications of procedural and substantive NPS policies that belong to different paradigms.

The taxonomy of approaches to public participation described by Decker and Chase (1997) provides a simple visualization of the varying degrees of influence given to managers and stakeholders under each approach. The addition of the intermediary approach expands this model to encompass a phenomenon that is often described by managers (Decker et al., 2001), but was not captured in the original classification scheme.

Applying community sociology theory to these classes of participatory approaches reveals two fundamental paradigm shifts with increasing public decision-making power, indicating not an increase in amount of public participation per se, but fundamentally different types of participation. These paradigm shifts also reflect fundamental shifts in the use of social science in wildlife management. While wildlife professionals have been concerned with interactions with the public for over half a century, systematic research to understand the human dimensions of wildlife management (i.e., beliefs, attitudes, and reasons for people's beliefs regarding wildlife) began only in the 1970's (Decker et al., 2001). The first paradigm shift related to participatory approaches thus reflects the advent of human dimensions of wildlife research, which focused primarily on survey research to understand social-psychological aspects of stakeholder group preferences for various forms of wildlife management. Human dimensions research has since expanded to include concern with the process of policy and management decision-making (Decker et al., 2001), corresponding with the second paradigm shift. As noted by Enck and Brown (1996, p. 16), "To get the most out of a citizen participation approach, wildlife managers need to move beyond simply making decisions with more public input to a point where they can make decisions through a more thoughtful process."

Both procedural (Paradigm 2: Macro understanding of the public) and substantive (Paradigm 3: Micro understanding of the public) NPS policies regarding

participation meet minimum NEPA requirements for public participation, yet they reflect different understandings of community structure, function, and capacity for collective action. Like other competing paradigms in natural resource management, one paradigm may not completely replace the other; instead, the most appropriate approach will likely depend on the management context. Director's Order 75A (National Park Service, 2003) recognizes a spectrum of approaches to public participation that corresponds to the continuum proposed by Decker and Chase (1997) and modified here, acknowledging that each may be appropriate depending on the task at hand. Clearly, each approach has pros and cons; however, it is hoped that identification of the paradigms that both define the public and form the basis for different approaches to public participation will help managers design participatory processes that are specific to their unique management situation.

Management Implications

According to the NPS, "The public includes all of the individuals, organizations and other entities who have an interest in or knowledge about, are served by, or serve in, the parks and programs administered by the NPS...[including] NPS employees" (National Park Service, 2003). Managers face the paradox of including all segments of the public in planning, yet each approach to active public participation gives advantages to some segments of the public over others, and may not be logistically feasible in some situations. Application of these philosophical approaches has been uneven in the NPS, however experience suggests contexts where each approach may be most fruitful. Transactional or co-managerial models (Paradigm 3) may be useful as ongoing approaches to engage the public in emerging wildlife management issues in a community of place, with episodes of inquisitive and intermediary participatory processes (Paradigm 2) added as issues become contentious and interest-specific

community structures are formed. Information outreach and acceptance of public comment (Paradigm 1) may be better described as a general way of doing business rather than public participation processes. Future research is needed to clarify the relationship between success of different approaches to public participation and the various stages within the life of a wildlife issue (i.e., from issue definition to formulation of an action plan, to implementing activities), bearing in mind that stakeholders also will have individual preferences and varying comfort levels with different means for providing input. While this paper examined community and participation from the perspective of the NPS, a federal land management agency, the same considerations would apply whenever the community of interest is broader than the community of place.

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CHAPTER 5

NEGOTIATING BETWEEN RESOURCE CONSERVATION AND THE PUBLIC TRUST ON FEDERAL RESERVE LANDS

Abstract

When making natural resource management decisions, federal land managers must both fulfill resource conservation mandates and satisfy the myriad publics for whom they manage. Public expectations and recent federal policy increasingly emphasize engaging the public in these decisions. In any collective decision, participants negotiate between three interrelated areas, each of which influences outcomes: the substance of what is being allocated or managed, the procedures or processes through which participants interact, and the relationships between participants in the decision. Negotiating these areas requires some degree of both competition and cooperation between parties to reach a mutually acceptable agreement. The tension between these two strategies is illustrated by the Negotiator's Dilemma, a conceptual model that reveals how well-meaning people may fall into competitive strategies where a focus on "claiming value" leads to lose-lose agreements. Alternatively, strategies that integrate substance, process, and relationships can help participants "create value" and negotiate better outcomes for all parties. Drawing on interviews with 22 federal natural resource managers and public participation practitioners, this paper: (i) outlines the Negotiator's Dilemma, (ii) examines reasons that federal land managers may be tempted to "claim" value as a strategy when interacting with the public, and (iii) describes how some practitioners are overcoming the Negotiator's Dilemma, successfully integrating the substance, process and relationships under negotiation to create joint gains.

Introduction

Federal natural resource management agencies are responsible for managing resources on public lands as public trust resources, to be protected and preserved in trust by the government for the benefit of current and future generations (Baer, 1988). Natural resource managers regularly address problems that are highly complex, ambiguous, and steeped in uncertainty in the response of the ecosystem. While each agency has a specific mission that defines its purpose with respect to resource management, segments of the public (for whom the agencies manage) may have interest in the resources based on different sets of values than managers and often from each other. Thus, management responses to complex natural resource issues often evolve into public issues when stakeholders¹ believe they may be impacted² by either the resource itself (e.g., wildlife such as predators or ungulates, insect or fungal disease outbreaks, fire, rangeland condition) or the means for managing the resource (e.g., allowing or restricting certain forms of recreation, eradicating exotic wildlife, distribution of grazing allocations, access to public lands).

Federal land managers working in this context constantly find themselves making decisions that involve negotiating between fulfilling their conservation mandates and satisfying the myriad publics, both local and national, to whom they are responsible. In previous eras, federal agency actions were less likely to be challenged by the public; however, expectations are growing for increased public involvement in natural resource management decision-making (Decker et al., 2001). Partially fueled by the environmental movement of the 1960's and 70's, a public that increasingly

¹ Stakeholders are individuals who will be affected by, or will affect, wildlife management (Decker et al., 2001; Decker et al., 1996).

² Impacts are the socially-determined important effects (e.g. ecological, economic, psychological, health and safety, etc.) of events or interactions involving natural resources, humans and resources, and resource management interventions (Riley et al., 2002).

values wilderness and non-consumptive recreation, heightened distrust of government, and democratization of information (making technical information more available to a more knowledgeable public), managers are experiencing increased pressure to adopt a collaborative strategy of decision-making (Wondolleck & Yaffee, 2000). The federal government is responding by placing greater emphasis on stakeholder involvement in recent law and policy, e.g., the Negotiated Rulemaking Act in 1996 (5 U.S.C. § 561 *et seq.*), Executive Order “Facilitation of Cooperative Conservation” (Exec. Order No. 13352, 69 Fed. Reg. 52989, Aug. 26, 2004), and the National Park Service Director’s Order #75A: Public Participation and Civic Engagement (2003a).

Some critics worry that a collaborative approach to resource management encourages agencies to relinquish too much power to local publics, rather than enforce agency conservation mandates (Heilprin, 2004), while others believe that cooperation between agencies and the public will lead to more sustainable resource management practices (Wondolleck & Yaffee, 2000). These diverse interpretations reflect a dilemma of collective decision-making. In any collective management decision, participants must negotiate between three interrelated areas, each of which influences outcome: the substance of what is being allocated or managed, the procedures or processes through which those participants interact, and the relationships between the participants in the decision. The relative weight that federal natural resource managers place on each of these areas will be reflected in part by the approach they adopt for engaging the public.

Approaches to public participation have been described in terms of a continuum that reflects the degree of citizen engagement and power in the decision-making process, ranging from token or nonparticipation, where the decision is made by the vested power alone, to co-management, where citizens are embraced as partners in the final decision and management implementation (see Chapter 4, and: Arnstein, 1969;

Chase et al., 2002; Decker & Chase, 1997; Smutko & Garber, 2001). This continuum is illustrated in Figure 4.1. Philosophical approaches at the authoritative end of the spectrum view participation in terms of competition between divergent interests, while those at the co-management end view participation as an opportunity for cooperation between stakeholders who may “create value” by identifying areas where they share common interests. The tension between these two strategies is illustrated by the Negotiator’s Dilemma, a conceptual model that reveals some of the reasons well-meaning people may fall into patterns of discourse that claim value and lead to lose-lose agreements.

Drawing on literature from the fields of natural resource management, environmental conflict resolution and planning, and interviews with 22 federal natural resource managers, planners and public participation practitioners, this paper: (i) outlines the Negotiator’s Dilemma, (ii) examines reasons that federal land managers may be tempted to “claim” value as a strategy when interacting with the public, and (iii) describes how some practitioners are overcoming the Negotiator’s Dilemma, successfully integrating the substance, process and relationships under negotiation to create joint gains.

The Negotiator’s Dilemma

Negotiation has been described as an everyday activity, a means of getting what you want from others, and back-and-forth communication designed to reach agreement between disputants who have some interests that are shared and others that are opposed (Emerson et al., 2003; Fisher & Ury, 1981). Natural resource managers regularly face these types of interactions with the public in the process of developing and implementing management plans for public trust resources. Any negotiation requires some degree of both competition and cooperation between the parties to reach

a mutually acceptable agreement (Lax & Sebenius, 1986). The tension between these two elements sets the stage for the “Negotiator’s Dilemma.” The relative emphasis placed on competition and cooperation in a deliberative process can significantly affect the outcomes of negotiations, in terms of both substantive outcomes and relationships between parties (for extensive examples, see: Forester, 1999b; O’Leary & Bingham, 2003; Susskind & Cruikshank, 1987; Susskind & Field, 1996; Wondolleck & Yaffee, 2000). As noted by Fisher and Ury (1981), every negotiator has interests in both substance (the reason for negotiating in the first place) and relationships (most negotiations simultaneously take place in the context of an ongoing relationship). The satisfaction of these interests depends, in part, on the strategies the parties choose when they interact with each other.

A competitive approach often is described as “value claiming”, “win-lose” or adversarial negotiation (Lax & Sebenius, 1986) that takes a positional, or “zero sum” bargaining posture (Fisher & Ury, 1981; Susskind & Cruikshank, 1987). From this perspective, whatever one party wins, the other loses; the pluses to one side are balanced out by the minuses to the other side, yielding a total of zero, or a “zero sum” (Fisher & Ury, 1981; Susskind & Cruikshank, 1987). This focus on the substantive outcome, or who wins, leads to strategies such as: framing the discussion as a debate, putting your beliefs in direct opposition to “theirs”; dramatizing the worst possible scenario if the other side wins; seeking to convince others of the reasonableness and righteousness of your cause; and challenging opponents’ credibility by accusing them of misrepresenting or falsifying facts (Susskind & Field, 1996). By adopting a competitive approach, a negotiator’s interests in substance and relationships are traded against each other; if the relationship is more important in the long run, you may agree to a less desirable substantive outcome, while if relationships matter less, you may push harder for the substantive outcome you desire (Fisher & Ury, 1981).

Alternatively, the cooperative approach is “value creating” (Lax & Sebenius, 1986), focusing on interest based, “mutual gains” or principled negotiation (Fisher & Ury, 1981; Lax & Sebenius, 1986; Susskind & Cruikshank, 1987). In this approach, the focus is on integrative bargaining (Susskind & Cruikshank, 1987), where negotiators work to understand each other’s interests (i.e., the needs, desires, concerns and fears that lead them to take a position). By engaging in an open, honest dialogue to uncover interests, disputants discover items they value differently. These differences can be developed into a list of things they might trade, allowing all parties to do relatively better on substantive outcomes. This approach is founded on the assumption that people can interpret the same substantive issue differently based on their own experiences and interests. Focusing too quickly on solutions to the issue rather than the reasons behind the issue may lead negotiators to miss creative alternatives. Cooperative dialogue allows for creativity that can expand the “size of the pie,” that is, the set of considerations under negotiation (Lax & Sebenius, 1986). Fisher and Ury (1981) also observe that for every interest there are usually several positions that could satisfy it, and that shared and compatible interests often may lie behind what appear on the surface as intractable, opposed positions. When we fail to identify these shared interests, “...we sometimes sacrifice a major interest because we are unwilling to yield on a minor one” (Jandt & Gillette, 1985, p. 5).

For effective cooperation, all parties must be open, honest, and transparent. Thus, when negotiations are approached cooperatively, substantive outcomes are important, but a “good agreement” also is related to process outcomes. Susskind and Cruikshank (1987) describe four such criteria for judging success: fairness, efficiency, wisdom and stability. Each of these criteria is related to the principles of participation developed by the Department of the Interior (DOI, Table 5.1). The DOI notes that

most often when processes break down, it is because these basic principles have not been respected (Department of the Interior, 2005).

Table 5.1. The DOI's eight principles of public participation (2005).

1. Establish clear commitment to excellent public participation
2. Base the level of public participation on the agency's intent
3. Be transparent in all actions
4. Ensure all voices are heard
5. Focus the process on public interests and values
6. Value relationships
7. Base decision-making on good information
8. Invest the necessary resources in planning public participation

Participatory processes developed with these criteria in mind can help managers create value not only by “expanding the pie” of the substantive agreement, but also by developing understanding and building trust and credibility that enhances long-term relationships between parties.

So if creating value leads to a more robust set of better outcomes, why do adversarial conflicts persist? This is the crux of the Negotiator's Dilemma: if one party doesn't know what strategy the other party will adopt (competition/claiming value vs. cooperation/creating value), a competitive strategy is safer. From an individual short-term perspective, greater substantive gains may be realized through competitive actions such as pursuing advantage, exploiting others, or hiding or distorting information (Wondolleck & Yaffee, 2000). A cooperative strategy is risky because revealing too early what one is willing to settle for may give the other side bargaining advantage. But if both sides act on the same fear of exploitation and vulnerability, they create a situation where they are both likely to do poorly. Alternatively, if both sides cooperate and are open and honest, higher payoffs may be

discovered for everyone. Thus, what is an individually rational strategy for each party (competition/claiming value) is collectively irrational (Forester & Stitzel, 1989).

Lax and Sebenius (1986) describe this situation in terms of relative outcomes (Figure 5.1): Two negotiators, A and B, each have a choice between negotiating styles that either create or claim value. If both choose to create value, they will each receive a good outcome. However, if A chooses to claim and B chooses to create, A will receive an even better (great) outcome, while B will receive a terrible outcome (and vice versa). If both choose to claim, they fail to realize joint gains and both receive a mediocre outcome. This dilemma is structured after the famous Prisoner's Dilemma that has been used to describe the dilemma of cooperation in all kinds of human interactions (Wondolleck & Yaffee, 2000).

		B'S NEGOTIATING STYLE	
		Create	Claim
A'S NEGOTIATING STYLE	Create	GOOD GOOD	GREAT TERRIBLE
	Claim	TERRIBLE GREAT	MEDIOCRE MEDIOCRE

Figure 5.1. The negotiator's dilemma. The lower left entry in each cell is A's outcome; the upper right entry is B's outcome (adapted from Lax & Sebenius, 1986).

Wondolleck and Yaffee (2000) offer a number of additional reasons that substance is often claimed during negotiations: (1) the "tragedy of the commons" (Hardin, 1968), where individuals approach common pool resources in terms of maximizing their own self-interest because costs are shared collectively, (2) biases in

human judgment such as the “myth of the fixed pie” cause individuals to assume that their interests directly conflict with the other party’s interests, so that the only rational behavior is to compete for the biggest share of the fixed pie you can get, and (3) cultural norms in the United States that emphasize individual rights and opportunities, leading to a neglect of collective responsibilities.

Lax and Sebenius (1986) acknowledge that the Negotiator’s Dilemma is a simplification, and that the line between creating and claiming may not always be clear cut. While many are tempted to separately address the competitive (claiming) and cooperative (creating) elements of negotiation, the two elements are inextricably entwined and influence each other: “No matter how much creative problem solving enlarges the pie, it must still be divided; value that has been created must be claimed. And, if the pie is not enlarged, there will be less to divide; there is more value to be claimed if one has helped create it first” (Lax & Sebenius, 1986, p. 33). Thus, the essence of effective negotiation involves managing the tension of creating while claiming value (Lax & Sebenius, 1986), and the Negotiator’s Dilemma is an instructive model that can assist managers in reflecting on the ways they approach negotiation.

When negotiating between agency conservation mandates and public desires, federal natural resource managers have interests in the substantive outcomes, processes used to make collective decisions, and relationships between parties. But what happens when each of these interests are claimed to a detriment of the others? As illustrated by the negotiator’s dilemma, parties who only pay attention to “substance” risk damaging relationships (and may not necessarily do well on “substance”); parties who only pay attention to “process” risk “going through the motions”, sacrificing both substantive outcomes and stronger relationships; and parties who only pay attention to relationships might risk adopting a process that teaches them

nothing and ignores substantive losses. We interviewed natural resource managers, planners, and practitioners who had experience with both competitive and cooperative participatory processes to learn how some managers are successfully balancing substance, process, and relationships to realize joint gains with stakeholders.

Methods

National Park Service natural resource managers in the Northeast and National Capital Regions, social scientists, and planners were asked to identify practitioners or other managers who had experience with designing and facilitating both competitive and cooperative approaches to public participation in natural resource management decisions on federal public lands. Twenty-two practitioners and agency managers or planners identified in this way were invited to participate in semi-structured informal interviews. Interviews of approximately one-hour duration were conducted either face-to-face or by telephone, during normal business hours from 1/24/05 to 10/28/05. Interviewees were asked to describe their experiences with (1) civic engagement and public participation efforts of federal land management agencies and (2) designing and implementing participatory processes (Appendix 5.A). Confidentiality was assured.

Interviewees described experiences as employees of or contractors for the following organizations: National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, U.S.D.A. Forest Service, U.S. Geological Survey, Department of Energy, and U.S. Military. Respondents were not asked to provide official agency position statements, thus responses were considered to reflect only opinions of the individual responding. We did not tape record interviews; quotations in the text are an attempt to reproduce their words as faithfully as possible from handwritten notes taken during the interviews that were written up in detail

immediately following the interviews. This research was approved by Cornell University's University Committee on Human Subjects (Protocol ID# 04-04-043).

Findings

Interviewees experiences with public participation were examined with respect to the interaction between (1) strategies that claim or create value and (2) substantive outcomes, processes used to make collective decisions, and relationships between parties. In addition, challenges to adopting more cooperative approaches to public participation were identified.

Substantive Outcomes

Interviewees indicated that in addition to the conditions outlined in the Negotiator's Dilemma, other situations lead to claiming value in terms of the substantive outcomes of federal natural resource management decisions. Many interviewees, like other managers (Chapter 3), mentioned the preoccupation of federal agencies with the potential for every decision to be adjudicated in court. Judicial processes are explicitly adversarial. Parties are cast as opponents who need to make the strongest case for their own interests and only one will win; it is in no one's interest to think of outcomes that split the difference or produce creative, win-win decisions (Wondolleck & Yaffee, 2000). If parties think they can do better in court than through a cooperative negotiation, they may choose to sue. Because of the diversity of values extant in the American public, interviewees recognized that it is practically impossible to reach an agreement that pleases everyone. This causes many managers to approach public participation cautiously, in terms of defending agency actions to the public, in preparation for what is perceived as inevitable adversarial conflict (as described in Chapter 3). Interviewees believed that the public hearing

approach to public participation reinforced the adversarial, competitive understanding of participation. As one planner who was interviewed described, “a public hearing in general has an outcome, you can grant or deny. It has winners and losers.” An agency scientist referred to this approach as “invite-inform-ignore,” while a third interviewee used the more familiar phrase, “decide-announce-defend.”

In contrast, one manager described a planning process that focused considerable effort on discovering the interests of potentially affected communities through informal communication networks. In this approach, park staff met with stakeholders “on their turf, at their convenience,” in informal gathering places such as churches and coffee shops to discover the topics of concern that were being discussed every day, as well as ways that park management might affect those concerns. These dialogues helped identify the people who were influential in the community (not necessarily as elected officials of a known organization, but those who the rest of the community listened to), who would be necessary to include in more formal scoping processes, but who might not ordinarily come. This manager acknowledges that this approach does not necessarily lead to agreement on all facets of issues. However, by using this approach in a recent General Management Plan, he sees that the park is now better able to articulate why they’re doing what they’re doing with confidence, and that the deeply emotional issues associated with their management appear to be less contentious and controversial than they had feared initially. Another manager described how this process helped identify changing local demographics that affected resource use. Using a Discovery Process™ to learn about communities via informal networks identified these needs which may have been completely missed otherwise, an oversight that likely would have necessitated a formal amendment of the management plan in the future, costing additional staff time and resources.

In addition to the ever-present threat of lawsuits, interviewees noted that agency assumptions about the authority of certain kinds of knowledge encourage a tendency to utilize participatory processes that claim substance. One agency scientist believed this mindset was perpetuated through agency emphasis on “decisions based on sound science.” He indicated that,

A myth has grown up that sound science alone will solve the problem. It relieves us of the need for the hard work of deliberation. It has decreased the focus on relationships. Information doesn’t make decisions, people make decisions.

Susskind and Field (1996) note that most people operate from a belief that we are able to interpret reality objectively, and that our social attitudes, beliefs, preferences, and priorities are rational, unemotional, and unbiased. As a result, we assume that anyone with an opposing viewpoint has limited information or is biased or irrational. These assumptions can lead to negotiations that attempt to convince or persuade other parties, using participation as a means to garner support from the public rather than listen to public concerns.

Alternatively, as one manager noted, “...there may be twelve people with the same issue, but twelve different reasons for having that issue.” He argued that rather than focus on the substance of the issues themselves, management should first try to understand the reasons behind the issues. Key to this observation is that the same information may be interpreted differently by different people based on their underlying beliefs or on social context, such as: the historical relationship between the community and the agency, assumptions about what the other group is saying, and level of knowledge about the topic (Weber & Word, 2001; Weeks & Packard, 1997; Ziman, 1991). One agency scientist emphasized that,

Information must be three things: credible and accurate, salient to the issue at hand, and legitimate in the eyes of the public. To accomplish that, you need relationships that are transparent, open and accessible to everyone. All forms of knowledge have to be respectfully questioned and examined, both traditional and expert. This builds the legitimacy of expert knowledge. Otherwise, people will take the attitude, ‘If you dismiss my local knowledge, I will dismiss your expert knowledge.’

From this perspective, relationships and processes that build relationships help participants discover each other’s (perhaps diverse) understanding of the substantive issue. Interviewees described processes that result in this type of comprehension as, “...amazing, it’s phenomenal...”, and “...transformative, it’s amazing to watch,” observations similar to what is described in literature as “light bulbs going off” (Forester, 1994) and transformations of awareness resulting in personal growth (Lowry et al., 1997). Through such transformative processes, parties realize the need to learn about each other as well as the issues at hand, helping them overcome presumptions that might restrict their ability to think creatively about options (Forester, 1999a). Until this understanding is reached, “Issues look different to opposing partisans, who think their own perceptions—and emotional reactions—are the only ‘natural’ ones” (Susskind & Field, 1996, p. 19).

One interviewee observed that most public participation efforts are focused on agency concerns, whereas learning about the public’s concerns may help agencies discover more sustainable management alternatives. He explained,

Rather than asking people always to come to our meetings, we need to go out to find out what are their issues, how to align with their goals, instead of asking them always to align with our goals. We need to be there to listen rather than inform and tell, we need to be more participants.

Another practitioner believed that understanding community issues, irrespective of the specific project, can help frame the project in terms of solutions that help both the community and the agency meet their respective goals. As an example, he described

an agency project to restore habitat for an endangered species. By learning about community issues, they discovered that community residents didn't care about the endangered species, but were concerned about youth leaving the area and wanted more camping spots. By learning about these community priorities, a wiser plan was developed, one that created opportunities to address community concerns via habitat restoration.

As mentioned previously, sound scientific information that is credible, accurate, salient to the issue at hand, and legitimate in the eyes of the public is crucial in natural resource decision-making. Yet it also is important to understand how each party interprets and understands that information. Thus, dialogue based on "good information" also requires that each party has a good understanding of each other's interests and concerns. As one interviewee observed,

Managers carry myths around that "people don't want x." There is a need for mutual education—for the agency to learn about the community on its own terms, not what the communities can do for them, and the community learning about the agency and its mission.

This sentiment was reiterated by another manager "There is a need for education, both of those outside and inside the park service. [Public participation] should be an opportunity to make you a better manager." Another interviewee explained, "Even if you don't agree, listen. Tell them why you don't agree, have a conversation. They may convince you."

Process

As with substance, focusing solely on the procedural components in a negotiation also can lead to poor outcomes. A procedural orientation focuses on process criteria such as: how many people participated, how many spoke at a meeting,

how well meetings were publicized, whether dialogue occurred, etc. Alternately, success can be gauged in terms of process-related outcomes (i.e., outcome criteria) such as: whether participants' comments were useful, whether participants' comments influenced decisions, whether participants were satisfied with the process, and whether relationships between the agencies and participants improved (Chess & Purcell, 1999; McComas, 2001).

Laws such as the Administrative Procedures Act (1946, 5 U.S.C. § 551 *et seq*) and the National Environmental Policy Act (NEPA, 1969, 42 U.S.C. § 4321 *et seq.*) require federal agencies to include public input in federal decision making. One manager pointed out that agencies typically use approaches to participation that focus entirely on NEPA's Section 102, the action-forcing portion of the law, which led them to forget about Section 101, the portion of NEPA that emphasizes productive harmony and working with communities. Section 101 declares a policy of the federal government "...to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans" (42 U.S.C. § 4331). This manager believed that the focus on Section 102 has not been productive, and has resulted in "...making the system more complex. We're making assumptions about what we know. When we find out we don't know, we get sued." The emphasis on Section 102 stems from legal rulings that have upheld NEPA as imposing only procedural requirements, preventing uninformed, rather than unwise, agency action (*Robertson v. Methow Valley Citizens Council*, 1989, 490 U.S. 332). Yet, as previously described, public input processes that meet only procedural requirements run the risk of being framed as adversarial and historically have resulted in many court challenges. Lawsuits may force agencies to start over, reassessing both the nature of the problem and appropriate solutions, as in the case of deer management at Cuyahoga Valley

National Park (National Park Service, 2003b). Another manager provided an example of what happens at a typical public meeting designed to meet procedural public involvement requirements:

At a typical public forum there are about 30 people, and maybe 3 or 4 who will speak out. Most are sitting silently, thinking. They are there because they feel something about the place, but the majority are not comfortable speaking in a public forum. By the end of the meeting they feel forced to choose one of the articulated positions. It may not be quite right, but they feel they have to choose. This leads to the creation of factions. People start discussing ‘I agree with what John said’ while someone else says ‘well, I liked what Sally said more’ and then they get entrenched.

This manager believed that more informal processes could encourage better dialogue, providing those less comfortable speaking in a public setting an opportunity to explain how they feel, rather than siding with someone else’s articulated position. Another manager described the typical lose-lose outcome stemming from participatory processes that simply meet legal requirements: “If both sides are equally mad at us, we’re successful.” Everyone leaves the process feeling as though they have done poorly, yet they do not see how any alternative is possible. This manager believed that agencies resigning themselves to this mindset have allowed fringe organizations to “isolate agencies in the middle,” an often described sentiment when the intermediary approach³ to participation is adopted (Decker et al., 2001).

One interviewee described an example of a more productive approach that followed the cooperative philosophy outlined in NEPA’s Section 101. Six years of traditional participatory processes had been unable to develop any sort of agreement in a dispute over a proposed resource management plan that would have a lifespan of

³ In this approach, dialogue is encouraged between stakeholder groups and the natural resource management agency, but not necessarily between stakeholder groups with different concerns; managers act as intermediaries in deciphering the similarities and differences in stakeholder positions and interests (Chapter 4).

approximately 20 years. Recognizing that continuing down this path was likely to end in court, the agency adopted a new format to discover each group's issues, facilitated workshops around those issues, and held many fieldtrips on weekends, including meals together. They developed relationships and informal communication networks that helped identify interested parties, complementing formal announcements in newspapers and other media. Collectively, they recognized early on that they wouldn't have enough information to make definitive decisions that would endure for the 20 year span of the plan, so rather than fight "tooth and toenail" over substantive details, they chose an adaptive management approach. The focus on their common interest in a healthy ecosystem led to a solution where a large influential landowner voluntarily changed its management practices, and an environmental group accepted responsibility for monitoring ecosystem condition. Both parties meet regularly with the agency, examining data and making decisions from year to year. After about three years, they were able to implement a plan, whereas previously there had been six years of negotiation with no agreements. By changing their approach to participation, they were able to reach a productive outcome in half as much time.

Interviewees also indicated the importance of utilizing less formal processes to improve understanding of local community dynamics. One manager described a situation where an approach to participation based on informal networks revealed that the local community leaders were not likely to attend public meetings. This manager believed that reaching out to these individuals via community networks rather than formalized processes was necessary to ensure that the agency did not "get caught blindsided" within the 20-year planning cycle. Another interviewee described how informal networks could be used to improve the turnout at public meetings:

At a public meeting where normally you would get ten people if you advertised in the newspaper, you get 200 [if you go through informal networks]. If you call five people, they call others; they post flyers in the community where you wouldn't think to post. And the 200, they'll be interested to hear what you have to say, vs. the ten who only want *you* to hear what *they* have to say.

Not all federal actions require extended negotiation with the public. For example, many standard operating activities are considered “categorical exclusions” under NEPA, meaning that they have no potential to impact the human environment and are not likely to be controversial (National Park Service, 2001). Other situations are not always clear-cut, and it may be up to a manager to determine the level of participation they choose to pursue. Two interviewees described cases where simply educating the public on the NEPA process resulted in community developed alternatives that were adopted as the preferred alternative by the agency. In both cases, the community alternatives included a co-management aspect that would have been outside the jurisdiction of the agency; i.e., the agency could not have developed that alternative on its own. In one instance the agency was planning a visitor facility and had identified a number of potential sites, all on agency property. A neighboring municipality that had been looking to revitalize the area was interested in the economic benefits this facility could bring. They identified two sites that were on land owned by the municipality, but adjacent to agency land, and submitted these sites as alternatives during the NEPA public comment phase. The agency included their sites in the final analysis and ended up choosing one as the preferred alternative. With this alternative, the agency does not need to use any of its own land to develop the facility, and the facility is in a more prominent location to attract visitors, benefiting both the agency and the local community.

In the second case, the agency was developing a recreation management plan. Seventeen local area recreation groups with different foci (e.g., shooting, off-road vehicle recreation) organized into an outdoor recreation association and developed an

alternative that not only met agency objectives but also would help the community prevent future sprawl, a common interest that united the recreation groups. Agency managers realized that if they could work with the communities to implement this alternative, they might be able to preserve those lands forever; if not, they would be fighting with them to make it something else (that the communities might not necessarily want). Managers also recognized that if they chose the community developed alternative, they would already have an allied group of 17 organizations who would help with implementation. This manager acknowledged that, "...all [the communities] needed was a better idea of how we do it with NEPA with respect to alternatives. They were able to take what they wanted to do and fit it within the NEPA process, it wasn't hard for them to do." Another manager remarked,

There is a need to discover. Are there other possible solutions that have been overlooked? Maybe we saw them but overlooked them because they're outside our realm of control. Bringing partners and citizens in opens up solutions that you may have dismissed because you were not able to control.

Relationships

Interviewees indicated that claiming value with respect to relationships affects federal resource management in two ways. First is a situation where parties utilize relationships and political power to influence decisions (e.g., lobbying congress rather than participating in collaborative processes). Interviewees gave examples of cooperative approaches to participation that helped reduce the use of this strategy. One planner described a stakeholder who changed his behavior when a more cooperative participatory process was adopted by the agency. After attending some of these meetings, a stakeholder who used to stand in front of the agency and picket now engages in reasonable discussions with the planner. Another manager described a

situation in which collaboration produced a solution that was agreeable to all local parties, and local environmental groups were successful in requesting that the parent national environmental groups (who typically have more lobbying and political power) not get involved. Although one national environmental group appealed the decision, voicing concerns that differed from the local chapter, they did not file a lawsuit.

Alternatively, a focus on building relationships taken to the extreme runs the risk of ceding decision-making power to the public, which some fear could result in substantive losses in terms of protection of the resource (Heilprin, 2004). This approach was not included in the continuum of public participation (Figure 4.1) because it results in the agency forfeiting its responsibility to manage in the public trust, which is illegal (*Illinois Central Railroad Co. v. State of Illinois*, 1892, 146 U.S. 387). Interviewees recognized that, “The buck stops with the agency. Legally the agency has the ability to make the decision,” but that, “...the decision is likely to be a better one and more durable if you listen to the public.” One interviewee described an approach to building relationships that avoids forfeiting agency management mandates:

The Cooperative Alliance for Refuge Enhancement was started by the agency around 1995. It is a diverse coalition of environmental, outdoor recreation, and scientific organizations, about 20 different groups including: The Wilderness Society, Safari Club, National Rifle Association, Wildlife Federation, Sierra Club. All they agreed on was that the refuge system is important and should be funded. They developed a written agreement, a chartered agreement that says they all agree the refuge system is important, but they don’t have to agree on specific activities. They *can’t* agree on activities because of the different purposes for groups, they recognize that. The Fish and Wildlife Service set up the group for its centennial anniversary, they decided to see if the groups would all want to work for a common goal. Since then, the funding for the refuge system has increased significantly. Now the members of [the alliance] are listening to each other better, the level of acrimony has decreased. They don’t deal with things they won’t agree on, they work on things they can.

Another manager explained how initiatives to build relationships, learn about community issues, and empower citizens to influence decisions transformed his experiences at public meetings. Prior to relationship building, he described public meetings where stakeholders would challenge government officials, saying “I think the government is full of BS,” and noted that as a manager, “you expect this, expect to get beat up.” After switching to a more cooperative approach, he described another meeting. A member of the public stood up and began almost personal attacks against him. Someone else in the audience then stood up and said, “Shut up. We want to hear what he has to say.” Others in the audience agreed, and it became self-policing. Rather than being “beat up,” this manager felt that he was being protected by citizens. This manager notes that to adopt this approach, “you have to be committed to the possibility that your whole relationship with people will change.”

Building relationships outside formal participatory processes also can lead to joint gains in unexpected areas. One manager gave an example of relationship building at all levels of the agency. A maintenance person was sent to a farm to work on a restoration project. While he was working, a neighboring farmer came over and asked what he was doing. He could have ignored the farmer; instead, he stopped the machine and took the time to explain the project. The farmer thought the restoration work was “cool,” said that he had land in similar condition, and asked if he could do the same thing. The refuge supervisor saw the value of this interaction and allowed the maintenance person to go out to the second farm. The maintenance person was sent to do one farm; he came back after doing 20 different restoration projects.

The DOI emphasizes that good public participation involves lasting engagements with people, not just episodes (Department of the Interior, 2005). As one manager explained,

You make a deal differently with someone you know you'll never see again vs. someone you have to see every day. The longer you live, the more you realize you can't assume you will never see them again.

Another summarized,

To be honest, working with public is all about developing relationships. You always have a relationship with the public. People come to meetings with preconceived ideas, they come with a relationship. We also perceive them, we have a predetermined perception of what their comments will be...we think we know what they will say. If we do business that way, we'll never get to issues, we'll only see positions.

Additional Challenges

The examples described above illustrate the dangers of claiming value with respect to substance, relationships, and process, as well as benefits of integrative approaches that create value in all three areas. However, interviewees also indicated a number of other challenges to adopting more cooperative approaches to participation. These include: the need for agency-wide commitment to public participation, clear communication of agency intent for outcomes of participatory processes, and lack of resources.

A number of interviewees identified a need for broader based commitment to cooperative public participation throughout the various agencies. One scientist observed that often field managers recognize they need to engage the public, but they won't be effective unless those with the authority to make decisions (who are typically at higher levels within the agency) are involved in the process. Interviewees acknowledged that using cooperative processes to uncover public interests and values can be "...very scary for a person in government, [to go] into things with no preconceived perception of what the outcome will be." This perception of risk can

prevent individuals from adopting new approaches to participation. As one manager described,

It can be foggy how you get from one step to the next. It was like that for me, like I was in a fog, I couldn't see the end. You had to have faith it's getting you forward...[I managed to stick with it] because I have always believed...that the public should be empowered in decision-making and implementing. Early on in the process, I recognized this was a method that could allow this to happen. By aligning our management and issues to community issues, we would empower stewardship, empower citizens to implement actions. I was willing to take that risk because it was something I believe in deeply.

Another interviewee noted that publicly acknowledging different viewpoints is a skill that can be uncomfortable to develop. She explained,

It is obvious to invite those who support you [to provide input]. It may be uncomfortable to invite those who are influential but don't necessarily support you. What I have learned is that if you don't invite other views early, there will be detractors later in process. There's a need for, and I'm still developing this, skills in working with people so that this approach is comfortable and successful. It can be a challenge when you're up in front of a group and people say negative things about [your agency], but by including them, the other people who are there see that you are inclusive. There is a big payoff in credibility by a lot of other people watching.

Interviewees also identified misperceptions among the public about agency intent for public participation as a barrier to more cooperative practices. One consultant thought this was especially true when people felt they hadn't been heard in the past. When this was the case, he believed public meetings often enhanced antagonism, rhetoric, and stereotypes, discouraging managers from further engaging with the public. He emphasized the importance of staff training in transparency: providing good information, being clear about expectations, and building relationships. He summarized, "I think people want honesty. They want to know 'what do you expect of us?' They want a commitment, 'how are you going to use our

input?’ The parameters need to be articulated or people will be skeptical.” Another interviewee emphasized the importance of building relationships and trust for successful cooperative participation:

What communities are really looking for are relationships. Through relationships they build trust. They all say the only way they can move forward is trust. It can be two years to develop trust. Trust has to be earned—once someone breaks trust, that’s it. It always comes back to building long-term relationships and trust.

One interviewee believed that one of the problems facing agencies is that the public often feels that “we know you’re in charge, you don’t know we’re here.” In these instances, this manager explains the importance of showing that you’ve listened, and that if you don’t agree with their solutions you can explain why and can explore other options together. Interviewees acknowledge that allaying public doubts about agency intent also is a process:

Before you ever start formal public participation, you need to interject yourself, or a few people, into the community on their terms. It’s personable. You peel layers of the onion away, the public positions, you need to get beneath these. And they do the same with you, they peel away the government façade to get to the reasons you’re doing what you do.

Many managers cite lack of funding as an impediment to effective natural resource management planning (Chapter 3), they don’t have the funding to invest in public participation even if they wanted to. However, interviewees saw lack of funding as an opportunity to develop partnerships. One manager explained,

Lack of funding leads to inability of the agency to do things by themselves. It becomes a great inventor, leads to solving problems in innovative ways. If you don’t have the funding, you *have* to partner. You get money from partners, and are able to spend their money on your projects. For one project, I had a budget that was too small, I couldn’t do it on my own. After building partnerships, I

ended up with a 5 for 1 return on the dollar, of flexible money, not money to pay people's salary. But you need open partnerships so that people are able to influence how their money is spent. They are more willing to spend money if they are able to influence how it is spent. Say you don't have money for a project but you have staff. Spend the time, put 1 staff member forward. If each partner has 1 staff member they can devote, with 10 partners suddenly you have 11 people working on a problem where you started with one.

Other interviewees believed it was important to consider the timing of spending limited resources on public participation, stating,

It's better to front-end load. There's an example of a park planning effort that didn't do this and is starting over because it was a failed effort. When this happens, it's harder to recover, you have to go back to the same people and do damage control.

One consultant lamented that many agency supervisors do not recognize that "front-end loading" may save the agency money in the long run. Individuals she had worked with saw the value of a more collaborative approach to public participation, but still framed it as something to try if the agency had the money to spend, rather than something that could save the agency money in the long run. A number of interviewees noted that more dialogue-based, cooperative approaches to public participation were only adopted after issues had become so contentious that agencies and the public were at an impasse or because courts had ordered more public involvement. One interviewee believed that focusing cooperative public participation efforts earlier, on emerging issues, provided more opportunities to create partnerships. He believed that waiting until issues became disruptive was too late in the process.

Negotiating the Dilemma

Negotiating between the strategies of creating and claiming value is not an easy task. Interviews with managers and practitioners corroborate findings in the literature

that cooperative approaches to public participation can reveal mutual interests between agencies and stakeholders. Such revelation can aid in identifying potential management alternatives that create value by improving the substantive outcome for all parties as well as relationships between them. Interviewees also identified impediments to adopting this approach: an agency preoccupation with adversarial processes; agency emphasis on scientific knowledge over other kinds of knowledge; legal precedents that focus on process criteria of public participation rather than outcome criteria; the ability of stakeholders to utilize political power to make an “end run,” rendering ineffective any collaborative efforts; and the fact that the agency has the final say in the management decisions.

Interviewees described many of the DOI principles for public participation as essential to successfully implementing a cooperative approach to participation: transparency, ensuring all voices are heard, focusing on public interests and values, valuing relationships, and basing decisions on good information. They also identified constraints to adopting this approach, which corresponded to other principles: agency-wide commitment to public participation, clear communication of agency intent, and lack of resources. Yet, rather than treat components of successful participatory processes as separate principles, interviewees described an underlying philosophical approach that interwove the principles. This philosophical approach corresponds with a micro conception of the public and substantive approach to participation (Chapter 4) and is founded on the assumption that the agency and stakeholders are interdependent and share interests. Interviewees indicated that these shared interests are better identified when the agency is open and transparent, honestly wants to learn from and with the public, and takes a proactive long-term approach to relationship building. Yet, interviewees also recognized that the micro approach can be uncomfortable for managers who are used to the macro conception of the public and subsequent

procedural approach to participation (Chapter 4) that fulfills NEPA requirements. Even though managers do not cede ultimate decision making power, they may feel like they have less control when they take a more cooperative approach to public participation. As one interviewee described,

What I've learned is that you have to manage the process but let go of the outcome—you have to trust the process. Unfortunately I've seen in the past that the agency goes through the process just because they have to, or more often because they don't know what else to do or have already made up their mind. That's deadly, that's where you get into gridlock. The important thing is how to get managers to understand that they should not be uncomfortable with the outcome—don't worry about the preferred alternative, focus on the process. It's a leap of faith that the agency doesn't want to control the alternative. What they don't understand is that participation is not decision-making. The agency still has to make the decision. You can't get to compromise unless you understand issues and trust the process. You need to dissect the issues and put them back together again.

This process of “dissecting the issues and putting them back together again” can only take place if both managers and stakeholders approach public participation as an opportunity to create rather than claim value, allowing for mutual learning and transformations in understanding. The crux of the negotiator's dilemma was that each party did not know what strategy the other would adopt, leading both to choose strategies that claim value. Federal land management agencies engaging the public have legal responsibilities not only to include the public, but also for making the final decisions. As such, they are in a position of power relative to the public. If the more powerful party can demonstrate in good faith that they will adopt a strategy that creates value, stakeholders would have more incentive to do likewise.

Experience from the fields of natural resource management, environmental conflict resolution and planning, and first-hand accounts from practitioners indicate that, in the long run, integrative processes that focus on building relationships to

discover shared substantive interests are more likely to lead to fair, efficient, wise, and stable decisions. While letting go of pre-conceived outcomes and trusting the process can be challenging for managers, it also can be powerful and transformative, resulting in unexpected outcomes that satisfy multiple interests and may be more sustainable. As summarized by one interviewee,

The problem is that most people want to make decisions quickly, but sometimes quick decisions take a long time. You will have to keep going back if you don't get it right the first time, but if you get it right the first time, it might last forever.

APPENDIX 5.A

Guiding Questions for Interviews with Public Participation Practitioners

1. Please describe your experiences with natural resource management on federal lands.
2. Please describe your role in natural resource management planning with your organization and with federal agencies.
3. If you have worked with federal agencies, at what stage of the planning process are you generally consulted?
4. How well do you think natural resource management decisions on federal lands align with the primary concerns of local community(ies) adjacent to such lands?
 - a. How responsive are agencies to these local concerns?
 - b. How responsive should they be?
 - c. Do you perceive variation in responsiveness by type of concern?
5. How well do you think the values that govern natural resource management decisions on federal lands align with the values of local community(ies) adjacent to such lands?
 - a. How accurate do you think each are in their perceptions of each other?
6. How have you seen local communities act to influence natural resource decision-making?
 - a. Which activities are most effective?
7. Please describe the different types of communication/education/participation efforts you have designed for natural resource organizations.
 - a. What was the primary function (goal) of these efforts?
 - b. Which of these do you consider to be the most successful and why?

8. How does the amount of interaction between the natural resource organization and local community prior to formal public engagement affect outcome?
 - a. Do you have any specific suggestions for things that the National Park Service can do prior to formal public engagement that might facilitate this process?
 - b. What about afterwards (follow-up)?

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CHAPTER 6

EXPANDING PROBLEM FRAMES AS A WAY TO RESOLVE HUMAN-WILDLIFE CONFLICTS IN URBAN-PROXIMATE PARKS

Abstract

Over the past century, the National Park System has expanded to include new kinds of parks in increasingly urban settings. As a result, park managers are experiencing growing needs for communication with and engagement of local stakeholders. Traditional public engagement processes were designed as models of rational-comprehensive decision-making. However, rather than clear-cut, logically simple problems, today's park managers are faced with complex, ill-defined, "messy" problems. Such problems do not have clear objectives or prescribed solutions. We examine one potential kind of messy natural resource management problem, human-wildlife conflict. Urban-proximate parks are particularly likely to experience increases in human-wildlife conflict; parks both attract wildlife to their natural resources and attract ex-urban immigrants to the amenity values they provide. As humans and wildlife come into more frequent contact along the urban-wildland interface, park managers will be increasingly challenged to manage impacts resulting from their interactions. This study utilized semi-structured, in-depth interviews with residents of communities near parks to articulate elements of messy deer problems faced by urban-proximate parks and to examine how problem framing can enhance or impede communication, conflict resolution, and/or collaboration with stakeholders. Problem elements were not universally recognized or equally valued by various stakeholders. In addition, stakeholders often used different problem frames than park managers. By examining problem elements for human-deer conflicts, we develop a conceptual model that managers may use with any species to conceptualize human-

wildlife conflicts and consider approaches to their resolution. Rather than simplifying messy wildlife problems to the subset of components that are salient to park managers, we suggest that managers capitalize on multiple stakeholder frames and perspectives to gain a richer view of problem elements and discover a wider range of opportunities for management intervention. By including the full suite of problem components recognized by all stakeholders, managers and stakeholders may work in concert to affect a greater portion of the entire problem rather than simply one aspect of it. In addition, recognizing differences in problem framing may help avoid conflicts between stakeholders whose beliefs about solutions are based on different assumptions about the problem. Thus, expanding perspectives beyond traditional problem frames to embrace the complexity of messy human-wildlife conflicts in urban-proximate parks may help managers identify areas of potential conflict or areas for potential collaboration, ultimately resulting in: clearer logic behind management decisions, better dialogue with stakeholders, and more durable management interventions.

Introduction

Natural resource management is in an “era of turbulence” (Lachapelle et al., 2003, p. 473) characterized by controversy and conflict surrounding agency actions and partially fueled by: the environmental movement of the 60’s and 70’s, heightened distrust of government, a public that increasingly values non-consumptive recreation, and democratization of information (Wondolleck & Yaffee, 2000). Rather than clear-cut, logically simple problems, today’s natural resource managers are faced with complex and ill-defined, “wicked,” or “messy” problems that do not have clear objectives or prescribed solutions (Lachapelle et al., 2003; Lauber et al., 2002; Ludwig, 2000; Patterson & Williams, 1998). Wildlife management issues associated with urban-proximate parks exemplify this class of problems. This study examined a

messy wildlife problem, white-tailed deer (*Odocoileus virginianus*) management in and around National Park Service (NPS) units in the northeastern U.S. We sought to understand better how problem definition and problem framing can affect communication with stakeholders. Human-wildlife conflict is becoming common in urban and suburban settings for many human-commensal wildlife species in addition to deer: Canada geese (*Branta canadensis*), beaver (*Castor canadensis*), black bear (*Ursus americanus*), and coyote (*Canis latrans*), to name a few. The conceptual model we developed from discussions with local residents about deer can be applied to any wildlife species. Recognizing the differences in the ways stakeholders and managers conceptualize messy wildlife problems may help managers proactively identify areas of potential conflict or areas for possible collaboration.

The Changing Role of National Parks

The National Park Service was created in 1916 “...to promote and regulate the use of the...national parks...which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (National Park Service Organic Act, 16 U.S.C. § 1.). The resources administered by parks¹ can be considered public trust resources; that is, resources that are to be protected and preserved in trust by the government for the benefit of current and future generations (Baer, 1988).

Over the past century, the National Park System has expanded from parks created to preserve America’s scenic treasures (Runte, 1997; Sellars, 1997) to include

¹ We will be using the term “park” as shorthand to refer to any type of unit administered by the National Park Service. There are currently many different types of designations for NPS units, ranging from National Parks to National Historic Sites, to National Recreation Areas.

new kinds of parks, including: recreation areas, wild rivers, heritage areas, and historic sites. Parks not only are being created in more urban settings, but also are attracting into nearby communities affluent ex-urban immigrants who seek the amenity values offered by living near protected areas (Howe et al., 1997). Thus, many parks now are embedded in urban or urbanizing settings that present increasingly complex management challenges. The NPS recognizes that parks are not isolated or insulated from their broader communities, and that actions in parks affect these broader communities just as actions in communities affect parks (National Park Service, 2001). With the NPS's broadening sphere of influence comes increased responsibility to ensure that: (1) the public understands and supports park management undertaken on their behalf, and (2) public input is adequately considered in park management decisions. These growing needs for NPS communication with and engagement of the public reflect current trends experienced by many public agencies charged with parks and recreation administration.

Tame vs. Messy Management Problems

Like many land management and natural resource agencies, the NPS policy environment stresses rational-comprehensive planning models, modified to allow for public input at various stages in the decision-making process. The rational-comprehensive model of planning focuses on identifying goals, searching for alternatives, evaluating them and choosing the preferred alternative (McCool & Patterson, 2000). This approach is highly effective in solving well-defined problems in systems that respond in predictable ways, such as those found in engineering or physics (Wang, 2002). Such problems and systems may be simple or very complex, but the natural laws that govern them allow managers a high degree of confidence in predicting outcomes of interventions.

Natural resource managers work with fundamentally different problems. They regularly address problems that are highly complex, ambiguous, and steeped in uncertainty about the response of the affected ecosystem and human systems (e.g., economy, society) to management actions. In addition, for problems that involve local stakeholders, disagreement typically arises over both the ends or objectives of management (which make the “problem” concrete and measurable) and the means to achieve acceptable solutions to the problem. Rittel and Webber (1973) described this alternate class of problems as “wicked” problems and distinguished them from “tame” problems by ten properties (Table 6.1). However, discussion of “wickedness” often is taken to imply that a problem is intractable, which discourages meaningful attempts at resolution. Consequently, many planners have switched to the term “messy” to describe these ambiguous, contentious, socially and politically charged, and frequently encountered, real-world problems (Forester, 1989; Lachapelle et al., 2003; McCool & Guthrie, 2001).

Messy problems are characterized by scientific uncertainty about cause-effect relationships and social conflicts over goals and management intervention alternatives (McCool & Stankey, 2003; Wang, 2002). While traditional problem-solving approaches may be suitable and highly effective when problems are well defined, values are shared by managers and stakeholders, and goals are unambiguous and uncontested, they are less applicable in solving messy problems (Lachapelle et al., 2003). Some even suggest that using tame (rational-comprehensive) problem-solving methods on messy problems may be counterproductive, making the problem even more contentious (Allen & Gould Jr., 1986; Borrie et al., 1998; McCool & Patterson, 2000; Rauscher, 1999).

Table 6.1. Ten distinctive properties of a wicked problem (Adapted from Rittel & Webber, 1973).

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1. There is no definitive problem formulation.
 2. Wicked problems have no stopping rule.
 3. Solutions are not true-or-false, but good-or-bad.
 4. There is no immediate and no ultimate test of potential solutions.
 5. Every solution is consequential, making it hard to learn by trial-and-error.
 6. There is not an exhaustively describable set of potential, permissible solutions.
 7. Every wicked problem is essentially unique.
 8. Elements of the problem are interdependent; one element may be a symptom of another.
 9. The problem can be explained in numerous ways, in terms of both the problem's nature and resolution.
 10. The planner has no right to be wrong.
-

A key weakness in the argument against applying traditional linear methods of problem solving to messy problems is a lack of any concrete alternative. In addition, management policies of many agencies rely on rational-comprehensive planning processes to improve agency accountability for decisions. Rittel and Webber (1973) noted that the process of problem formulation and resulting outcome often *is* the problem. Other researchers also found that assumptions about the way management problems are conceptualized, or framed, could impede resolution (Lauber et al., 2002). The idea of framing has been used in the fields of communication and dispute resolution to assist practitioners in understanding the different perspectives of parties in conflict. Frames act as lenses or filters through which different stakeholders interpret and process information (Lewicki et al., 2003). Frames both call attention to certain elements of an issue and direct attention away from other elements (Entman,

1993). We examine one potential kind of messy natural resource management problem, human-wildlife conflict, to understand better how problem framing can both enhance and impede communication, conflict resolution, and/or collaboration with stakeholders.

Human-wildlife Conflict in Urban-proximate Parks

During the last few decades, urban human-wildlife conflict has become an increasingly important area of study. Urbanization changes both the physical and socio-cultural landscape, resulting in increased negative human wildlife interactions as well as increased conflict over wildlife management actions to mitigate those interactions (Patterson et al., 2003). Urban-proximate parks are particularly likely to experience increases in human-wildlife conflict, as they both attract wildlife to their natural resources and attract ex-urban immigrants to the amenity values they provide. One prominent example of human-wildlife conflict is urban/suburban white-tailed deer management in the east. NPS managers have expressed concerns about impacts from white-tailed deer in northeastern urban-proximate parks for over two decades, although few have taken management action. Often, deer management is desired by some people living in communities adjacent to these parks, but their concerns may be very different from those of park managers. To articulate elements of messy deer problems faced by urban-proximate parks, this study utilized semi-structured, in-depth interviews with residents of communities near parks. By examining problem elements of human-deer conflicts, we developed a framework that managers may use with any species to conceptualize human-wildlife conflicts, consider approaches to their resolution, and engage in productive dialogue with affected stakeholders.

Methods

Potential study sites were identified based on discussions with NPS national and regional scientist staff. A number of NPS units volunteered to participate in the project. Because of our focus on messy problems, we chose two sites with decades of dialogue on deer issues, Fire Island National Seashore (FINS) in New York and Valley Forge National Historical Park (VFNHP) in Pennsylvania.

To become more familiar with the physical setting and better understand the perspectives of community residents, K. Leong resided in communities near each park for approximately three weeks (per park) in the fall of 2005. Semi-structured interviews were used to elicit local community residents' personal understandings of deer and deer impacts in the parks and surrounding communities. Open-ended questions followed an interview guide; follow-ups and probes were used as necessary to elaborate on and to clarify the intended meaning of interviewee responses.

Leong and Decker (2007a; 2007b) describe the full techniques used in the interview process. In brief, two types of interviews were conducted with individuals or small groups: (A) in-depth semi-structured interviews with known stakeholders and influential community residents (n=22 and 20 for FINS and VFNHP, respectively) and (B) short interviews with residents intercepted in local gathering places (n=65 and 42 for FINS and VFNHP, respectively). Type A interviews lasted from 30 to 165 minutes; Type B interviews typically lasted 15-20 minutes. Over half (64%) of the Type A interviews and eight Type B interviews were audio recorded and later transcribed by one of three transcriptionists. All transcriptions were checked for accuracy by K. Leong. Some interviewees preferred not to be audio recorded; in other cases, environmental conditions (e.g., wind, music, other background noise) precluded effective recording. Hand-written notes were taken during the interviews and detailed notes were written up as soon as possible following the interview (usually within one

day). For interviews that were not audio-recorded, specific attention was paid to capturing the language used by interviewees.

Interview transcripts and notes were coded for themes using ATLAS.ti (version 5.0, Scientific Software Development GmbH, Berlin). An iterative process was used to generate codes from themes and topic areas present in the interviews. Themes and topic areas were linked and quotes were sorted to reveal key concepts and to capture emergent relationships between themes. Analysis of the specific management context at each park revealed a number of common themes (Leong & Decker, 2007a; 2007b). This paper synthesizes the themes related to understanding the management system and framing the problem and potential solutions.

Findings

Local community residents collectively described deer issues in and around the three parks as a multi-level system of interrelated components (Figure 6.1). They identified anthropogenic factors as fundamental system drivers. Only a few interviewees mentioned natural processes such as harsh winters or disease, whereas the majority described effects of anthropogenic activities: various aspects of hunting (hunter motivations, state wildlife agency regulations, numbers of hunters, effectiveness of hunters, etc.), a history of predator eradication, collective effects of individual landowner practices (ornamental landscaping, and other plantings, fencing, etc.), and large-scale land conversion and development (Figure 6.1: I).

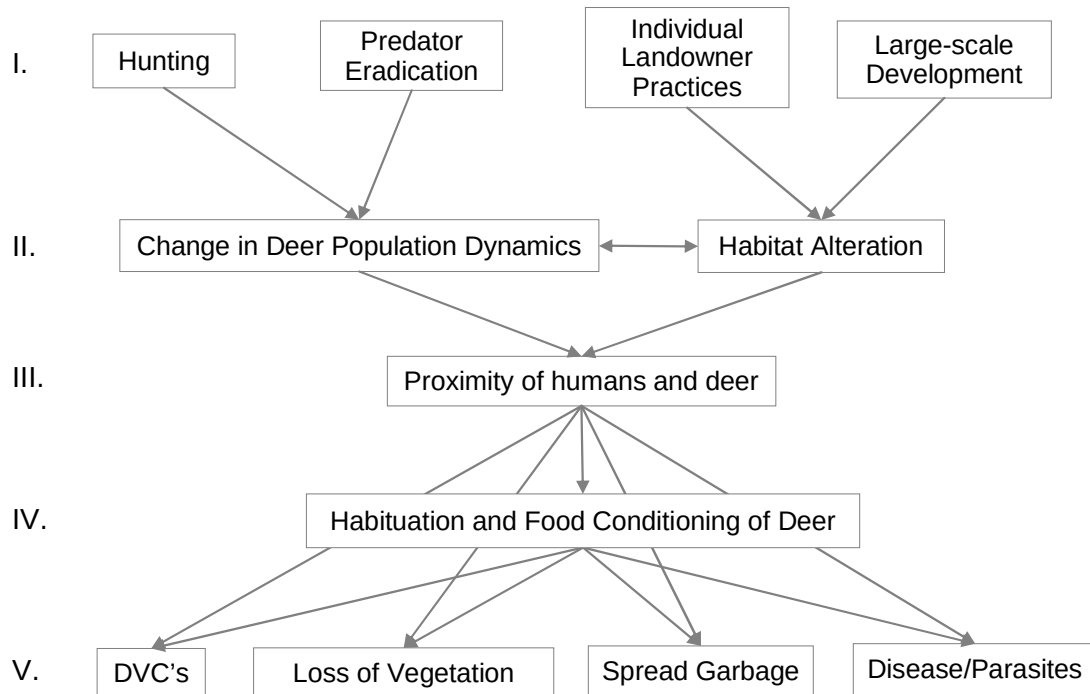


Figure 6.1. Elements of messy deer problems in and around northeastern U.S. NPS units, as collectively described by local community residents. Stakeholders described a multi-level system of factors that contributed to perceived deer problems: (I) primary anthropogenic factors were seen to cause (II) broad ecological effects that result in (III) the proximity of humans and deer, which in turn facilitates (IV) mediating anthropogenic factors that amplify (V) specific impacts experienced by stakeholders. Stakeholders did not necessarily recognize all problem elements, nor did they value system elements equally. For example, those that emphasized specific impacts (V) saw deer as the source of a local problem, while those that emphasized broad ecological effects (II) saw deer as a symptom of a more regional problem. DVC's is an abbreviation for deer-vehicle collisions.

These anthropogenic factors were seen to have broad ecological effects (Figure 6.1: II). For example, changes in hunting pressure and predator eradication were believed to result in changes in deer population dynamics, notably increased population size. In addition, large-scale development and individual landowner practices outside the parks were believed to collectively alter available deer habitat, by

both destroying natural habitat and creating artificial habitat that attracted deer into local communities. This, in turn affected deer movements. As a result, the parks became islands of habitat where deer could find refuge. One respondent summarized: “Living here, I’m seeing that the park is not the problem...there’s so much building, the deer used to be there, but now they’ve found a sanctuary in the park. Now they’re making their way into our neighborhood.”

Changes in deer population dynamics and habitat structure brought humans and deer into proximity (Figure 6.1: III). This, in turn, facilitated additional anthropogenic activities: habituation and food conditioning (Figure 6.1: IV). Habituation is defined as a reduction of response to a repeated, inconsequential stimulus (usually resulting in loss of fear response to people), while food conditioning occurs when an animal learns to associate food with the presence of people, due to positive experiences of acquiring food easily (McCullough, 1982; McNay, 1998). Habituation and food conditioning create a positive feedback loop, amplifying human-deer interactions by bringing people and deer in closer contact on a more regular basis. Changes in deer behavior also appeared to affect people’s perceptions of deer:

I don’t even think of them as wildlife anymore. To me they’re like cows grazing in a pasture...you walk by them, they may look up and kind of look at you or if they think you’ve got [food] they’ll kind of walk towards you. That’s not wildlife. It’s not natural and we’ve encouraged that and that’s not who these animals are supposed to be.

Human-deer interactions can have positive or negative effects. These effects become impacts when they are important to the people involved (Riley et al., 2002). The majority of respondents enjoyed viewing deer, which many described normatively: “...deer are a beautiful animal and everybody loves to view wildlife like that.” Yet many also were concerned about negative impacts. The impacts people

experienced or worried about often appeared to determine whether they believed there were too many deer, that the deer were in the wrong place, or that the deer were behaving unnaturally. Respondents were concerned with four main classes of negative impacts: deer-vehicle collisions (dvc's), loss of vegetation (native, ornamental plantings, and vegetable gardens), deer getting into garbage, and diseases and/or parasites carried by deer (Figure 6.1: V).

Each component of the system described above can be affected by a number of management actions. This suite of potential actions that influence a single element of the system can be thought of as a family of solutions (Figure 6.2). For example, stakeholders concerned about the lack of hunting pressure on the deer population talked about culling populations, altering hunting regulations such as bag limits, season length, etc., or opening parks to special hunts. Other stakeholders focused at different levels or on different components of the system, either with respect to problem elements or potential management actions. Stakeholders often discussed potential solutions in more detail than problem elements, seemingly based on the assumption that everyone saw the problem in the same way.

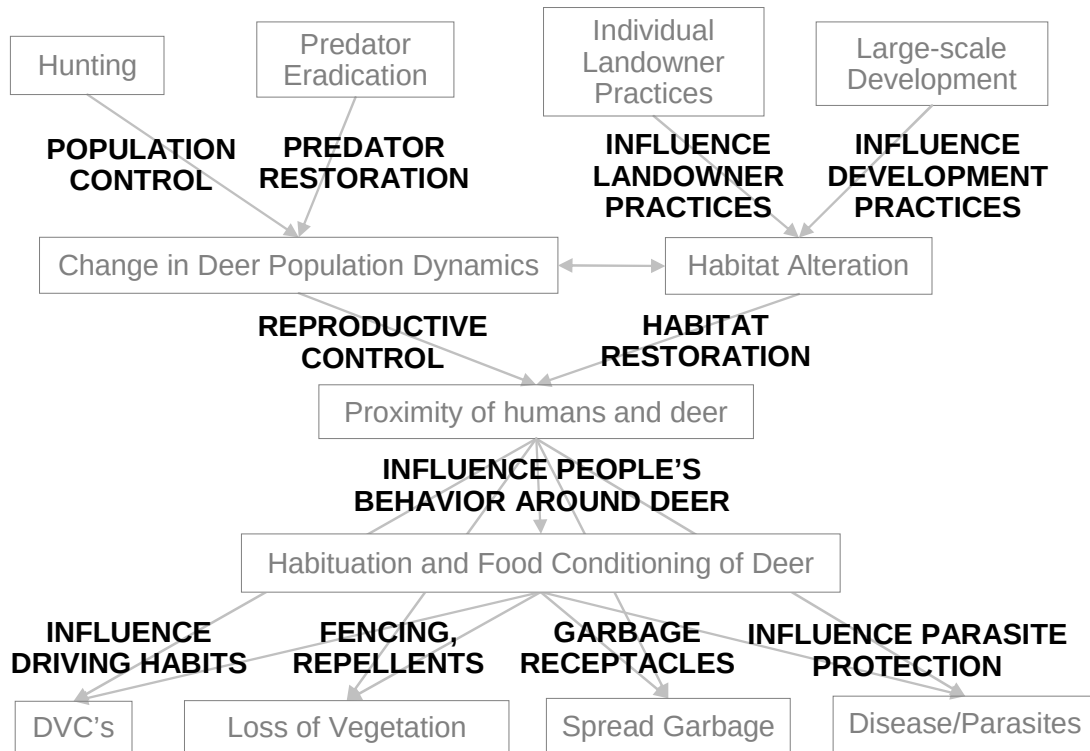


Figure 6.2. Families of solutions for each pathway in the system. Each component of the system can be affected by a number of management actions, which can be thought of as a “family” of potential solutions. The families of solutions considered to be reasonable are influenced by the components of the system that are used to define the problem.

Yet, stakeholders did not necessarily recognize all problem components, nor did they value all components equally. The relative salience of a component appeared to be influenced by the degree to which stakeholders’ expectations about that component matched their perceptions of the current condition of that component; elements that were perceived to fall short of expected conditions became salient and therefore the focus of the problem. Problem focus had other implications as well. For example, stakeholders who emphasized specific impacts (Figure 6.1: V) often described deer as the source of a local problem, while those who emphasized broad ecological effects (Figure 6.1: II) described deer as a symptom of a more regional problem. In addition,

stakeholders who were primarily concerned about specific impacts often desired faster results from a management action, while stakeholders who were more concerned about higher levels of the model were more tolerant of a longer time frame to reduce specific impacts. For example, reproductive control was not a logical option for stakeholders who desired an immediate reduction in impacts from deer:

What are you going to do? Go out and castrate the deer and how many times can you do that? And in the meantime if they're still out there then we're still hitting them and they're still on people's property and they're still crapping on the property and bringing Lyme disease onto your property and you know? All these things still exist.

The elements of the system that were salient to stakeholders also constrained their thinking about potential solutions. In other words, different assumptions about problem framing (e.g., whether the focus was on impacts or on deer, the dimensions of deer biology that were considered, and the time frame and geographic scale that were used to determine success) affected beliefs about potential solutions that should be considered or deemed reasonable.

Implications for NPS Managers

Like local community residents, NPS managers do not place equal weight on all elements of messy deer problems in urban-proximate parks. First, laws and agency mandates and policies dictate certain management foci. NPS natural resource managers are primarily responsible for preserving park resources to be enjoyed by current and future generations (National Park Service, 2006). Previous interviews with NPS managers revealed that negative effects from deer browse on native vegetation, ecosystem health, and/or biodiversity, were the specific impacts likely to lead managers to consider deer management (Chapter 3). In many parks, the

geographic scope of deer impacts is widespread, making fencing and repellents ineffective or impractical as means to reduce impacts to vegetation. In addition, habitat alteration outside a park boundary is outside the jurisdiction of NPS management. As a result, NPS managers focus much of their attention on different ways to affect deer populations in parks. Thus, NPS management priorities and jurisdiction narrow the framework of deer management issues to only one major pathway in the system (Figure 6.3).

This pathway results in two main families of potential solutions, one centered on different forms of lethal population reduction (population control, e.g., hunting,² culling), the other on forms of non-lethal population reduction (reproductive control, e.g., sterilization, contraception). Many respondents offered opinions about various means to affect deer populations and had diverse beliefs and expectations for the fundamental objective of population reduction (e.g., reduction of specific negative impacts, how soon improvements should be experienced, etc.). While concerns about impacts to resources are the impetus for taking management action, managers recognize that these actions often result in collateral impacts, impacts generated by the management actions themselves (Decker et al., 2006). Many respondents were less concerned about impacts from deer, and more concerned about collateral impacts from potential forms of population management. By constraining the problem frame, the potential families of solutions are reduced to a win-lose structure: hunters vs. animal rights vs. parks. In such a situation, controversies over collateral impacts from potential management actions can overshadow the desired end result, reduction of primary impacts related to deer (i.e., Figure 6.1 level V).

² Hunting is prohibited by the enabling legislation of most urban-proximate parks. A park's enabling legislation can only be changed by Congress. NPS cannot lobby Congress to change the enabling legislation.

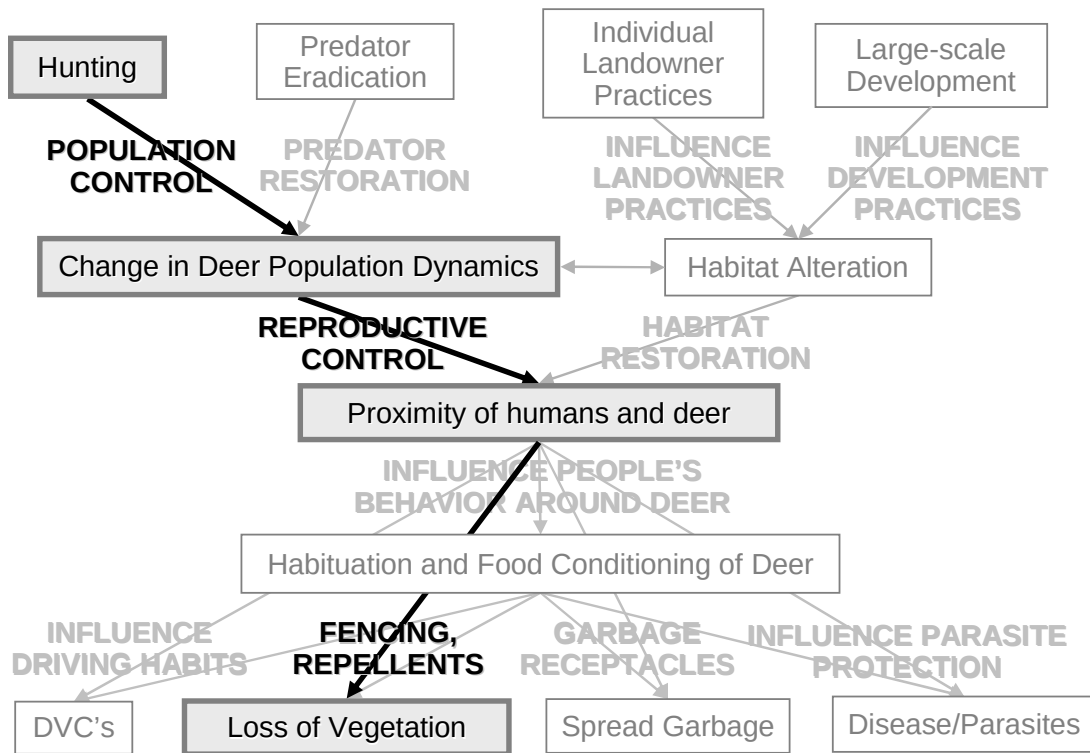


Figure 6.3. The NPS natural resource management problem frame for deer issues in and around parks in the northeastern U.S. Agency mandates, policies and jurisdiction constrain the scope of the problem to only one pathway in the system. Stakeholders frame the problem in many different ways; the similarities and differences between stakeholder and management frames suggest areas for potential conflict or collaboration.

Stakeholders offered many different ways to frame deer problems, some of which aligned closely with NPS managers and some of which differed greatly. Like managers, many stakeholders placed emphasis on the population dynamics branch of the system. Yet for many, their fundamental concern was over different specific impacts, namely ornamental vegetation damage and deer-vehicle collisions. They supported similar methods as NPS managers (population control or reproductive control of deer) to achieve different ends. Management actions that are designed to

affect population dynamics will only indirectly affect specific impacts, and may affect different impacts at different rates. Thus, even if managers and stakeholders agree on the means, disagreement on ends could lead to conflict over expected time frame for alleviation of impacts.

Other stakeholders framed the problem as a development problem. They believed that unless the fundamental source of the problem was addressed (in this case, development), it was pointless to try to manage a species. Many of these stakeholders were involved in efforts to curb development in the region and offered habitat restoration outside the park as a potential solution. By broadening the problem frame beyond only those components salient to NPS managers, these stakeholders identified activities that could complement efforts of the park, collectively reaching more components of the entire system and improving sustainability of management actions.

Application to Other Wildlife Species

Managers responsible for wildlife in suburban landscapes are facing similar challenges with many wildlife species. Given current trends in human migration and development, this situation is likely to continue to grow, especially around urban-proximate parks. One interviewee observed:

I'd like to see deer tied to the Canada goose issue. They are exactly the same. Exactly the same...the resident non-migratory Canada goose problem...Canada geese are not nature. They're a manmade subspecies and we have created a habitat just like the deer, so it's an identical issue. The Canada goose problem and the deer problem and the solutions are identical...there's something about what we're doing in suburbia that's creating ecological habitat and cohabitation.

Wildlife species of recent study include: Canada geese (Lauber et al., 2002), beaver (DeStefano & Deblinger, 2005), black bear (Gore et al., 2006), and coyote (Martínez-

Espiñeira, 2006). For each of these species, the management context is strikingly similar to messy deer problems. To help managers engage in dialogue about human-wildlife conflicts with any wildlife species we created a general conceptual model of messy wildlife problems in urban settings (Figure 6.4).

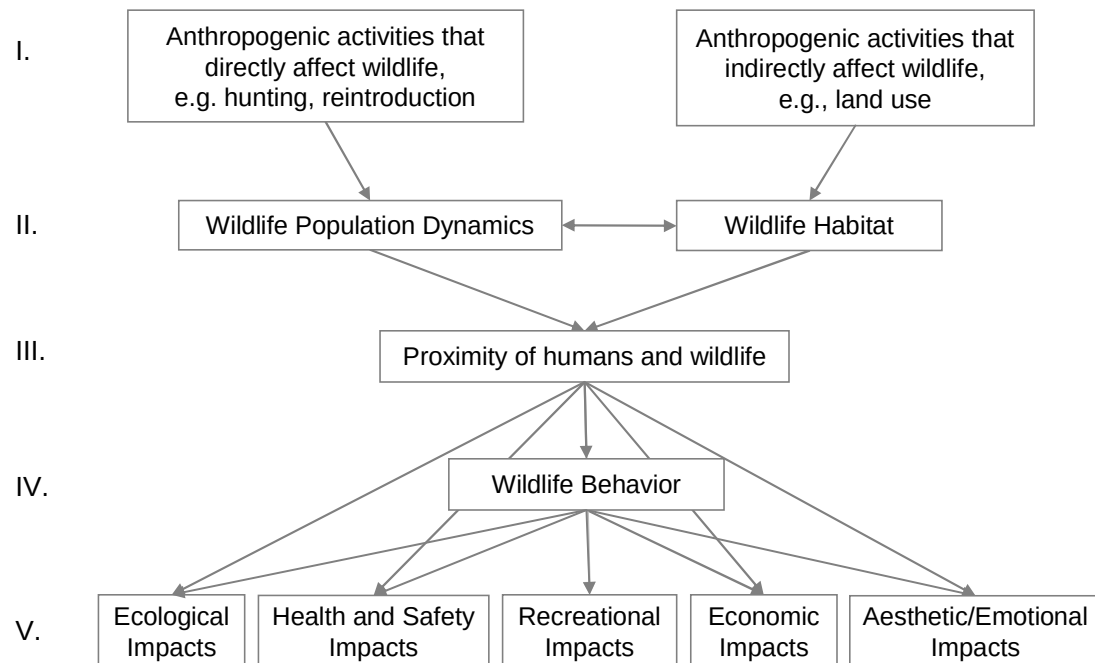


Figure 6.4. Components of messy wildlife problems in urban settings. Anthropogenic activities bring humans and wildlife into closer and more frequent proximity. Increased human-wildlife interactions result in an increase in human-wildlife conflicts, which are amplified when wildlife behavior changes as a result of increased interactions. In this diagram, we identify only major pathways; we recognize that there may be feedback within the system (for example, vehicle-wildlife collisions affects wildlife population dynamics), and there is a possibility for factors at one level to affect multiple levels (for example, hunting affects wildlife behavior).

The specifics for each level of the system will differ for each species, however, the general concepts remain consistent: anthropogenic activities that directly or indirectly affect wildlife, resulting changes in wildlife population dynamics and habitat

availability, the relative proximity of humans and wildlife, anthropogenic activities that affect wildlife behavior, and perceived impacts associated with human-wildlife interactions.

While this conceptual model is admittedly simplified, it reveals key characteristics of messy wildlife problems that can enhance management planning when they are acknowledged and utilized to better understand fundamental sources of conflict. General principles include:

1. Any component or combination of components can be considered part of the problem if a stakeholder's (including park managers) expectations for that component are not met.
2. There are opportunities for multiple types of management interventions at each level of the model. The traits of the interventions chosen depend on the components of the problem they are designed to address; i.e. the way the problem is framed determines the families of solutions that are considered.
3. There are both direct and indirect means to affect most components of the model. For example, speed enforcement is along a direct pathway to reduce wildlife-vehicle collisions because it acts at the specific impact level. On the other hand, wildlife population control is an indirect pathway to reduce wildlife-vehicle collisions because there are a number of intervening levels between the action and the desired result. Management actions undertaken on indirect pathways should be evaluated carefully to assure that they actually affect the fundamental component of concern and to identify associated collateral impacts of those actions.

Additional considerations apply when multiple parties are involved:

1. The set of elements included in one stakeholder's problem frame may not align with that of other stakeholders.
2. Stakeholders' fundamental concerns may be at different levels of the model. For example, wildlife biologists may believe the problem that needs to be solved is restoring a particular density of wildlife to the ecosystem (i.e., at the level of wildlife population dynamics), while local community residents may believe the problem that needs to be solved is alleviation of specific negative impacts from wildlife.
3. Differences in problem framing create challenges. If stakeholders and managers do not acknowledge that their interests lie in different parts of the system, they may apply different metrics of success to the same management action, resulting in incompatible opinions about whether or not a management action "works," thereby decreasing agency credibility, eroding relationships, and ultimately increasing conflict.
4. Differences in problem framing create opportunities. A richer and more robust view of the problem can be achieved by synthesizing multiple frames and perspectives. If stakeholders and managers recognize discrepancies in their underlying interests, they may be able to find creative solutions where stakeholders with jurisdiction over different areas act in concert to affect different elements of the system simultaneously, thereby improving the durability of management interventions.
5. Human dimensions research may be used to evaluate stakeholder problem frames before engaging in public participation, to help identify areas of potential miscommunication and guide the development of stakeholder engagement processes. Similarly, stakeholder engagement

processes that focus on dialogue and discussion (e.g., facilitated or mediated negotiations, consensus building, etc.) can be used to take advantage of multiple frames and perspectives to inform a richer view of the problem and potential solutions.

When the full complement of stakeholder perspectives are not considered, the rational-comprehensive model of decision-making runs the risk of treating a messy problem as if it were tame by simplifying the problem to the subset of components that are salient to decision-makers. This approach misses opportunities to identify creative solutions and may even generate unnecessary conflict. We suggest that utilizing stakeholder engagement processes that help identify the full suite of problem elements will assist managers in choosing among and understanding the implications of potential management interventions. Expanding perspectives beyond traditional problem frames to embrace the complexity of messy human-wildlife conflicts in urban-proximate parks may ultimately result in clearer logic behind management decisions, better dialogue with stakeholders, and more durable management interventions.

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CHAPTER 7

THE TRAGEDY OF BECOMING COMMON: LANDSCAPE CHANGE AND PERCEPTIONS OF WILDLIFE

Abstract

Since 1970, more Americans have lived in suburbs than elsewhere in the country, and exurban development is now the fastest growing residential sector. Changes in land-use practices, human attitudes and behaviors, and conservation efforts have contributed to increased numbers of many species that are adapting to these urbanizing settings. People are encountering wildlife more frequently with varying reactions, which often leads to conflicts over wildlife management. These conflicts may be especially apparent at urban-proximate parks where managers and park neighbors can have different expectations and goals for wildlife. One species demonstrates this conundrum well—white-tailed deer (*Odocoileus virginianus*). The National Park Service administers a number of parks in suburban areas that experience impacts related to deer. In-depth interviews conducted with residents living near three parks yielded insight into community perceptions of deer. Interviewees' evaluations of their experiences with deer appear strongly influenced by both frequency of encounters and deer behavior. Deer were described more positively when perceived as rare versus common and wild versus tame. Yet cultural conceptions of “wildness” were based on deer behavior in the absence of humans rather than adaptive ability. This study suggests that the coexistence of people and deer in urbanizing landscapes creates a positive feedback loop: when deer are rare and “wild,” people actively seek encounters; deer become habituated when people are unthreatening, which lowers their fear response and brings them into contact with people more frequently; people in turn become habituated to deer as they become less novel, increase in abundance,

and act less “wild”; habituated deer cause undesirable impacts to people; a level of human tolerance of negative impacts is exceeded where deer are no longer viewed as wildlife, but as pests. Just as Roderick Nash describes wilderness as a “state of mind,” so too is “wildness” in wild life. The extent to which humans and wildlife continue to coexist may depend on the ability of our cultural conceptions of “wildness” to keep pace with the rate at which wildlife adapts to anthropogenic landscape change, as well as the effectiveness and acceptability of interventions that help maintain expected “wild” traits.

Introduction

Since 1970, more Americans have lived in suburbs than anywhere else in the country (Morgan & England, 1999). Suburban and exurban areas (low density development beyond the urban fringe) are growing faster than any other type of residential area in the United States (Crump, 2003). Development leads to habitat fragmentation and ecosystem simplification, which typically results in an increase in generalist, human-commensal species and a decrease in specialized and human-sensitive species, as well as changes to wildlife behavior (for review, see DeStefano & DeGraaf, 2003; Glennon & Kretser, 2005). In addition, urbanization changes the socio-cultural landscape; in urbanized societies, the cultural context in which people construct meanings of animals has become more individualized, with greater emphasis on symbolic meanings and personal relationships, and less grounded in culturally shared utilitarian/ instrumental meanings (Patterson et al., 2003). The resulting diversity of values and meanings ascribed to wildlife often leads to intractable conflicts over appropriate wildlife management goals and socially acceptable wildlife uses and wildlife management practices. Few studies have explicitly addressed the

role of socially constructed meanings in these intractable conflicts. This study begins to address this topic.

Historical studies reveal that wildlife populations in New England are changing at a remarkable rate, generating historically novel species assemblages as well as novel and often significant conflicts with human values (Foster et al., 2002). One historical phenomenon is a pattern of distribution and abundance of several wildlife species that were widespread at the time of European settlement, decreased almost to the point of extirpation in the region by the mid-nineteenth century, and recently have increased dramatically; this group comprises species that predominantly depend on and use forested environments, with black bear (*Ursus americanus*), moose (*Alces alces*), beaver (*Castor canadensis*) and white-tailed deer (*Odocoileus virginianus*) as four of the more notable mammal species, all of which come into conflict with humans (Foster et al., 2002). Of these species, white-tailed deer have perhaps received the greatest management attention, including a broad base of research on biological and human dimensions topics (e.g., the Wildlife Society Bulletin Summer 1997 issue was devoted to deer overabundance).

Urban-proximate parks are particularly likely to experience increases in human-wildlife conflict. They offer attractive habitat to human-commensal species and provide amenity values to ex-urban migrants who desire improved quality of life. White-tailed deer have been a major concern in urban-proximate National Park Service (NPS) units in the northeastern U.S. for over two decades, and biological studies have been undertaken at a number of parks to determine deer population density, movement, and impact on park resources (for example: Frost et al., 1997; Lovallo & Tzilkowski, 2003; Porter & Underwood, 1999; Shafer-Nolan, 1997; Underwood, 2005; Warren, 1991). Few studies have addressed the ways in which values and attitudes of local community residents affect wildlife management planning

in national parks.¹ Local stakeholders often are crucial to the initial identification and articulation of wildlife issues associated with parks, such as those related to deer, although park management objectives and policy influence the degree to which NPS becomes involved in management of those issues (Chapter 3). NPS policies recognize that "...parks are integral parts of larger regional environments...the service will work cooperatively with others to anticipate, avoid and resolve potential conflicts...and address mutual interests in the quality of life of community residents" (National Park Service, 2006, p. 13). While wildlife management often focuses on decreasing the negative impacts of wildlife on people, the root of many human-wildlife conflicts are human-human conflicts (Knight, 2000); that is, conflicts between stakeholders about wildlife or about how wildlife should be managed.

Many studies have documented the diversity of stakeholder attitudes, beliefs and values towards nature and wildlife, as well as varied preferences for wildlife management and some of the beliefs, attitudes, and demographic characteristics that influence these preferences (for review, see Decker et al., 2001; Decker et al., 2004; Duda et al., 1998). In addition, there is growing recognition that context and individual experience influence stakeholder perceptions of impacts (Decker et al., 2006; DeStefano & Deblinger, 2005). Most of these studies used survey instruments designed by the researchers based on their understanding of the management context and informed by stakeholders. Fewer studies have explicitly examined the personal meanings stakeholders attribute to wildlife and wildlife-related impacts or people's cultural expectations for wildlife in various contexts. Anthropologists have long recognized that "animals are good to think" about (Lévi-Strauss, 1964, p. 89); i.e.,

¹ The NPS currently administers many different types of units, one of which is National Park. However, for convenience, the terms "national park" and "park" will be used throughout this paper to refer to any unit administered by the NPS, regardless of actual designation.

animals often are signifiers of human values and traditions. Given that the way people think about and interact with wildlife may be less a product of biology and more influenced by human culture and consciousness (Arluke & Sanders, 1996), this study used a constructivist, hermeneutic, interpretive approach to identify potential sources of conflicting beliefs and attitudes about deer in and around suburban parks.

Wildlife as a Social Construct

The role of social construction in conservation policy and wildlife management is becoming increasingly recognized (Czech et al., 1998; Soulé & Lease, 1995). A social construction perspective presumes that people make meaning of concepts such as “nature” not only based on their physical attributes, but also on the cultural symbols assigned by society (Elder, 1996; Evernden, 1992). As noted by psychologist William James, “...whilst part of what we perceive comes through our senses from the object before us, another part (and it may be the larger part) always comes...out of our own head” (1981, p. 747). Nash applied this idea to wilderness, which he described as a “state of mind” (2001, p. 5). Others recognize that this process affects the way people think about animals:

Whenever a human being confronts a living creature, whether in actuality or by reflection, the ‘real life’ animal is accompanied by an inseparable image of that animal’s essence that is made up of, or influenced by, preexisting individual, cultural, or societal conditioning. Thus ‘nature,’ as represented by the actual biological and behavioral traits of a particular animal, becomes transformed into a cultural construct that may or may not reflect the empirical reality concerning that animal... (Lawrence, 1997, p. 1).

Duda, Bissell, and Young (1998) extended Nash’s metaphor to wildlife in their book title *Wildlife and the American Mind*, yet they did not specifically examine wildlife as a social construct, but rather provided a synthesis of studies on public opinion on

attitudes toward fish and wildlife management. Very few studies have examined wildlife management issues using a social construction framework, with the notable exception of those featured in *Mad About Wildlife* (Herda-Rapp & Goedeke, 2005). These studies regard wildlife issues as social problems and illustrate how competing social constructions of wildlife can fuel claims-making and power struggles between different stakeholders involved in wildlife controversies.

To reveal insight about social constructions of deer in suburban environments, an often controversial wildlife issue, we adopted a hermeneutic research philosophy. This approach is fundamentally constructivist, in that it assumes that multiple social realities exist (Guba & Lincoln, 1998; Tashakkori & Teddlie, 1998). Unlike extreme relativists, a hermeneutic philosophy maintains that there is structure in the environment and recognizes that individuals may experience this structure differently; this process results in multiple realities when different individuals or cultures assign different meaning to structure in the environment (Patterson & Williams, 2002). Many of the emerging suburban human-wildlife conflicts likely stem from differences in the way that individuals assign meaning to interactions with wildlife in human-dominated landscapes.

The goal of this study was to gain an in-depth understanding of the variety of meanings stakeholders ascribed to their experiences with deer and deer-related impacts in and around urban-proximate parks in the northeastern U.S. Impacts are the socially-determined important effects (e.g., ecological, economic, psychological, health, and safety) of events or interactions involving (a) wildlife and other natural resources, (b) humans and wildlife, and (c) wildlife management interventions (Riley et al., 2002). Insight into the different ways stakeholders make sense of their experiences with wildlife will improve NPS ability to address the source of conflicts that are manifested as different desires for management outcomes and interventions.

Methods

Three study sites were chosen to represent various stages of maturity of deer issues and amount of outreach effort related to these issues. Fire Island National Seashore (FINS), on Long Island, New York, represents a park with a long history of deer issues and experience with deer outreach activities. Valley Forge National Historical Park (VFNHP), in southeastern Pennsylvania, represents a park with a long history of deer issues and limited deer outreach activities. Prince William Forest Park (PWFP), in Virginia, represents a park where deer issues are emerging only recently and relatively few outreach activities have occurred related to deer. In the fall of 2005, the author resided in communities near these parks for approximately three weeks per park, to become more familiar with the physical setting and better understand the perspectives of community residents. A qualitative, inductive, interview-based approach was used to elicit local community residents' personal understandings of deer and deer impacts in the parks and surrounding communities. Open-ended questions were asked based on an interview guide, with follow-ups and probes used to elaborate on and to clarify the intended meaning of interviewee responses.

The techniques used in the interview process were originally described in Leong and Decker (2007a; 2007b; 2007c). In brief, two types of interviews were conducted, either with individuals or small groups: (A) in-depth semi-structured interviews with known stakeholders and influential community residents (N=22, 20, and 19 for FINS, VFNHP and PWFP, respectively) and (B) short interviews with residents intercepted in local gathering places (N=65, 42, and 47 for FINS, VFNHP and PWFP, respectively). Type A interviews lasted from 30 to 165 minutes; Type B interviews typically lasted 15-20 minutes. Over half (61%) of the Type A interviews and eight Type B interviews were audio recorded and later transcribed by one of three

transcriptionists. All transcriptions were checked for accuracy by the author. Some interviewees preferred not to be audio recorded while others could not be recorded effectively due to environmental conditions (e.g., wind, music, other background noise). For interviews that were not audio-recorded, hand-written notes were taken during the interview and detailed notes were written up as soon as possible following the interview (usually within one day).

Interview transcripts and notes were coded for themes using ATLAS.ti (version 5.0, Scientific Software Development GmbH, Berlin). Unlike quantitative research that emphasizes numerical data, a hermeneutic approach examines "...things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2000, p. 3). Rather than develop a coding framework a priori, an iterative process was used to generate codes based on themes that emerged in the interviews. Themes and topic areas were linked and quotes were sorted to reveal key concepts and to capture emergent relationships between themes. Initial analysis described the management context at each park and revealed a number of themes that were common across parks (Leong & Decker, 2007a; 2007b; 2007c). This paper synthesizes the themes that collectively revealed insights about interviewees' expectations for deer in suburban environments.

Findings

As expected, interviewees held varying opinions and attitudes about deer, deer-related impacts and management preferences. A number of factors appeared to affect evaluation of these topics: people's perceptions of deer abundance, deer behavior, and habituation (of deer to people and people to deer); their assessment of closeness to deer, and; their categorization of deer along a continuum from wild to domesticated.

Expectations of Rarity: Perceptions of Abundance

One interviewee summarized general expectations for deer in suburban environments, “To see a deer should be a rare and wonderful event.” These expectations were met when encounters with deer were perceived as infrequent and primarily positive, although individuals had different preferences and thresholds of tolerance for both of these conditions. When both of these conditions were met, deer were described as rare. Deer were not expected to be seen and sightings were a pleasant surprise. When encounters were frequent but still mostly positive, i.e., positive impacts (e.g., enjoyment of viewing deer) outweighed negative impacts (e.g., damage to native vegetation, landscaping and gardens, deer-vehicle collisions; concerns about Lyme disease and ticks), deer were described as abundant but generally tolerable. When both conditions were violated, deer were described as overabundant. In addition, interviewees who experienced greater frequency of encounters and intensity of negative impacts also: used more negative language to describe deer, such as, “infestation,” “locusts” or “rats with hooves”; specifically identified a “deer problem”; expressed a greater desire for management action directed at deer (versus management actions aimed at impacts, such as fencing or repellents), and; concluded that deer were not where they were “supposed to be.”

A range in evaluations of abundance was seen at each park. This variation likely was due in part to localized abundance of deer in areas immediately adjacent to forested habitat, but appeared to be more strongly influenced by individual assessments of impacts. While the actual size of regional deer populations influences the likelihood of encounters, frequency of encounters represented only one dimension in interviewees’ assessment of relative abundance.

Expectations of Wildness: Perceptions of Behavior

Interviewees also generally spoke of deer as symbols of wildness and nature that were separate from culture. This resulted not only in the expectation that deer sightings in human-dominated landscapes should be rare and wonderful, but also that deer should behave as a “wild” animal and should flee from humans. When deer did not violate the expectation of a rare and wonderful encounter, interviewees appeared to tolerate and even value or seek out deer that did not flee from humans. When encounters on the whole were more frequent and less wonderful (as at FINS and VFNHP), expectations for “wild” deer behavior appeared to play a more important role. Under these conditions, perceptions of “wildness” appeared to be related to perceptions of habituation.

Effects of Habituation

In psychology, habituation is defined as decreased response to a stimulus that is presented repeatedly or for a prolonged time (McSweeney & Swindell, 2002). In wildlife management, habituation is defined as the reduction of an animal’s response to a repeated, inconsequential stimulus (usually resulting in loss of fear response to people). Food conditioning, a different phenomenon, occurs when an animal learns to associate food with the presence of people, due to positive experiences of acquiring food easily (McCullough, 1982; McNay, 1998). At both FINS and VFNHP, many interviewees described changes in deer behavior typical of habituation to a suburban environment, such as decreased fear response to humans and increased diurnal activity. Food conditioning was especially prevalent at FINS, where there was long history of visitors feeding deer as well as deer foraging in unsecured garbage in the local communities.

Interviewees often linked observations of deer habituation with assessments of abundance. As one interviewee described, “There are too many when they’re in closer contact with people on a regular daily basis during the day.” In addition, the resulting changes in deer behavior also affected whether interviewees thought of deer as wild animals. Deer that were no longer considered wild were described as “tame” or “domesticated.” Some indicated this behavior change was positive, describing habituated deer as being “like pets,” while others used more negative language, describing habituated deer as “pests” or “vermin.” As one interviewee opined, “I would say you cross the line when the white flag is no longer showing, when they are so familiar with people...so unafraid of people and no longer wildlife. They are pests.” These disparate evaluations of habituated wildlife result in a context ripe for stakeholder conflict.

In discussing their own behavior, interviewees often indicated that they had become habituated to the presence of deer. As one interviewee described, “Growing up here, when you saw a deer, people ran out of their houses, ‘Look! A deer!’ Now it’s like a squirrel.” Human habituation also appeared to interact with deer habituation. As humans habituated to deer that were less rare and wonderful and more habituated to humans, their cultural expectations for deer became more prominent in contrast to their actual experiences:

They’ve lost the instinct to run away. They’re de-deerified, humanized. When I first came here, it was thrilling to see a deer bounding across the main. Now, they knock over garbage cans and stand their ground.

...when I first came here, seeing a deer was very unusual and it was something you kind of appreciated. They’re white-tailed deer and one of the attractive things was that tail sticking up, a sign of alarm and so on. Now you never see that flag. It is always down because the deer are totally acclimatized to people.

I don't even think of them as wildlife anymore. To me they're like cows grazing in a pasture...I think they're beautiful. But I admire them more when I see them in the wild or down someplace where they were meant to be as opposed to acting like a cow standing by the walk in somebody's yard...I'll never forget one time, one of the first summers here...there were three bucks that came up over the dune...and there was all this mist around and they were so magnificent...I mean you really were in awe of them and that's no longer the way it is out here anymore.

In addition to evaluations of deer, habituation affected evaluations of appropriate means for population control. At FINS, a research hunt had been conducted in the 1980's. Many negative reactions to the hunt also appeared to be related to the idea of hunting habituated deer; i.e., hunting was not considered appropriate when animals were no longer wild but were more closely associated with humans. One interviewee described, "It was the most horrific thing...It would be like letting all the neighborhood dogs into someone's fenced-in backyard and shooting them." Another voiced a similar opinion, "People would kill them with a bow and arrow right in front of kids...It was like shooting neighborhood cats."

Even those who did not have negative associations with the research hunts at FINS (including interviewees at other study sites) described hunting as inappropriate when animals are habituated. For example, "You can hunt here with a baseball bat. You shouldn't hunt them, they're like pets. People who hunt upstate say this. Here, they beg." Others thought that any form of direct reduction, including agency sharpshooters, would be "...unfair because the animals are so tame, so used to people."

Closeness to Deer

Many who did not perceive a "deer problem" focused on anthropogenic processes that negatively affected both themselves and deer, namely human population growth, associated development, sprawl, and traffic. In essence, by emphasizing

shared negative impacts, they aligned themselves more closely with deer. These individuals attributed negative deer-related impacts to anthropogenic activities that affected deer, rather than to the deer themselves. Even though many of these individuals experienced negative impacts from deer, they often defined the problem differently, “Development has created the problem; we, mankind has developed the problem. The deer are doing their best to survive, they’re coming back at us and eating our shrubbery. What are they supposed to do, lay down and die?” This type of observation was most widespread at the park with low deer densities (PWFP) but also occurred to varying degrees at the other two parks, again indicating a potential source of conflict.

Wild, Domesticated, or a Man-Made Subspecies?

Differing opinions of deer often appeared to stem from the ambiguity that resulted when animals typically associated with the “wild” were encountered in a human-dominated landscape. The different ways that individuals resolved this ambiguity resulted in different evaluations of deer encounters and beliefs about appropriate management. Many expressed personal difficulty in resolving this ambiguity. One commented, “This is an environment where you can walk up to deer. Deer are in an urban setting, it’s very different from the wild. They’re not like a cat or dog, but they’re not wild. They’re somewhere in between.” Others believed that the “somewhere in between” was an entirely new category that was not yet recognized:

I’d like to see deer tied to the Canada goose issue. They are exactly the same. Exactly the same...the resident non-migratory Canada goose problem...Canada geese are not nature. They’re a man-made subspecies and we have created a habitat just like the deer, so it’s an identical issue.

Interviewees collectively described a positive feedback loop between the interactions of people and deer in urbanizing landscapes that resulted in a “man-made subspecies.” When deer were perceived as rare and “wild,” people valued, and actively sought, encounters with deer. Deer attracted to suburban landscaping became habituated to the presence of unthreatening people they encountered. This lowered their fear response and brought them into contact with people more frequently. As people encountered deer more frequently, the novelty of deer decreased. Although people no longer actively sought encounters with deer, they still did not present an active threat to deer and allowed habituation to continue. Negative impacts increased relative to positive impacts and became intolerable for some, especially when deer were perceived as no longer “wild.” For some, this feedback loop culminated in deer no longer being viewed as wildlife, but as pests that required management attention. Thus, the “suburban deer problem” resulted not simply from deer being able to exploit an anthropogenic ecological niche, but rather from the interaction between people’s responses to deer and deer responses to people in a human-dominated landscape.

Discussion

In his famous essay “The Tragedy of the Commons,” Hardin (1968) illustrated how individuals acting rationally to increase personal gains could collectively lead to the destruction of common pool resources. If the observations from communities near these three parks represent a more widespread phenomenon, perhaps the same process may be responsible for the devaluation of wildlife species in suburban environments. Over time, individually rational behavior that increases opportunities to enjoy encounters with human-commensal wildlife species collectively leads to these species becoming more common and less valuable. Left unchecked, this process results in what can be thought of as the ultimate “Tragedy of Becoming Common” when these

species become viewed as pests. This study suggests this loss of value results from two meanings of the word “common”: “occurring or appearing frequently” and “characterized by a lack of privilege or special status,”² which can be equated with loss of both rare status (i.e., overabundance) and wild character (i.e, habituation).

Interviewees valued deer more highly when they were thought of as rare. This was evident both in the different focus of discussion at the park with lower deer densities (PRWI) and in individual evaluations of deer at the other parks where interviewees had different levels of tolerance for negative impacts. These findings are supported by studies in economics that provide evidence that people assign hedonic value to items that are rare or scarce, such as coins and other collectibles (Koford & Tschoegl, 1998). Nash (2001) argued that relative scarcity helped wilderness gain value, and a recent study shows that this type of valuation also applies to wildlife species (Courchamp et al., 2006). While white-tailed deer are far from an endangered species, encounters with deer in urbanizing landscapes may be perceived as rare events for many individuals. Interviewees in this study indicated a general expectation that deer did not belong in suburban landscapes and that encounters there should be rare and wonderful.

In addition to expectations about where wildlife should be encountered, this study indicates that expectations about how wildlife should act also affect people’s evaluations of their experiences. Thompson and Henderson (1998) demonstrated that cervid habituation in urbanizing environments can be seen as an adaptive behavioral strategy to maximize reproductive fitness. Yet, from a cultural perspective, this study suggests that habituation and food conditioning violate expectations for behavior of “wild” animals. As a result, interviewees had conflicting interpretations of deer as

² Merriam-Webster’s Online Dictionary, s.v. “common,” <http://www.m-w.com/dictionary/common> (Accessed April 29, 2007).

wild, domesticated, or somewhere in between. This effect was especially pronounced in situations where deer abundance was high and perceived rarity was low.

Moreover, people's assessment of "normal" and "wild" behavior may affect their assessment of ethical wildlife management alternatives, which also was suggested in a recent study on the ethical judgments related to wildlife fertility control (Lauber et al., 2007). These observations indicate that when perceptions of abundance and lack of wildness reach a level where species management is desired, significant constraints on management action also may emerge. This effect underscores the potential importance of proactive management attention, before species are perceived to be overabundant.

An increasing body of literature documents the effects of anthropogenic activities on animal behavior, physiological response, or reproductive fitness in various settings. Few studies have examined how these changes in wildlife behavior affect people's attitudes towards wildlife and wildlife management. In New York state, Butler, Shanahan, and Decker (2003) observed a decrease in wildlife problem tolerance over time and emphasized a need to examine reasons behind these changing attitudes. This study suggests that co-habitation (i.e., of wildlife to humans and vice versa) that changes perceptions of wildlife behavior may be one potential source of attitude change. Further attention to this area may help identify root causes of conflicting desires for wildlife management in suburban landscapes.

Deer have played a central role in the mythology and symbolism that are the foundation of American culture (Sax, 2001), yet this study illustrates that suburban deer do not adhere to traditional cultural constructs. Just as dirt can be thought of as "matter out of place" (Douglas, 1992, p. 35), animal pests have been described as animals in inappropriate numbers or in the wrong context (Putman, 1989). This study identifies two dimensions of "the wrong context," namely "in the wrong location"

(i.e., abundant in suburban environments) and “behaving inappropriately” (i.e., no longer wild). A recent mail survey of suburban residents in upstate New York supports these findings; assessment of both abundance and wildness were strongly correlated with people’s evaluation of deer as positive or negative; in addition, both factors affected judgments of severity of impacts (Leong, et al. unpublished data).

Colpitts (2002) argues that in North America, ideals from the Romantic era have led to present day understandings of wildlife as “animate creatures that live beyond the imaginary boundaries of town and city” (p.12). This artificial boundary between natural and cultural spaces is reproduced by society. For example, a recent commercial for Windows Vista™ includes a man viewing a buck in a suburban subdivision as an example of a “Wow” event that is “...so new, so delightfully unexpected...” (Raine, 2007, p. C-1), reinforcing expectations that wildlife in suburbs should be rare. When people’s experiences conflict with cultural expectations, they experience cognitive dissonance and may eliminate this dissonance by altering various beliefs or attitudes (Festinger, 1957). Colpitts (2002) describes this phenomenon in his belief that when wildlife “...violate boundaries and enter civilized spaces, they become either virtuously domesticated or hunted as vermin” (p.12), an observation echoed by interviewees in this study.

Structural anthropologists describe animals that cross the nature-culture boundary as “anomalous,” which some argue is the reason they become defined as pests (see Knight, 2000 for review). In his influential essay on animal symbolism, Leach (1964) referred to this class of animals as “ambiguous.” According to his typology, animals could be placed along a continuum from pets (closest to self) to wild animals (most distant from self), where both extremes were valued and animals that fell between the two endpoints were ambiguous. Livestock and game were examples of ambiguous animals that had specific cultural meaning, subject to sets of

rules. This study indicates that suburban wildlife is emerging as an increasingly important class of ambiguous animals for which cultural rules have not yet become established.

Even though Americans have predominantly lived in suburbs for over 35 years, cultural expectations for wildlife encounters in this context clearly are still evolving. In their analysis of changing New England landscapes, Foster et al. (2002) identify sizeable and important lags in habitat transformation and wildlife responses. Given that these ecological lags are likely to be compounded by cultural lags, it seems reasonable to expect that suburban wildlife conflicts will increase in the future. The field of wildlife management traditionally has focused on population control and habitat or behavioral modification to reduce physical interactions between people (or their property) and wildlife. This study suggests that wildlife managers also may have an opportunity to influence how people think about themselves in relation to wildlife in different contexts. Wildlife management actions that are conducted in a manner that can be perceived as “pest control” may reinforce the nature-culture division, furthering the “tragedy of becoming common.” Thus, one challenge for suburban wildlife management will be to encourage a cultural construct where suburban wildlife is no longer seen as ambiguously outside both nature and culture but is recognized as a fundamental part of the nature-culture matrix that is created by the transformation of suburban landscapes. Establishment of this construct will require dialogue with stakeholders, future studies that examine cultural expectations in more detail, and increased prominence of suburban wildlife in mainstream popular culture.

Just as Roderick Nash (2001) describes wilderness as a “state of mind,” so too is “wildness” in wild life. The extent to which humans and wildlife continue to coexist may depend on the ability of our cultural conceptions of “wildness” to keep pace with the rate at which wildlife adapts to anthropogenic landscape change, as well as the

effectiveness and acceptability of interventions that help maintain expected “wild” traits. In *Playing God in Yellowstone*, Alston Chase (1986) questioned the role of man in nature and whether natural areas were made less natural by human presence. He recognized that in many ways, Yellowstone could not be considered a natural area, but contended that, “It was not natural, but it was nice. The park was a place where nature and culture mixed” (Chase, 1986, p. 374). Perhaps in suburban landscapes, wildlife managers will do the most service to ambiguous wildlife species by promoting a concept of suburban wildlife as neither nature nor culture, but nevertheless nice.

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Expiration Date 12/31/06. The opinions, findings, conclusions or recommendations expressed in this document are those of the author and should not be interpreted as representing the opinions or policies of the U.S. Government.

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CHAPTER 8

MATCHING THE FORUM TO THE FUSS: USING COORIENTATION CONTEXTS TO ADDRESS THE PARADOX OF PUBLIC PARTICIPATION IN NATURAL RESOURCE MANAGEMENT

Abstract

Public participation in natural resource management has been described as paradoxical: citizens want the best science to guide natural resource management decisions, but not to the exclusion of their input; agencies want meaningful citizen involvement in their management decisions, but they also want citizens to trust their scientific expertise. As a result, many studies have focused on developing criteria for designing successful participatory processes. Rather than definitive guidelines, however, studies to date typically indicate broad rules of thumb, which may differ in application depending on political and historical context. These observations suggest the need to identify contextual elements that influence the varying success of participatory process designs. One such contextual element is the degree of understanding, or coorientation, between stakeholders and managers. This paper expands the concept of “coorientation” to “coorientation contexts” to describe the climate for communication between natural resource managers and stakeholders. Examining participation philosophies and corresponding techniques within the framework of coorientation contexts reveals that certain types of communication are better suited to certain coorientation contexts. Tailoring participation strategies to the appropriate coorientation context throughout the evolution of public issues, i.e., matching the forum to the fuss, may ultimately result in more informed, equitable and sustainable management decisions. Future empirical testing of this framework may

improve natural resource managers' ability to successfully navigate the paradox of public involvement in natural resource management.

Introduction

Over the past few decades, natural resource management has become increasingly complex. Managers now regularly face problems that cross jurisdictional boundaries between agencies, involve stakeholders with widely diverse views, and may be defined differently depending on the scale of the proposed solution. As a result, collaboration and public participation have gained popularity as a means for addressing natural resource conflicts and identifying sustainable management alternatives. Yet the term "public participation" can be applied to many forms of interaction and communication between natural resource management agencies and citizens. To improve the success of participatory processes, scholars and practitioners have examined implications of different philosophical approaches to public participation (e.g., Arnstein, 1969; Decker & Chase, 1997), developed detailed case studies (e.g., Lewicki et al., 2003; Wondolleck & Yaffee, 2000), and examined successes and failures of different process designs in different contexts (e.g., Beierle & Cayford, 2002; Chess & Purcell, 1999). One context that has not been studied in detail is the degree of understanding, or coorientation, between stakeholders and managers. Using the National Park Service (NPS) as an example, this paper develops a framework that outlines the implications of different coorientation contexts on participatory process design.

Within the context of natural resource management in agencies such as the NPS, certain parameters for management have been defined by law and policy and are reinforced through agency culture. Like many agencies responsible for public trust resources, the NPS is charged with conservation of resources for the enjoyment of

current and future generations (National Park Service Act, 1916, 16 U.S.C. § 1; Baer, 1988). Within the constraints of ecologically sound management, many possible ends and means can be considered for any complex management issue, such as: ecosystem restoration, invasive species management, fire management, or managing wildlife disease outbreaks. Given the range and intensity of cognitions about natural resources extant in the American public (Bright et al., 2003; Kellert, 1996), management actions may become the focus of public controversy when any subset of the public¹ perceives a negative impact² from a proposed management action.

Public issues in NPS units have been observed to progress through a number of phases in their evolution: (1) identifying potential issues: concerns are voiced and activity from concerned individuals increases, (2) focusing issues: issues are formally defined and goals and objectives are set, (3) planning action: potential actions to address issues are identified and evaluated, and (4) taking action: chosen management alternatives are implemented, evaluated and adjusted (Chapter 2). Each of these stages presents opportunities to involve the public in natural resource management. In practice, the degree to which the public is included in each of these stages often varies based on public awareness of the issues, perceived impact from the resource and/or potential management alternatives, level of controversy surrounding the issues, and philosophy of agency decision-makers regarding public participation. For relatively non-controversial issues, such as noxious weed removal, public input may be minimal. However, for more complex, ambiguous, and controversial issues, such as white-tailed

¹ In this paper, we use the term “public” interchangeably with the term “stakeholders,” i.e., any individuals who will be affected by, or will affect, natural resource management (Decker et al., 2001; Decker et al., 1996). The NPS defines the public as “...all of the individuals, organizations and other entities who have an interest in or knowledge about, are served by, or serve in, the parks and programs administered by the NPS” (National Park Service, 2003, p. 4).

² Impacts are the socially-determined important effects of events or interactions involving natural resources, humans and resources, and management interventions (Riley et al., 2002).

deer (*Odocoileus virginianus*) management, public participation may be crucial for successful implementation of management actions.

The National Environmental Policy Act (NEPA) established a legal mandate to include public input in federal decisions that may significantly impact the environment or may be controversial (1969, 42 U.S.C. § 4321 *et seq.*), and many states have similar mandates that affect state natural resource agencies (e.g., New York State Environmental Quality Review Act. 1978. 6 NYCRR Part 617; California Environmental Quality Act. 1986. Cal. Pub. Res. Code § 21000 *et. seq.*). In addition, natural resource management agencies have forged agency-specific policies to further the citizen involvement intent of these laws. For example, recent NPS and Department of the Interior policies emphasize public participation and civic engagement in agency decision-making (Department of the Interior, 2004; National Park Service, 2003; 2006). In addition to policy direction, natural resource managers currently are experiencing increased pressure from the public for opportunities to be involved in natural resource management decisions (Covello & Sandman, 2001; Decker et al., 2001; Wondolleck & Yaffee, 2000). At the same time, agencies must inform decisions with high quality science (National Parks Omnibus Management Act, 1998, P.L. 105-391; National Park Service, 2006); yet scientific results may be interpreted differently by experts and the public (Plough & Krinsky, 1987; Sandman, 1987).

These requirements and desires produce a paradox of public participation in natural resource policy:

“Citizens’ [sic] want the best science to guide natural resource management decisions, but not to the exclusion of their input. Similarly...agency personnel know they need meaningful citizen involvement in their management decisions, but they also want citizens to trust their scientific expertise” (Walker & Daniels, 2001, p. 253).

This paradox results from a tension between technical competence and open process; there is a desire for the efficiency provided by science-based solutions as well as the equity derived from meaningful citizen input (Walker & Daniels, 2001). Navigating this paradox can be a challenge for natural resource managers, especially given the general agreement on the limitations of the traditionally relied upon decide-announce-defend model (e.g., public hearings) of public input (Beierle & Cayford, 2002; Checkoway, 1981; Chess & Purcell, 1999; Kasperson, 1986; McComas, 2003b; Walesh, 1999).

Public participation is a broad term that encompasses a wide variety of philosophies and techniques for engaging the public. Many of these techniques are more properly described as “communication with the public”; thus, for the purposes of this paper, “public participation,” “participatory processes,” and the like will be used to describe any active communication efforts designed by an agency to interact with the public. While numerous practitioner guides describe how to design various participatory processes, studies have shown that different forums for participation (e.g., surveys, focus groups, open houses, public meetings, mediated negotiations, and citizen advisory committees) have yielded similar outcomes (e.g., better acceptance of decisions, education of stakeholders, improved quality of decisions, fairness, information exchange), and that similar forums have yielded different outcomes (Chess & Purcell, 1999). In addition, recent studies have underscored the importance of trust and credibility in the agency (McComas & Trumbo, 2001) as well as political and historical context in which participation occurs (Foster, 2002; Walker & Hurley, 2004). These observations suggest that systematic situational assessment may identify contexts in which certain participatory process designs are more likely to succeed than others.

One common approach to addressing context is to know your audience; that is, to learn about the beliefs, attitudes, and values of the public (Decker et al., 2001; Jacobson, 1999; Tyson, 2002). A more robust approach, known as coorientation (McLeod & Chaffee, 1973), seeks to understand and measure the differences in viewpoints and assumptions of both agency representatives and members of the public. This paper expands the concept of “coorientation” to “coorientation contexts” that describe the different climates for communication in which an agency may find itself. Participation goals and desired outcomes are likely to vary depending on the perceived climate for communication, thus determining which approach to public participation (i.e., the forum) best matches each coorientation context (i.e., the fuss) to aid managers in more successfully meeting their public trust mandate.

Using Coorientation to Identify Strategies for Public Participation

Coorientation focuses on interpersonal relationships and assumes that people’s communicative behavior is not only based on private cognitive constructions of their worlds but also their perceptions of other people’s views and how these views align with their own (McLeod & Chaffee, 1973). Based on these assumptions, the coorientation model indicates that an individual’s communication style and content will depend largely on his/her perceptions of the attitudes and perspectives of the audience (Connelly & Knuth, 2002).

The coorientation model uses beliefs and attitudes³ to quantify communication variables between individuals or groups that might facilitate or hinder information exchange (Wackman, 1973). These measures may serve as an index of how well a person or group perceives the cognitions of another person or group with respect to a

³ The term “attitudes” will be used generically to refer to both beliefs and attitudes.

particular object or referent, based on: (1) the responses of each person or group to a set of attitudinal questions, and (2) how well each person or group can predict the answers the other will give to the same attitudinal questions. These measures are then compared in terms of: (1) agreement, meaning the similarity between the two people's reported attitudes on the issue, (2) congruency, or the similarity between one person's attitudes about the issue and his estimate of the other person's attitudes about the issue, and (3) accuracy, meaning the similarity between one person's estimate of another's attitudes about the object and the other's actual attitudes. The ability of one party to predict the other's answers provides a measure of their coorientation, which in turn should predict how well the two will communicate (McLeod & Chaffee, 1973; Shanks, 1992).

Most work on coorientation focuses on measures of agreement, congruency, and accuracy to explain dependent variables such as the level of stakeholder satisfaction, performance ratings, or consensus between two groups (for a discussion of historical application of coorientation theory see: Connelly & Knuth, 2002; Papa & Pood, 1988; Purnine & Carey, 1999). Instead of focusing on coorientation as a measurement tool, this paper examines implications of coorientation for the design of communication interventions, in this case, participatory processes.

Coorientation and Participation Model Development

For communication between two people or groups, measures of agreement and accuracy lead to four possible coorientation contexts: (I) true consensus: high accuracy and high agreement, (II) dissensus: high accuracy and low agreement, (III) false conflict: low accuracy and high agreement, and (IV) false consensus: low accuracy and low agreement (Table 8.1; Broom & Dozier, 1990).

Table 8.1. Coorientation contexts related to the dimensions of agreement and accuracy. Agreement refers to the amount of cognitive overlap between parties. Accuracy is the similarity between one person's estimate of another's attitudes and the other's actual attitudes. It is often assumed that the ideal situation is Context I, True Consensus; however, Context II, Dissensus, still can lead to satisfactory and meaningful interaction.

		Agreement	
		High	Low
Accuracy	High	Context I: True Consensus	Context II: Dissensus
		“They agree and think they agree.” Perception of high agreement is accurate.	“They don’t agree and know it.” Perception of low agreement is accurate.
	Low	Context III: False Conflict	Context IV: False Consensus
		“They think they don’t agree but do.” Perception is inaccurate: Perceive low agreement although in reality agreement is high.	“They think they agree but don’t.” Perception is inaccurate: Perceive high agreement although in reality agreement is low. May agree on some dimensions of issue but not others.

Each of these contexts represents a different climate for communication with the public, suggesting that different approaches to public participation might be more successful in different contexts. Thus, each coorientation context indicates different communication needs or objectives for communication interventions. Depending on the nature of the management context, communication needs may be greater in either the agreement or accuracy dimension, which has additional implications when developing communication objectives. Because different participatory process designs are better suited to different communication objectives, assessing the coorientation context and communication objectives can assist managers in determining the appropriate mix of approaches and techniques for public participation

(Tables 8.2, 8.3). This type of situational assessment also can assist managers in reflecting on their expectations for the outcomes of public participation.⁴

A focus on the agreement dimension of coorientation implies that the objective of public participation is to reach high agreement (and accuracy) with agency officials. From this perspective, communication objectives could be short-term with emphasis on achieving support and consent for agency action. A fundamental assumption in this approach is that the agency viewpoint is the correct viewpoint and that one-way communication with the public (i.e., communication that does not include dialogue) is adequate. Based on these assumptions, informational communication, persuasive communication, and education could be appropriate means to move the relationship between the agency and the public towards recognized agreement, regardless of the original coorientation context (Table 8.2). However, success of these approaches may differ based on other contextual elements, such as public trust in the agency and historical relationships between parties. Because of the underlying assumption that agency experts have correctly framed the issues, approaches that focus on agreement may be most appropriate for topics where public participation is unlikely to affect outcomes, i.e., efforts designed to increase awareness of existing laws or agency mandates, jurisdiction, and policy.

⁴ While general types of participatory processes are outlined for each coorientation context, specific techniques are beyond the scope of this paper and are treated in detail elsewhere. See for example: The National Park Service Community Toolbox for Public Participation (National Park Service Rivers Trails and Conservation Assistance Program, 2003), The IAP2 Public Participation Toolbox (International Association for Public Participation, 2004), The Consensus Building Handbook (Susskind et al., 1999), Citizen Participation Approaches to Decision-making in a Beaver Management Context (Enck & Brown, 1996).

Table 8.2. Predictions of appropriate forms of participation based on coorientation contexts: Objectives focused on agreement dimension. A focus on agreement gives precedence to participatory strategies that would move participants from all other contexts towards true consensus with managers. The assumption that managers have correctly identified and defined the problem leads to use of one-way communication models.

		Agreement	
		High	Low
Accuracy	High	Context I: True Consensus	Context II: Dissensus
		<i>Objective:</i> Keep the public informed. <i>Forum to involve stakeholders:</i> Informational communication.	<i>Objective:</i> Move towards high agreement. <i>Forum to involve stakeholders:</i> Persuasive communication.
	Low	Context III: False Conflict	Context IV: False Consensus
		<i>Objective:</i> Correct misperceptions. Move towards high accuracy. <i>Forum to involve stakeholders:</i> Education.	<i>Objective:</i> Correct misperceptions. Move towards high agreement and accuracy. <i>Forum to involve stakeholders:</i> Education and persuasive communication.

A focus on the accuracy dimension of coorientation implies that the objective of public participation is to correct misperceptions, whether or not full agreement is reached. This philosophy places emphasis on the long-term, relationship-building elements of participatory processes. Two-way symmetric models of communication that emphasize dialogue, mutual learning and outcomes such as social justice and participant satisfaction would be appropriate to move the relationship between the agency and the public from unrecognized agreement and disagreement to recognized agreement and disagreement, respectively (Table 8.3). This approach assumes that dialogue can result in action plans that all stakeholders can live with, even if they may not agree on all points. Again, socio-political and historical contexts are important considerations in process design.

Table 8.3. Predictions of appropriate forms of participation based on coorientation contexts: Objectives focused on accuracy dimension. A focus on accuracy gives precedence to participatory processes that result in accurate assessments, whether or not agreement is reached as a result. These objectives suggest two-way symmetric communication models. After accurate understanding about agreements or disagreements is achieved, participatory processes may be further modified to reach satisfactory and sustainable decisions.

		Agreement	
		High	Low
Accuracy	High	Context I: True Consensus <i>Objective:</i> Meaningful collaboration, capacity building, relationship building <i>Forum to involve stakeholders:</i> Collaboration, partnering.	Context II: Dissensus <i>Objective:</i> Mutual learning to understand interests and values behind different positions, finding common ground, building respect. <i>Forum to involve stakeholders:</i> Alternative dispute resolution, mediated negotiation, consensus-building, negotiated rulemaking.
	Low	Context III: False Conflict <i>Objective:</i> Correct misperceptions. Mutual learning to understand how each party actually views the issues. <i>Forum to involve stakeholders:</i> Dialogue, workshops.	Context IV: False Consensus <i>Objective:</i> Correct misperceptions. Mutual learning to understand different interests and values behind seemingly similar positions. <i>Forum to involve stakeholders:</i> Facilitated dialogue, deliberation, workshops.

Context I. True Consensus: High Accuracy and High Agreement

This context represents the ideal situation in which both parties not only agree fundamentally on the topic of concern but also realize that they are in agreement. Rogers (1995) states that the transfer of ideas occurs most frequently between two individuals who are homophilous, i.e., similar in attributes, such as beliefs, education,

or social status. According to this perspective, when two individuals share common meanings, a mutual language, and similar personal and social characteristics, communication is likely to have greater effects in terms of knowledge gain, attitude formation and change, and overt behavior change (Rogers, 1995).

While this context has the potential for the easiest and most productive interactions, it also includes many levels of complexity. Recent studies have underscored the importance of trust and credibility in effective communication (McComas & Trumbo, 2001); different approaches to participation may be necessary in situations of low vs. high trust. When trust in the agency is low, it may be more difficult to engage stakeholders in dialogue. For example, it has been observed that, “when people feel they’re not heard, their rhetoric can get very antagonistic, very polarized...” (Eng, M, U.S. Institute for Environmental Dispute Resolution, personal communication). In this situation, communication efforts may need to focus first on gaining agency trust and credibility before attempting to address the management issue itself.

When there is high trust in the agency and objectives focus on agreement, a public information approach may be adequate. The public can be kept informed of agency actions through formats such as press releases, web sites, and open houses, and given opportunities to comment, meeting NEPA’s procedural requirements. High levels of agreement, accuracy, and trust imply that the issues are relatively non-controversial.

High accuracy and high agreement on causes and potential solutions are likely to facilitate collaborative management approaches and partnerships between agencies and stakeholders. These processes can build trust, credibility, problem-solving capacity and relationships between agencies and stakeholders as well as among diverse segments of the public, positioning both the agency and the public well for

future interactions. Yet, if socio-political and historical contexts (including trust of the decision-making bodies) are not considered, backlashes against collaborative efforts that are perceived as insincere may derail the process, inciting rather than diffusing controversy (Walker & Hurley, 2004).

Context II. Dissensus: High Accuracy and Low Agreement

In this context, parties fundamentally disagree on the topic at hand and know it. When the main concern is with achieving high agreement, communication strategies such as persuasion, influence, and attitude change are indicated. In a study of attitudes toward contraception in suburban deer, Lauber and Knuth (2004) found that agency communication is most likely to influence public attitudes if it is tailored to address the particular concerns of important stakeholder groups, suggesting that communication can be an effective means for an agency to influence public perceptions of wildlife issues.

Source factors, such as charisma, authority and credibility can play a large role in the effectiveness of persuasion (Perloff, 1993). Yet persuasion efforts can backfire and result in loss of trust and increased conflict if people view the agency as trying to manipulate them (Weber & Word, 2001). Practitioners emphasize the difficulty of regaining trust after it has been broken, and managers often remark on challenges of interacting with communities with a history of conflict with the agency (Karl, H, MIT-USGS Science Impact Collaborative, personal communication). These considerations should be evaluated against the potential benefits before implementing persuasive communication strategies.

Participation objectives emphasizing the accuracy dimension would instead utilize methods that facilitate mutual learning to: understand the interests and values behind the positions held by all parties, find common ground on which to base

dialogue, and build respect between parties. Many studies of alternative dispute resolution, negotiation, and public participation have shown that consensus or agreement is not necessary for satisfactory communication (Fisher & Ury, 1981; Forester, 1999; Gangl, 2003; McComas, 2003a). Rather than focusing on achieving agreement between all stakeholders on all aspects of the issues, consensus-building emphasizes mutual learning to develop management alternatives that all parties can agree to live with because they represent a good-faith effort to meet the needs of all stakeholders (Susskind et al., 1999). In a situation of low agreement but high accuracy, encouraging dialogue-based communication may lead to increased satisfaction with the communication process, respect for the agency, and support for agency decision-making, even if agreement about certain elements of the issues is not reached (McComas, 2003a; Tyler, 2000). Neutral third party mediators or facilitators can help initiate dialogue when issues are highly contentious. These processes also may help to identify areas of common ground, moving the parties to recognized agreement where collaboration and partnering can be fruitful.

Context III. False Conflict: Low Accuracy and High Agreement

The low accuracy contexts represent situations defined by misperceptions. In the case of low accuracy and high agreement, groups believe that they disagree when they actually share the same fundamental views about the topic in question. In this case, emphasis should be placed on correcting misperceptions so that a high accuracy/high agreement situation can be realized. In a situation where managers and stakeholders share the same underlying attitudes and values, an environmental education approach could be very successful. However, studies have shown that stakeholders may interpret information disseminated in good faith as “objective

science” as an attempt to manipulate (Weber & Word, 2001) or as lacking credibility if the source is not trusted (Weeks & Packard, 1997).

Because of perceived disagreement, managers in a false conflict situation may be inclined to design highly controlled participatory formats in an attempt to diffuse expected controversy. Yet mutual learning through dialogue-based approaches may quickly reveal more similarities than differences between parties. In this instance, flexible processes can be modified to capitalize on revealed agreement by focusing on collaboration rather than dispute resolution.

Participatory processes designed to address perceived conflicts may be more costly and time consuming for the agency because of the need for third party mediators and the need to discover areas of common ground as the basis of future discussions. When coorientation assessment indicates false conflict as a starting point, managers may be successful in utilizing less formal dialogues that focus on areas of misperception and learning about the reasons behind these assumptions and expectations.

Context IV. False Consensus: Low Accuracy and Low Agreement

False consensus may be responsible for many perceived failures of participatory processes. In this situation, parties think they agree on a topic when in fact they disagree. This could be due to agreement on some dimensions of the issue but not others (e.g., agreement on ends but not means), or overall misperceptions, such as when they mistakenly assume they agree. If participatory processes are designed based on these incorrect assumptions, disagreements may surface later that derail the process, leading to loss of trust, inability to act, and possibly litigation. In addition, key stakeholders inadvertently may be overlooked, bringing the legitimacy of the process into question. Situational assessment is necessary to reveal false consensus,

indicating the importance of understanding the socio-political and historical situation as a foundation for designing effective participatory processes. Before embarking on collaboration, facilitated dialogues may be used to reveal different interests and values behind seemingly similar positions. Dialogue-based processes can help reveal interests behind the issues, creating awareness of disagreements (i.e., that the false consensus context applies).

When situational assessment is lacking and there appears to be little public interest and/or likelihood for controversy early in the issue-evolution cycle, managers may want to err on the side of caution and assume there is false consensus. Education about the issues and persuasion to become involved early on may lead to opportunities for more constructive and informed dialogue as specific management objectives and alternatives evolve, which also may surface potentially contentious elements of the issues before they become highly polarized.

Implications for Practice

The above discussion identifies areas where different participatory approaches that focus on agreement vs. accuracy may be more likely to help managers achieve their public participation objectives under various climates for communication. Yet coorientation contexts in real-life management issues are likely to include many levels of complexity. First, multiple stakeholder groups and agency perspectives add dimensions beyond this simplistic two-party treatment. Second, parties may not have the same level of accuracy in predicting each other's attitudes. Because natural resource issues encountered by NPS and other environmental agencies are complex, each stage of issue evolution likely will require a mix of participatory processes that enhance both agreement and accuracy. Table 8.4 illustrates some of the broad needs that can be met by agreement- or accuracy-focused participation at each of these

stages. Situational assessments such as research to determine coorientation contexts can assist managers who have limited resources to focus their attention on specific issue areas or communities that would most benefit from participation efforts.

Table 8.4. Applications of participation focusing on agreement and accuracy for each stage of public issue evolution. Assessment of the situational context, including trust, history of relationships, and coorientation can help managers determine where participation needs are greatest. Coorientation contexts then can be examined to determine specific process design.

Stage in Public Issue Evolution	Participation Needs	
	Processes that focus on Agreement	Processes that focus on Accuracy
Identifying potential issues	• Motivate stakeholder discussions	• Identify potential issue frames and affected stakeholders
Focusing issues	• Increase awareness of agency mandates and jurisdiction	• Determine dimensions of issues to be addressed and acceptable problem frame
Planning Action	• Increase awareness about agency planning process and limitations	• Determine alternatives and consequences acceptable to all • Identify new stakeholders affected by management actions
Taking Action	• Increase awareness about implemented actions	• Evaluate actions

To be sure, public participation in the NPS and other agencies charged with natural resource management is an ongoing endeavor that may take many forms. Clearly, public participation should not be thought of as a one-size-fits-all solution to resolving complex management issues. The above conceptual models coupled with

research that evaluates coorientation contexts provide managers with a practical tool to “match the forum to the fuss,” i.e., to select the approach to participation that is best suited to their management situation and communication objectives. The models also provide a framework for evaluating participation objectives that include a desired change in accuracy or agreement between stakeholders and managers.

These models optimistically predict that tailoring participation strategies to the appropriate coorientation context throughout the issue evolution cycle will ultimately lead to more informed, equitable, and sustainable management decisions, helping to resolve the paradox of public participation in natural resource management. The framework provides a conceptual tool to help managers test this expectation, and minimally to better anticipate and respond to public concerns related to natural resource management issues. Analysis of the climate surrounding communication efforts can be applied at any phase of public issue-evolution as a means to better understand the overall management context. Consideration of coorientation, as opposed to just audience characterization, encourages managers (as communicators) to reflect on the influence of their own values and assumptions about their relationships with interested publics, as well as desired outcomes of public participation. While model predictions must be verified, application of this strategy may enhance natural resource managers’ ability to implement policy related to public participation, foster innovation in natural resource management, and help resolve conflicts around natural resource issues.

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CHAPTER 9

FORMATIVE COORIENTATION RESEARCH: DEVELOPMENT OF A TOOL TO IMPROVE COMMUNICATION BETWEEN SMALL GROUPS OF DECISION MAKERS AND LARGE GROUPS OF STAKEHOLDERS

Abstract

A growing body of research recommends interaction between managers and stakeholders to improve natural resource management decisions. While formative audience research and summative evaluations of communication efforts have been well-studied, less research has included formative evaluations that compare managers and stakeholders to inform communication efforts. This study applies the communication concept of coorientation to the case of deer management on Cornell University open space lands and develops a modified analysis for use with small decision making teams. Mail surveys were used to assess the level of agreement and accuracy between decision makers and residents of nearby communities. Cornell decision makers were more accurate than residents in predicting the other's responses; these differences have implications for approaches to communication that might be adopted. This study also illustrates the utility of coorientation research as a tool to reveal areas of difference within the decision making team as well as with the public.

Introduction

Scholars and practitioners regularly observe that natural resource management is becoming increasingly complex. Protected areas management is moving away from a single species, island of habitat approach to an ecosystem based, landscape approach. In addition, resources and resource issues (such as fire management, invasive or endangered species management, management of overabundant wildlife species) cross

jurisdictional boundaries, involving greater numbers of stakeholders with diverse views. A growing body of research in a variety of disciplines (such as, natural resource management, dispute resolution, communication, environmental justice, to name a few) recommends more interaction between managers and stakeholders as a way to improve the substance, durability and sustainability of natural resource management decisions (for example, see Decker et al., 2001; Fisher & Ury, 1981; Pearce & Littlejohn, 1997; Susskind et al., 1999; Wondolleck & Yaffee, 2000). For federal and state agencies, public participation and civic engagement are institutionalized in laws and policies such as: the Administrative Procedure Act (1946, 5 U.S.C. § 551 *et seq.*), National Environmental Policy Act (1969, 42 U.S.C. § 4321 *et seq.*) and corresponding state laws (e.g., New York State Environmental Quality Review Act, 1978, 6 NYCRR Part 617; California Environmental Quality Act, 1986, Cal. Pub. Res. Code § 21000 *et. seq.*); and National Park Service (NPS) Management Policies (2006), Director's Order 75A: Public Participation and Civic Engagement (2003). While much attention has been given to formative audience research and summative evaluations of communication and participation efforts, less research has included formative evaluations of both manager and stakeholder perspectives to inform approaches to communication that may enhance interaction between these key actors in natural resource management. This study applies the communication concept of coorientation to determine the prevailing climate for communication between managers and stakeholders in the case of deer management on Cornell open space lands, an analogous situation to that faced by land managers such as managers of parks, wildlife refuges and other natural areas adjacent to urban and suburban development.

Cornell University, situated in the Finger Lakes Region of central New York State, maintains a variety of open space lands for educational and research purposes.

White-tailed deer (*Odocoileus virginianus*) are common on these lands and in the neighboring communities surrounding the campus in Ithaca, NY. Deer and impacts associated with deer have gained attention in recent years in the neighborhoods surrounding the Ithaca campus, and a team of ten Cornell University decision makers and advisors¹ was recently assembled to begin planning a long-term approach to managing deer-related impacts on Cornell lands (see Siemer et al., 2007). Unlike public land managers, Cornell University decision makers are not required by law to include public input. However, they recognize that they share interest in a local deer population with neighboring communities and wish to improve communication with neighbors and explore the possibility of working jointly on deer management (S. Golding, Cornell University, personal communication).

Cornell University sponsored a comprehensive survey of residents of neighboring communities to learn more about their interests, experiences, and concerns with respect to the local white-tailed deer population (see Siemer et al., 2007 for full report). Cornell University decision makers completed a parallel questionnaire that included a subset of questions to assess coorientation with residents of neighboring communities. This chapter examines the use of coorientation research for small groups of decision makers and large groups of stakeholders as a means to improve the effectiveness of communication strategies.

Strategic Communication and Coorientation

Grunig and Repper (1992) demonstrate that communication programs can be used to enhance organizational effectiveness when managed strategically. They emphasize the importance of formative research when the behavior of an organization

¹ This team is referred to as “Cornell University decision makers,” or “CU” throughout this document, even though some team members served in advisory rather than decision making roles.

may have consequence on stakeholders, as a means to anticipate public response and identify areas of potential conflict or opportunities for collaboration. Formative audience research has been called “...the backbone of a conservation communications program” (Jacobson, 1999, p. 29). Understanding the target audience’s beliefs, attitudes, and values is essential when developing communication objectives and evaluating the success of communication efforts (Decker et al., 2001; Jacobson, 1999; Tyson, 2002);

In addition, communication success can be influenced by the accuracy of assumptions that an organization makes about its target audience or that the target audience makes about the organization’s intentions (Dozier & Ehling, 1992; Pearce & Littlejohn, 1997; Susskind & Field, 1996). One type of formative research that examines these assumptions is known as coorientation research. Chapter 8 reviewed the potential for coorientation research as a means to identify the climate for communication and design communication strategies accordingly. Unlike simple audience characterization, coorientation seeks to understand and measure the differences in viewpoints and assumptions of both decision makers of an organization and members of the public (McLeod & Chaffee, 1973). Coorientation research measures an organization’s views on an issue, the public’s views on the same issue, and each group’s estimate of the other’s views. These measures are used to calculate agreement (the extent to which the organization and the public hold the same attitudes and beliefs), congruency (the extent to which the organization’s or the public’s estimate of the other’s attitudes and beliefs is similar to their own), and accuracy (the extent to which the organization’s or the public’s estimate of the other’s attitudes and beliefs is similar to the other’s actual attitudes and beliefs).

Most previous work examines coorientation variables as predictors of other factors that may affect communication, such as the level of stakeholder satisfaction,

consensus between two groups, or willingness to negotiate (for review, see Christen, 2005; Connelly & Knuth, 2002; Papa & Pood, 1988). Broom and Dozier (1990) suggest that coorientation research can be used to inform two-way symmetrical communication efforts by revealing potential areas where change in knowledge, predispositions, and behavior of both the public and organization leaders may improve relationships. They also propose that when research reveals that relationships are based on inaccurate perceptions, coorientational variables can be used as outcome criteria on which to evaluate communication efforts.

A coorientation approach provides a level of detail above audience characterization for decision makers of an organization or agency seeking to improve communication and relationships with stakeholders. Comparison of agreement and accuracy between stakeholders and decision makers can be used to reveal areas of true consensus (high agreement and high accuracy), dissensus (low agreement and high accuracy), false conflict (high agreement and low accuracy), or false consensus (low agreement and low accuracy), each of which suggest different objectives and approaches to communication (Broom & Dozier, 1990; Dozier & Ehling, 1992). Chapter 8 outlines some of the specific communication approaches and techniques that are suggested by each of these four coorientation contexts, thereby illustrating the potential utility of coorientation assessment as a tool to assist managers in tailoring communication efforts to their specific management context. In addition, a coorientation approach provides the opportunity for decision makers not only to improve their understanding of their target audience, but also to reflect on their own assumptions that may influence the effectiveness of their communication efforts. Dozier and Ehling (1992) warn that “Misperceptions can lead to catastrophic actions...” (p.181); coorientation assessment that reveals misperceptions prior to

designing communication or outreach efforts may assist managers in preventing misinterpretation of their actions by the public.

In a review of coorientation research, Kelly et al. (2006) found few applications by practitioners in the field, calling it a “powerful but underutilized approach” (p. 612). In addition, they point out that most coorientation research ignores the views of organizational decision makers and often measures only the public side of the relationship. While their study extended the application of coorientation to include organizational leaders, their sample of leaders was large enough that statistics could be used to compare average responses of the two groups studied. At Cornell University, and in most public land units, wildlife management decisions are made by much smaller groups, usually on the order of 10-15 individuals. Yet these individuals make decisions that directly affect a variety of stakeholders which in some cases can number in the thousands to millions (e.g., visitors to popular National Parks). In this situation, statistical comparison of means, even between decision makers and representative samples of the public, would be suspect. To provide small leadership teams with an additional tool to improve their communication effectiveness, this study modifies the coorientation approach for use with small groups of decision makers and large groups of stakeholders.

Methods

Coorientation requires measurement of the same variables on two groups, thus two surveys were necessary: a survey of residents and a survey of decision makers.

Survey of Residents

A mail survey was used to collect data for this study; full methods are reported in Siemer et al. (2007). In brief, 12-page questionnaires were mailed to all 2,638

owner-occupied households identified via tax rolls in the area referred to locally as East Hill communities, delineated by Cornell University decision makers (Figure 9.1).

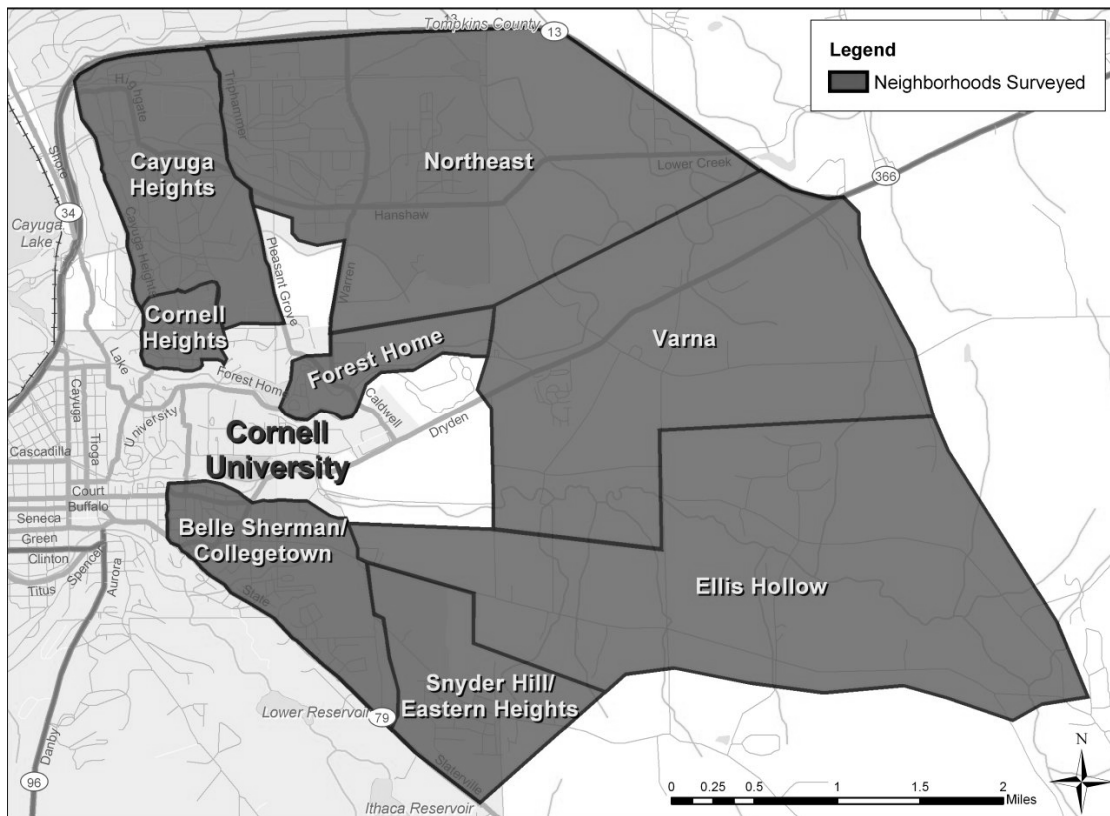


Figure 9.1. Geographic boundaries used to assign households to a neighborhood.

The survey instrument was designed based on previous research experience on community-based deer management, discussions with natural resource managers (Chapter 3) and public participation practitioners (Chapter 5), and qualitative interviews with a total of 267 local community residents living near three suburban parks that provided open spaces and deer habitat similar to the situation encountered in East Hill (Leong & Decker, 2007a; 2007b; 2007c). Questions that are pertinent to this chapter asked respondents' opinions about: presence of deer in their community and on Cornell lands, seriousness of various types of deer impacts, whether Cornell should

start now to address deer impacts, impacts of Cornell actions on surrounding communities, the importance of understanding other people's viewpoints, and Cornell's affiliation with the local community (Appendix 9.A, Question A). Respondents also were asked to predict Cornell decision maker responses to the same questions (Appendix 9.A, Question B). A four-wave mailing approach was used, following Dillman (2000). All members of the sample were mailed a cover letter, questionnaire, and postage-paid return envelope on October 21, 2006. Residents who did not respond to the initial mailing were contacted up to three additional times, with the last reminder mailings taking place in mid-November 2006.

Survey of Decision Makers

As previously mentioned, the team of ten Cornell University decision makers and advisors was involved in planning a long-term approach to managing deer-related impacts. For a point of reference, we note that the size of this team roughly corresponds to that of deer management advisory teams assembled by many natural resource agencies when addressing management needs on public lands, such as NPS in developing Environmental Impact Statements. Using NPS as an example, these teams typically include park superintendents and natural resource managers, scientists from the regional offices and inventory and monitoring networks, and planning specialists. The Cornell team has an analogous composition: executive vice president of the university, property and grounds management directors, plantation and natural areas managers, and the university planner.

Each member of the Cornell University decision making team was asked to fill out an abbreviated questionnaire that paralleled a subset of questions on the survey of residents, including the questions in Appendix 9.A. The questionnaire was administered via inter-office mail to all members of the Cornell University decision

making team on December 15, 2006. A follow-up reminder was sent on January 8, 2007.

Analysis

All questions were asked on a 5-point Likert scale from Strongly Disagree to Strongly Agree; all responses of “Not Sure” were treated as missing values. Statistical analysis was conducted using SPSS software (version 14.0, SPSS, Inc.). In most coorientation research, both groups are large enough and of similar enough size to determine high and low agreement and accuracy by using t-tests to compare means. For this study, and in most parallel management situations, the group of decision makers was small, invalidating this approach. In addition, from a practical standpoint, management decisions are not based on aggregate opinions of individual decision makers, but rather on a single set of assumptions adopted by decision makers as a group. In the absence of a consensus response to each item from decision makers, we used the mean response of decision makers as a proxy. We address limitations of this approach in the discussion.

Coorientation was determined by computing difference scores for agreement and accuracy on each item. For each resident respondent, difference scores were computed as follows:

$$CU \text{ Agreement} = \text{mean CU response to QA} - \text{resident response to QA}$$

$$CU \text{ Accuracy} = \text{mean CU response to QB} - \text{resident response to QA}$$

$$\text{Resident Agreement}^2 = \text{resident response to QA} - \text{mean CU response to QA}$$

$$\text{Resident Accuracy} = \text{resident response to QB} - \text{mean CU response to QA}$$

² CU and Resident agreement scores are the same magnitude with opposite signs. Both were calculated to facilitate interpretation of results.

Perfect agreement or accuracy would result in a difference score of zero. Difference scores with lower magnitudes (i.e., absolute values closer to zero) represent higher levels of agreement and accuracy, while difference scores with higher magnitudes represent lower levels of agreement and accuracy. The sign of the difference score indicates the direction of disagreement or inaccuracy. One-sample t-tests then can be used to determine whether these difference scores are significantly different from zero. Resident responses to coorientation items were not normally distributed and were highly skewed, violating the assumptions of a one sample t-test. Therefore we used an equivalent nonparametric test, the one sample sign test, to determine significant differences in coorientation variables. We set the null hypothesis to zero, i.e. no difference in responses between decision makers and residents.

Results

Agreement Among Decision Makers

Even though the decision-making team was a small group who met to discuss the deer situation multiple times over several months, they were not unanimous on all items. Decision makers shared fairly consistent views on the agreement items, although there were some important discrepancies. While most agreed that it is reasonable to have some deer on Cornell lands and in neighboring communities (N=5), one disagreed and one strongly disagreed, indicating potential differences in assumptions about goals of management even among the management team. A wide variation occurred in assessments of whether deer pose serious health risks; two disagreed, two were neutral, two agreed, one strongly agreed, and one was not sure. In addition, there was some variation in assessment of whether deer management on

Cornell lands would affect neighboring communities negatively; six disagreed or strongly disagreed, and one was neutral, but one strongly agreed.

Decision makers also were not unanimous in their predictions about resident responses. Half of decision makers were unsure whether community members think the habitat for deer is better on Cornell lands or in neighboring communities, and the other half each responded in a different category. In addition, decision makers varied in their responses about whether community members think that: deer seriously damage plants and other resources on Cornell lands; addressing deer impacts on Cornell lands would affect them positively or negatively; it is important to understand how other people view deer-related impacts; and Cornell is part of the local community.

Coorientation Between Decision Makers and Residents

One sample sign tests revealed significant differences ($p < 0.001$) for almost all measures of agreement, accuracy of decision makers, and accuracy of residents (Tables 9.1, 9.2). There were only three exceptions. Decision makers accurately predicted resident responses about whether the habitat was better on Cornell lands or in surrounding communities. Residents accurately predicted decision maker responses on the degree to which they thought that managing deer related impacts would affect residents negatively and whether it is important to understand other people's perspectives on deer.

Even though differences were significant on all other items, these differences often were quite small; the absolute value of mean difference scores ranged from only 0.02 to 1.03 (recall that on our scale, a mean difference of one is the distance between agree and strongly agree). Given our large sample size of respondents ($N=1497$), we had high enough power to detect statistical significance for relatively small

magnitudes of difference. For each coorientation item, approximately 1200 residents responded, with a standard deviation of approximately one. Based on these parameters, we conducted a power test to determine the smallest mean difference that would be detected as significant, with the power set to 80%. Under these conditions, we would be able to detect statistical significance at magnitudes of only 0.08. When we set the standard deviation to 0.05 for comparison, our sample size was large enough to detect a difference of 0.04. Thus, while coorientation difference scores were statistically significant, they were not practically significant for managers.

Instead of using statistical significance to categorize coorientation scores as high or low, we examined the scale of response categories. Taking into account our large sample size and that we were examining mean values, we determined that a 10% difference between decision makers and residents was a reasonable value to set as the limit of high agreement or accuracy. Coorientation scores with an absolute value below 0.5 would fall into these categories. Any coorientation scores with absolute values of 0.5 or higher were classified as low agreement or accuracy.

When coorientation scores were re-categorized using these criteria, eight of the 13 items showed high levels of agreement (Table 9.1). For the areas of low agreement, decision makers believed more strongly than residents that deer damage plants and resources on Cornell lands, deer present serious safety risks, deer present serious nuisance, and that Cornell should start now to address deer-related impacts. Conversely, decision makers believed less strongly than residents that the habitat for deer is better on Cornell lands than in the surrounding community.

Table 9.1. Coorientation of decision makers with local residents.

Item	Agreement	Accuracy
Context I: True Consensus	High	High
It is reasonable to have some deer on Cornell lands and in my community	-0.36	-0.41
Our local deer herd uses both Cornell lands and neighboring communities	0.27	-0.33
Deer in and around Cornell lands create serious health risks for people	0.09	0.41
Addressing deer-related impacts on Cornell lands would affect neighboring communities	0.29	0.04
Addressing deer-related impacts on Cornell lands would affect me positively	0.37	0.10
It is important to understand how other people view deer-related impacts	0.12	-0.13
Context II: Dissensus	Low	High
The habitat is better for deer on Cornell lands than in neighboring communities	-1.03	0.10 NS
Deer seriously damage plants and other resources on Cornell lands	0.80	-0.45
Deer in and around Cornell lands create serious safety risks for people	0.62	0.12
Cornell should start now to address deer-related impacts on their lands	0.77	0.02
Context III: False Conflict	High	Low
Addressing deer-related impacts on Cornell lands would affect me negatively	0.07	0.69
Cornell is part of the local community	0.29	-0.96
Context IV: False Consensus	Low	Low
Deer in and around Cornell lands create a serious nuisance for people	1.02	0.57

Note: Numbers represent average coorientation scores (differences between decision maker and resident responses for each item). While magnitude of differences were low, the differences were significant ($p < 0.001$) for all items except those marked NS. Items categorized as high have absolute values below 0.5 and are indicated in bold, items categorized as low have absolute values of 0.5 or higher.

Table 9.2. Coorientation of local residents with decision makers.

Item	Agreement	Accuracy
Context I: True Consensus	High	High
It is reasonable to have some deer on Cornell lands and in my community	0.36	0.15
Deer in and around Cornell lands create serious health risks for people	-0.09	0.04
Addressing deer-related impacts on Cornell lands would affect me negatively	-0.07	0.08 NS
It is important to understand how other people view deer-related impacts	-0.12	-0.08 NS
Context II: Dissensus	Low	High
No items	n/a	n/a
Context III: False Conflict	High	Low
Our local deer herd uses both Cornell lands and neighboring communities	-0.27	-0.62
Addressing deer-related impacts on Cornell lands would affect neighboring communities	-0.29	-0.60
Addressing deer-related impacts on Cornell lands would affect me positively	-0.37	-0.50
Cornell is part of the local community	-0.29	-0.72
Context IV: False Consensus	Low	Low
The habitat is better for deer on Cornell lands than in neighboring communities	1.03	0.84
Deer seriously damage plants and other resources on Cornell lands	-0.80	-0.79
Deer in and around Cornell lands create a serious nuisance for people	-1.02	-1.01
Deer in and around Cornell lands create serious safety risks for people	-0.62	-0.63
Cornell should start now to address deer-related impacts on their lands	-0.77	-0.86

Note: Numbers represent average coorientation scores (differences between decision maker and resident responses for each item). While magnitude of differences were low, the differences were significant ($p < 0.001$) for all items except those marked NS. Items categorized as high have absolute values below 0.5 and are indicated in bold, items categorized as low have absolute values of 0.5 or higher.

Accuracy scores were markedly different for Cornell University decision makers and residents; decision makers accurately predicted resident responses in ten of the 13 items (Table 9.1), while residents accurately predicted decision maker responses in only four items (Table 9.2). As a result, residents perceived many more areas of false conflict and false consensus than decision makers. Residents mistakenly identified false conflict over whether decision makers think that: deer use both Cornell lands and neighboring communities, addressing deer-related impacts would affect neighboring communities, addressing deer-related impacts would affect them positively and Cornell is part of the local community. For each of these areas, decision makers agreed with the statements more strongly than residents predicted. This also was true for almost all areas of false consensus. Decision makers not only rated the seriousness of deer impacts (damage to vegetation, nuisance, and safety risks) higher than residents, they also rated the seriousness higher than residents predicted they would. The same was true for whether Cornell should start now to manage deer. Residents also perceived false consensus on whether the habitat is better for deer on Cornell lands; residents agreed more strongly with this statement than decision makers and also predicted that decision makers agreed with the statement more strongly than they actually did.

Because decision makers had specified neighborhoods of interest, coorientation scores also were calculated for each neighborhood. When the sample was segmented, the sample size for each item was appropriate to use one sample sign tests to determine high and low categories of coorientation. An item was classified as high agreement or accuracy when a significant difference was not detected and classified as low when a significant difference was detected. As an example, we include one question of management concern (Table 9.3); analysis of all 13 items by all eight neighborhoods is beyond the scope of this paper.

Table 9.3. Coorientation scores by neighborhood.

Item	Neighborhood	Agreement (Decision Makers- Residents)	Accuracy of Decision Makers	Accuracy of Residents
Cornell should start now to address deer-related impacts on their lands (N _{TOT} =1371)		0.77**	0.02**	-0.86**
	Cornell Heights (N=36)	0.79	0.04	-1.21**
	Cayuga Heights (N=269)	0.68	-0.07	-0.83**
	Northeast (N=347)	0.62	-0.13	-0.88**
	Forest Home (N=57)	0.98*	0.23*	-0.43
	Varna (N=58)	1.05**	0.30**	-1.15**
	Ellis Hollow (N=140)	0.92**	0.17**	-0.96**
	Snyder Hill/Eastern Heights (N=129)	0.94**	0.19**	-0.90**
	Belle Sherman/Collegetown (N=335)	0.79**	0.04**	-0.81**

Note: Numbers in cells represent average coorientation scores. Scores that are not significantly different (i.e., high agreement or accuracy) are indicated in bold. * = scores that are significantly different at $p < 0.05$. ** = scores that are significantly different at $p < 0.01$.

For the item “Cornell should start now to address deer-related impacts on their lands,” decision makers and residents were in high agreement for the neighborhoods of Cornell Heights, Cayuga Heights and Northeast. In addition, responses of residents in these neighborhoods were most similar to the way that Cornell decision makers thought about the public in general (accuracy of decision maker scores). All other neighborhoods did not agree as strongly with decision makers on this item, which is reflected in the overall low accuracy of decision makers. It is interesting to note that the three neighborhoods that most closely correspond to Cornell decision maker views on this item also are the neighborhoods that have been working closely with Cornell on deer management research for over a decade. Yet their accuracy in predicting

decision maker response on this item was low. Residents of all three neighborhoods believed Cornell decision makers agreed less strongly with this item than they actually did. This level of inaccuracy also was true for all other neighborhoods, except for Forest Home, the neighborhood that has most recently been engaged in discussions about deer management with Cornell.

Discussion

As demonstrated in this paper, a coorientation approach to formative communication research can add value on two levels. First, it provides a learning opportunity for decision makers. Second, it reveals areas of similarity and difference between decision makers and the public that have implications for content and delivery of communication messages. Together, insight in these areas can be used to improve effectiveness of communication efforts.

The survey of decision makers revealed differences of opinion within the decision making team. These differences are important as they have potential to affect communication among team members. While responses were similar for most of the agreement questions, decision makers were not unanimous on whether it was reasonable to have deer on or around Cornell lands, the seriousness of health risks posed by deer, and whether managing deer on Cornell lands would affect neighboring communities. Beliefs about these items are fundamental in assessing whether deer management is warranted and to what extent; i.e., essential to framing the management problem and potential solutions (Chapter 6). Unless disparate beliefs are identified and addressed, individual decision makers may base their assessment of appropriate management goals and potential actions on different metrics, which may impede constructive discussion between team members about these topics. To move forward with analysis leading to management action, a land management authority or

entity with management responsibility eventually will need to articulate a single set of assumptions on which the organization basis its actions. Participation in coorientation research is one technique that can assist a management team in exploring potential differences in their own assumptions to develop a uniform understanding of the various elements of the management context. The degree of consensus among decision makers also has practical implications for the validity of quantitatively measuring coorientation with stakeholders. For small groups of decision makers, means of individual opinions may not accurately reflect the decision making process of that management unit. For more a more valid coorientation instrument, decision makers *as a group* would select one response to each item asked on the coorientation questionnaire (both agreement and accuracy questions). This group response would be used to calculate difference scores, rather than mean opinions of individuals. How group responses are determined may vary by management team (e.g., via consensus-based approaches, a vote, or even a single individual with actual decision making authority). Coorientation scores calculated by this method would more accurately reflect the way decisions are made by small groups and would obviate the problem of using means based on small samples.

The need for a common understanding of the management context was even more evident in the variation of decision maker accuracy in predicting resident response. These differences are especially important if different team members plan to regularly engage with the public or develop outreach materials. In general, assumptions about the target audience and their potential reactions shapes the approach to communication that is adopted (Dozier & Ehling, 1992). If individual decision makers have different beliefs about public reactions, they may adopt different communication strategies or messages. Coorientation accuracy questions can be used to reveal potential areas where decision makers or representatives of an organization

might deliver inconsistent messages in the absence of coorientation research.

Discussion among decision makers on the topics where they are less unanimous can help ensure consistency in future communication efforts with residents (which may include consistently acknowledging that decision makers were not unanimous on certain topics).

Additional implications for strategic communication were evident when the coorientation contexts for decision makers and residents were compared; Cornell University decision makers currently appear to be doing a better job of listening to residents than effectively informing residents about relevant Cornell perspectives about land management. Given that Cornell University is still fairly early in the planning process and has not yet engaged in comprehensive communication outreach, this result is unsurprising.

In a sense, coorientation from the decision maker perspective (i.e., Table 9.1) reveals a similar amount of information as can be gleaned from traditional audience research. Decision makers can use traditional audience research to assess the degree to which the public holds similar views to their own and whether these results were expected. In this study, decision makers were relatively accurate in their perceptions of areas of agreement and disagreement with the public, indicating true consensus and dissensus for almost all items. If Cornell decision makers relied only on their own coorientation to the public, and referred to the suggested communication objectives and approaches outlined in Chapter 8 for each coorientation context, they might pursue informational communication and collaboration for areas of true consensus and persuasive communication or alternative dispute resolution for areas of dissensus.

Yet, coorientation of residents to decision makers revealed many more areas of misperception, indicating that communication efforts based solely on decision maker coorientation to residents could be misinterpreted. When false conflict or false

consensus exist, coorientational variables become the outcome criteria of interest for communication objectives (Broom & Dozier, 1990) and education, dialogue and deliberation have been hypothesized as communication strategies that may improve accuracy (Chapter 8). In the case of false conflict, inaccurate perceptions may be more easily changed via communication than actual conflicts over beliefs (Christen, 2005), whereas recognizing false consensus at the outset can avoid premature attempts at collaboration that may be derailed when areas of disagreement surface later in the process.

While this study demonstrates the utility of a coorientation approach to formative communication research, implementation can be challenging with small groups of decision makers. Coorientation research requires decision makers to articulate assumptions about the public and can reveal inaccuracies that may be uncomfortable to accept. Unlike studies conducted on large groups, identities of individual decision makers may be easy to discern in the raw data of responses, which may cause additional discomfort. Indeed, decision makers in many natural resource agencies with whom we have worked often express reluctance to participate in coorientation research, citing that they anticipate a wide range of public responses and that part of the reason for a survey of the public is to acknowledge that decision makers need more information. While valid arguments, from a practical standpoint any communication effort is designed based on predictions of stakeholder response, whether or not these assumptions are explicitly recognized in communication planning. Nonetheless, coorientation of the public to decision makers (rather than decision makers to the public) has more important implications for effectiveness of communication efforts. For decision makers who are uncomfortable predicting responses of the public, measuring accuracy scores only for the public should nevertheless yield useful information.

It is important to reiterate that coorientation scores were based on mean scores for a small group of decision makers; for items where decision makers' opinions varied greatly, these coorientation values may less accurately reflect the assumptions that form the basis of actual decisions. In this situation, small groups of decision makers are at an advantage over larger groups in that they can more easily engage in discussions that examine the root of any differences in their perceptions and may find it easier reaching consensus on topics that form the basis of management decisions. As previously mentioned, such early conversations that establish uniform understanding among decision makers will improve the validity of coorientation measures. Thus, before using results of this study to inform communication strategies, the Cornell University decision making team would benefit from discussions that result in a single team response to agreement scores, at minimum. Coorientation scores then can be recalculated to determine whether or not public accuracy (as well as corresponding approaches to communication) is affected.

On the whole, this study illustrates the importance of: (1) surfacing and acknowledging differences in perspectives of decision makers, either through a survey instrument such as the one used in this study, or through other means that allow decision makers to articulate and discuss their understanding of all components that comprise the management context, and (2) understanding not only the beliefs and attitudes of decision makers and the public about management topics but also the assumptions each group holds about the other. Coorientation research can provide insight in both of these areas, and assessment of coorientation contexts may be a useful tool to assist managers in more effectively fulfilling public engagement directives. Coorientation research also can assist decision makers in tailoring communication strategies to specific subgroups, e.g. neighborhoods or interest groups. Finally, participating in coorientation research allows decision makers who are open

and inquisitive to test their own assumptions about the management environment, learning not only about differences with the public, but also about differences within their own team.

Acknowledgments

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APPENDIX 9.A

Coorientation Questions

Question A:

Please indicate to what extent YOU agree or disagree with the following statements.

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
It is reasonable to have some deer on Cornell lands and in my community	1	2	3	4	5	9
The habitat is better for deer on Cornell lands than in neighboring communities	1	2	3	4	5	9
Our local deer herd uses both Cornell lands and neighboring communities	1	2	3	4	5	9
Deer seriously damage plants and other resources on Cornell lands	1	2	3	4	5	9
Deer in and around Cornell lands create a serious nuisance for people	1	2	3	4	5	9
Deer in and around Cornell lands create serious health risks for people	1	2	3	4	5	9
Deer in and around Cornell lands create serious safety risks for people	1	2	3	4	5	9
Cornell should start now to address deer-related impacts on their lands	1	2	3	4	5	9
Addressing deer-related impacts on Cornell lands would affect neighboring communities	1	2	3	4	5	9
Addressing deer-related impacts on Cornell lands would affect me positively	1	2	3	4	5	9
Addressing deer-related impacts on Cornell lands would affect me negatively	1	2	3	4	5	9
It is important to understand how other people view deer-related impacts	1	2	3	4	5	9
Cornell is part of the local community	1	2	3	4	5	9

Question B.

Please indicate to what extent YOU agree or disagree with the following statements about Cornell decision makers.³

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
It is reasonable to have some deer on Cornell lands and in my community	1	2	3	4	5	9
The habitat is better for deer on Cornell lands than in neighboring communities	1	2	3	4	5	9
Our local deer herd uses both Cornell lands and neighboring communities	1	2	3	4	5	9
Deer seriously damage plants and other resources on Cornell lands	1	2	3	4	5	9
Deer in and around Cornell lands create a serious nuisance for people	1	2	3	4	5	9
Deer in and around Cornell lands create serious health risks for people	1	2	3	4	5	9
Deer in and around Cornell lands create serious safety risks for people	1	2	3	4	5	9
Cornell should start now to address deer-related impacts on their lands	1	2	3	4	5	9
Addressing deer-related impacts on Cornell lands would affect neighboring communities	1	2	3	4	5	9
Addressing deer-related impacts on Cornell lands would affect me positively	1	2	3	4	5	9
Addressing deer-related impacts on Cornell lands would affect me negatively	1	2	3	4	5	9
It is important to understand how other people view deer-related impacts	1	2	3	4	5	9
Cornell is part of the local community	1	2	3	4	5	9

³ In the questionnaire distributed to decision makers, the main question was reworded to “Please indicate to what extent YOU agree or disagree with the following statements about members of neighboring communities”; individual items were re-worded to read “Community members think...”

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CHAPTER 10

RETHINKING PROTECTED AREAS IN A CHANGING WORLD

The theme of the 2007 George Wright Society Biennial Conference on Parks and Protected Areas and Cultural Sites was “Rethinking Protected Areas in a Changing World.” Sub-themes included: globalization, shifting demographics, increasing democratization of heritage, erosion of biodiversity, alienation of people from the past, ongoing debates over privatization of parks and heritage sites, and the emergence of civic engagement. Rethinking the role of parks in response to such large-scale changes was seen as the next challenge for park professionals, in which understanding the human dimensions of natural resource management will play a fundamental role.

As this collection of papers demonstrates, the field of human dimensions is evolving to meet this challenge. New paradigms for public participation have emerged, and managers are gaining experience with implementing innovative approaches to better understand stakeholders. Emphasis of both policy and practice is shifting to a more inclusive, landscape view of natural resource management and dialectic, dialogue-based approaches to public participation. With this emphasis on dialogue, clear communication is essential. For complex, messy natural resource issues, problem framing is a non-trivial task, and strategies to improve two-way symmetric communication between stakeholders and managers will need to be developed and adopted to a greater degree. This study began to address this task by examining capacity for local community participation in biological resource management decisions on federal reserves.

Contributions to Theory, Method, Policy and Practice

This study contributed to theory, method, policy and practice in a number of disciplines related to public participation in natural resource management. In the first phase of research, a public issues education model was refined for application to wildlife issues in National Parks and was used as a theoretical framework for examining public participation needs throughout subsequent phases of research (Chapter 2). In addition, a popular typology of philosophical approaches to public participation was expanded to capture a category that was not originally identified (Chapter 4). Because of NPS interest in local communities (Chapter 3), this typology was examined with respect to conceptions of community, revealing paradigm shifts in ways to conceive of both communities and public participation. These paradigms are reflected in policies that differentially privilege communities of interest and communities of place. Yet the policies are used contemporaneously depending on the nature and scope of the issue at hand and the phase in the issue evolution cycle. Referring to these conceptual models may assist managers in reflecting on the philosophical approach to public participation that is most appropriate for their unique management context. Interviews with public participation practitioners revealed additional insight on challenges and opportunities related to applying approaches within the different paradigms (Chapter 5).

Next, a hermeneutic research philosophy was adopted to learn from residents of communities near parks. This research resulted in the development of a conceptual model that illustrates components of messy wildlife management issues at urban proximate parks as a tool to assist managers and stakeholders in engaging in dialogue about problem framing (Chapter 6). In addition, suburban/urban wildlife were identified as “ambiguous” animals for which a uniform cultural construct had not yet been established. Dialogue between managers and stakeholders, as well as interaction

between the wildlife profession and broader society, likely will be important in the evolution of this cultural construct (Chapter 7). The significance of cultural expectations for wildlife revealed by this study and the declining response rate of mail surveys indicate a need for future human dimensions studies informed by ethnographic research traditions, such as the approach used in this study.

The final phase of research centered on communication theory. The concept of coorientation was broadened from a descriptive measurement tool to examine theoretical implications of coorientation contexts on different approaches to participation (Chapter 8). Different objectives and techniques for engaging the public were suggested depending on not only the coorientation context and phase in issue evolution, but also the underlying philosophical approach to participation. A quantitative method for assessing coorientation contexts also was developed for use with small groups of decision makers and large groups of publics (Chapter 9), the typical situation encountered by natural resource managers of federal reserve lands.

Capacity for Innovative Approaches to Public Participation

The complex, dynamic, ecological processes and wide range of stakeholders who influence biological resource management in NPS units are characteristic of the open systems nature of parks and protected areas. Rethinking the role of protected areas in a changing world will include shifts from a closed to open system perspective that considers influences beyond jurisdictional boundaries and from one-way to two-way symmetric models of communication (i.e., transactional and co-management approaches to participation, Chapter 4). These changes in philosophy can be thought of as adoption of innovations (Rogers, 1995).

NPS organizational culture and the closed-system worldview in which it historically developed are elements of institutional capacity that influence adoption of

inclusive approaches to communication and public participation. Individual capacity for adoption of innovation may be linked to institutional capacity but is influenced by other factors as well. These include: (1) knowledge of the innovation and an understanding of how it functions, (2) developing a favorable or unfavorable attitude towards the innovation, (3) experiences implementing the innovation (Rogers, 1995).

Adopting two-way symmetric communication is not as straightforward a proposition as it may seem. Applying this communication model to public participation in natural resource management assumes a fundamentally constructivist paradigm (Guba & Lincoln, 1998; Tashakkori & Teddlie, 1998), where there are multiple, valid ways that people value natural resources, desire resources to be managed, and affect or are affected by natural resources and management decisions. Yet, natural resource managers often are schooled in ecology, where a postpositive paradigm (falsification of hypotheses) is applied to management questions. While ecologists recognize that, “Understanding is an objectively determined, empirical match between some set of confirmable, observable phenomena in the natural world and a conceptual construct” (Pickett et al., 1994, p. 28), the scientific community attempts to agree on a single “reality” through replication, confirmation, critique, and peer-review. Stakeholders may not agree with this version of “reality.” Before managers can successfully implement dialogue-based approaches to public participation, they must be open to the legitimacy of alternative worldviews. Otherwise, communication runs the risk of reverting to attempts to persuade the public to adopt the scientific paradigm.

As reported in Chapters 3 and 5, managers also may be wary to adopt a two-way symmetric approach to public participation because of attitudes formed towards participation in general. Negative past experiences with other forms of public participation may result in the assumption that two-way symmetric approaches simply

advocate “more” public involvement, rather than “different” public involvement. Fears such as loss of control, fear of the public, and fear of lawsuits also may act as barriers against more inclusive approaches to public participation.

Individual capacity for adoption of innovation also can be affected by experiences implementing the innovation, which often is linked to institutional capacity. For example, lack of administrative support, lack of agency funding for refreshments or to defray travel costs for participants, and lack of authority may prevent interested managers from adopting more inclusive participatory practices (Wondolleck & Yaffee, 2000). Conversely, organizations that encourage openness, sharing of information and group achievements with a reward system that rewards risk taking, willingness to change, and long-term focus are perceived as more supportive of innovation (Montes et al., 2004).

Institutional capacity for dialogue-based participation may be increased by instituting a team structure throughout the organization and developing practices that expand the information flow throughout the organization (Zamanou & Glaser, 1994). In addition, institutionalizing a reward system that encourages risk taking, willingness to change, openness, and sharing of information and group achievements are positively related to an innovation-supportive culture (Montes et al., 2004).

Fundamental to the success of open and honest two-way symmetric communication is an individual’s capacity to recognize multiple, valid ways to perceive systemic natural resource risks and potential effects of management, and a commitment to understanding the reasons behind alternate perceptions. One metaphor that explains the existence of these multiple perspectives is described by Porter and Underwood (1999), who liken NPS and state agency perceptions of deer issues to the blind men touching different parts of an elephant and disagreeing about its form.

Kuhn (1996) takes this idea one step further in the concept of incommensurable paradigms:

“The proponents of competing paradigms practice their trades in different worlds...Both are looking at the world, and what they look at has not changed. But in some areas they see different things, and they see them in different relations one to the other...it is why, before they can hope to communicate fully, one group or the other must experience the conversion that we have been calling a paradigm shift. Just because it is a transition between incommensurables, the transition between competing paradigms cannot be made a step at a time, forced by logic and neutral experience. Like the gestalt switch, it must occur all at one (though not necessarily in an instant) or not at all” (p.150)

This phenomenon is reflected in the different problem frames and cultural expectations for wildlife discussed in Chapters 6 and 7 and can be visually illustrated by images that are perceptually ambiguous, such as Rubin’s well-known face-vase (Figure 10.1). Focusing on different elements of the image suggest two very different subjects, a vase or profiles of two people engaged in dialogue. Similarly, the diverse interests and values of natural resource managers and stakeholders may lead them to focus on different aspects of natural resource issues, resulting in different conclusions about: impacts related to the resource or resource management activities, what science tells them about the resources, and management’s role and responsibility toward the resources. Two-way symmetrical dialogue may allow each party to understand how the other views the “big picture,” allowing them to see both the “vase” and “faces” as different ways of understanding the same environment. When parties achieve the ability to understand how the other sees, or frames, the problem, the experience can be transformative, as described in Chapter 5. What were previously incommensurable paradigms are recognized as different aspects of the same environment, allowing for the possibility of identifying areas of common ground.



Figure 10.1. Ambiguous face-vase (after Rubin, 1915). By focusing on different elements of this well-known illustration, the viewer can see two very different subjects.

Pearce and Littlejohn (1997) extend this concept of incommensurability to communication, where they define moral conflicts as situations in which normal discourse does not work because the normal discourse of one group does not match that of the other; "...participants not only differ about what they want, believe or need but also lack shared procedures for arguing their claims and standards for judging the validity of those arguments" (p. 97). They suggest that "normal patterns of discourse" (e.g., adversarial participatory processes, Chapter 5) may lead participants to fall into proscribed roles, while "abnormal patterns of discourse," such as those that grow out of two-way symmetric communication can facilitate mutual understanding, where participants learn to see with a different vision. Chapters 8 and 9 developed a methodology to assist managers in determining when abnormal patterns of discourse may assist in triggering the "gestalt switch" leading to improved understanding of the overall management system.

Adoption of “abnormal patterns of discourse” as standard practice in natural resource management throughout the NPS likely will be a gradual process that accompanies broader cultural changes. The emergence of policy that embraces this approach indicates the beginning of this trend, which should increase as managers experience positive results from implementing more inclusive forms of participation. To become widespread, this type of innovation must be adopted throughout the NPS line authority, from policy-makers, to field officers, and most importantly to the influential decision-makers at mid-levels who control funding and set rewards. The more procedurally focused approaches to public participation (i.e., inquisitive and intermediary, Chapter 4) likely will continue to play an important role in natural resource management, however they are less suited to identifying and addressing the root causes of emerging messy natural resource issues facing today’s managers.

Natural Resource Management on the Third Frontier

Perhaps it is not a coincidence that the national park idea was born in the era when manifest destiny and westward expansion reached their apex. In 1890, the U.S. Census Bureau officially declared the frontier closed, “...the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line...it can not, therefore, any longer have a place in the census reports” (Turner, 1920, p. 1). In his frontier thesis, Frederick Jackson Turner speculated that the closing of the frontier and the end of free land to homesteaders signaled the conclusion of the first significant period in American history and believed that the nation was “...readjusting its old ideals to new conditions and...turning increasingly to government to preserve its traditional democracy” (Turner, 1920, p. 321). As America entered its next era of agrarian development, concern turned from taming the wilderness to preserving it. Nature was viewed increasingly through the lens of

romanticism and the NPS grew in prominence as a vehicle for preservation of wild nature. In 1990, one hundred years after the closing of the first frontier, the U.S. Census Bureau officially stopped counting farm residents, which Richard Louv describes as the closing of the second frontier (Louv, 2005). Natural resource management is now entering what Louv calls the “third frontier,” an era he characterizes by electronic detachment from nature, the rise of a new kind of suburbia, and blurring of distinctions between the urban and the natural. The nation is again readjusting its old ideals to new conditions, although this time it appears that renewed civic engagement and collective decision making are the preferred means to preserve democracy.

The research presented in this collection of manuscripts examined implications of these changing ideals about public participation for natural resource management on public trust lands. Policies for public participation and civic engagement are evolving in response to this need and practitioners are implementing more inclusive forms of public participation. As societal shifts and changing land-use practices alter the continent, natural resource management on the third frontier has become more complex. Stakeholders experience protected areas and the resources they conserve from multiple perspectives, and techniques to clarify problem frames and recognize multiple valid ways to view the environment are becoming increasingly valuable. In the absence of a uniform understanding of natural resources, dialogue and civic engagement have emerged as mechanisms to help stakeholders and managers see from the same vision.

Wallace Stenger wrote, “The national park idea, the best idea we ever had, was inevitable as soon as Americans learned to confront the wild continent not with fear and cupidity but with delight, wonder and awe” (1983, p. 5). Louv warns that children growing up on the third frontier run the risk of suffering “nature-deficit disorder,”

which may lead them to fear nature as adults (Louv, 2005). According to Kahn's hypothesis of environmental generational amnesia, the natural environment experienced as children becomes the norm against which adults gauge the status of the environment (Kahn, 1999; 2002). If current large-scale changes continue (e.g., societal detachment from nature, anthropogenic landscape transformations that alter human-wildlife interactions, and additional species succumbing to the tragedy of becoming common), and fear of nature becomes widespread, the national park idea as originally conceived could become threatened. A challenge for natural resource managers on the third frontier thus will be preventing these fears from developing. Better understanding and communicating about the human and ecological dimensions that affect protected areas will be essential to this process. By effectively engaging the public throughout all stages of issue evolution, managers have the opportunity to improve appreciation of national parks and the resources they conserve and address fears of the natural world, ensuring that current and future generations continue to view parks with delight, wonder and awe.

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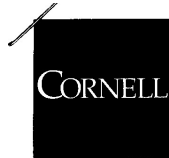
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APPENDIX

RESEARCH APPROVAL DOCUMENTATION

University Committee on Human Subjects (UCHS) Full Project Approval



Cornell University
123 Day Hall
Ithaca, NY 14853-2801

Telephone: 607 255-5138
Fax: 607 255-5058

University Committee on Human Subjects

NOTIFICATION OF EXEMPT CLASSIFICATION

Protocol ID# 04-04-043

To: Kirsten Leong

From: Sarah J. Demo, UCHS Administrator *Sarah J. Demo*

Date of approval: April 27, 2004

Project(s): ***Human Dimensions of Deer Management in National Parks in the Northeastern United States (Phase I)***

As Administrator of the University Committee on Human Subjects, I have reviewed the above referenced project and it is Exempt from the Federal Regulation for the Protection of Human Subjects (45 CFR 46). As detailed in the application you submitted, the involvement of human subjects in this research study is ***strictly limited*** to one or more of the exempted categories listed on the attached Citation sheet.

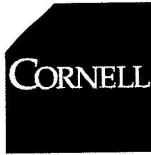
- * Exemption does not absolve the investigator from ensuring that the welfare of the subjects participating in the research is protected and that methods used and information provided to gain subject consent are appropriate to the activity. It is your responsibility as a researcher to familiarize yourself with and conduct the research in accordance with the ethical standards of the *Belmont Report*.
Belmont Report: <http://ohrp.osophs.dhhs.gov/humansubjects/guidance/belmont.htm>
- * You must immediately notify the UCHS if any changes or modifications are made in the study's design or procedures that do not fall within one of the categories exempted from the regulations. Any such changes or modifications must be reviewed and approved by UCHS *prior* to their implementation.
- * You are not required to submit progress reports or requests for continuing review/approval to UCHS, unless you modify your study protocol.

Please take note of the following:

You may file an amendment (rather than a full renewal application) with UCHS when you are ready to apply for Phase II of this study.

Attachment: Exemption Citation

c: Daniel Decker
JDC 43138



Cornell University
115 Day Hall
Ithaca, NY 14853-2801

Telephone: 607 255-5138
Fax: 607 255-5058

University Committee on Human Subjects

Exemption Citation

Name of Investigator: **Kirsten Leong**

Protocol ID# **04-04-043**

Title of Project: **Human Dimensions of Deer Management in National Parks in the Northeastern United States (Phase I)**

4/27/04

45 CFR 46.101 (b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

- ☐ (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as
 - (i) research on regular and special education instructional strategies, or
 - (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
- ☒ (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
 - (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
 - (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.
- ☐ (3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if:
 - (i) the human subjects are elected or appointed public officials or candidates for public office; or
 - (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.
- ☐ (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.
- ☐ (5) ~~Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine:~~
 - ~~(i) Public benefit or service programs;~~
 - ~~(ii) procedures for obtaining benefits or services under those programs;~~
 - ~~(iii) possible changes in or alternatives to those programs or procedures; or~~
 - ~~(iv) possible changes in methods or levels of payment for benefits or services under those programs.~~

Not applicable to Cornell.
- ☐ (6) Taste and food quality evaluation and consumer acceptance studies,
 - (i) if wholesome foods without additives are consumed or
 - (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

UCHS Amendment Approval: Interviews with Practitioners



Cornell University
115 Day Hall
Ithaca, NY 14853-2801

Telephone: 607 255-5138
Fax: 607 255-5058

University Committee on Human Subjects

NOTIFICATION OF AMENDMENT APPROVAL

Protocol ID# 04-04-043

To: Kirsten Leong
From: Sarah J. Demo, UCHS Administrator *Sarah J Demo*
Date of approval: November 19, 2004
Project(s): *Human Dimensions of Deer Management in National Parks in the Northeastern United States (Phases I & II)*

The UCHS has reviewed and approved the following amendment(s) to the above referenced project.

11/17/04 amendment to add a new Phase II to the study in which practitioners who are not NPS managers are interviewed (as well as redesignating the original Phase II as Phase III).

Please take note of the following:

Please file an amendment with UCHS when you are ready to apply for Phase III of this study.

If you requested modifications to a consent form(s):

- Use only the modified form for additional subject enrollment.
- Include on the form the date of this notification for the revised UCHS approval date.

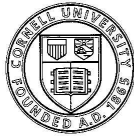
If you submitted revised/final versions of interview guides, questionnaires, or debriefing scripts, you have approval to use these materials immediately.

All other study procedures/instruments are to remain unchanged from the original submission and UCHS approval.

Your protocol remains "Exempt" with this modification.

c: Daniel Decker
JDC 43138

UCHS Amendment Approval: Interviews with Residents



Cornell University
University Committee on
Human Subjects

1162 Comstock Hall
Ithaca, New York 14853
t. 607.255.5138
f. 607.255.5058
uchs@cornell.edu
www.osp.cornell.edu/Compliance/
UCHS/homepageUCHS.htm

NOTIFICATION OF AMENDMENT APPROVAL

Protocol ID# 04-04-043

To: Kirsten Leong
From: Sarah J. Demo, UCHS Administrator *Sarah J. Demo*
Date of approval: June 23, 2005
Project(s): *Human Dimensions of Deer Management in National Parks in the Northeastern United States (Phases I & II)*

The UCHS has reviewed and approved the following amendment(s) to the above referenced project.

6/20/05 amendment to begin Phase IIIA, consisting of in-depth, semi-structured interviews with local residents, and 2) short interviews with residents in local gathering places.

Please take note of the following:

Please submit the mail-back survey to UCHS with an amendment before beginning Phase IIIB, the mail-back survey to community residents.

If you requested modifications to a consent form(s):

- Use only the modified form for additional subject enrollment.
- Include on the form the date of this notification for the revised UCHS approval date.

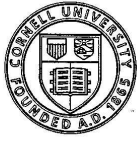
If you submitted revised/final versions of interview guides, questionnaires, or debriefing scripts, you have approval to use these materials immediately.

All other study procedures/instruments are to remain unchanged from the original submission and UCHS approval.

Your protocol remains "Exempt" with this modification.

c: Daniel Decker (djd6)
JDC 43138

UCHS Amendment Approval: Mail Survey with East Hill Residents



Cornell University
Office of
Research Integrity and Assurance

University Committee on
Human Subjects
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Ithaca, New York 14850-1285
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f. 607.255.0758
e. uchs@cornell.edu
www.osp.cornell.edu/Compliance/
UCHS/homepageUCHS.htm

NOTIFICATION OF AMENDMENT APPROVAL

Protocol ID# 96-03-005

To: Tommy Brown
From: Sarah J. Demo, UCHS Coordinator *Sarah J. Demo*
Date of approval: October 3, 2006
Project(s): *Human Dimensions of Natural Resources Management*

I have reviewed the following amendment(s) to the above referenced project and find that your protocol remains "Exempt" with this modification:

10/2/06 amendment to conduct new survey, "Deer, Cornell Lands, and East Hill Communities"

If you requested modifications to a consent form(s):

- Use only the modified form for additional subject enrollment.
- Include on the form the date of this notification for the revised UCHS approval date.

If you submitted revised/final versions of interview guides, questionnaires, or debriefing scripts, you have approval to use these materials immediately.

All other study procedures/instruments are to remain unchanged from the original submission and UCHS approval.

JDC 42190, 48804, 50525, 51078, 51500

Cornell University is an equal opportunity, affirmative action educator and employer.

Fire Island National Seashore Research Permit

SCIENTIFIC RESEARCH AND COLLECTING PERMIT Grants permission in accordance with the attached general and special conditions United States Department of the Interior National Park Service Fire Island NS	Study#: FIIS-00035 Permit#: FIIS-2005-SCI-0012 Start Date: Aug 15, 2005 Expiration Date: Dec 31, 2006 Coop Agreement#: n/a Optional Park Code: n/a
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Name of principal investigator: Name: Ms Kirsten Leong Phone: 607-255-4136 Email: KML47@cornell.edu <i>FX 970-225-3585</i>						
Name of institution represented: Cornell University						
Co-Investigators: <table style="width: 100%;"> <tr> <td style="width: 33%;">Name: Daniel J. Docker</td> <td style="width: 33%;">Phone: 607-255-2559</td> <td style="width: 33%;">Email: djd6@cornell.edu</td> </tr> <tr> <td>Name: Margaret A. Wild</td> <td>Phone: 970-225-3593</td> <td>Email: Margaret_Wild@nps.gov</td> </tr> </table>	Name: Daniel J. Docker	Phone: 607-255-2559	Email: djd6@cornell.edu	Name: Margaret A. Wild	Phone: 970-225-3593	Email: Margaret_Wild@nps.gov
Name: Daniel J. Docker	Phone: 607-255-2559	Email: djd6@cornell.edu				
Name: Margaret A. Wild	Phone: 970-225-3593	Email: Margaret_Wild@nps.gov				
Project title: Identifying Capacity for Local Community Participation in Biological Resource Management Planning on Federal Reserves: White-tailed Deer Issues in National Park Service Units in the Northeastern U.S.						
Purpose of study: The National Park Service (NPS) regularly addresses biological resource management issues that are of interest to the public. While biological expertise is needed to understand and predict ecosystem responses to management actions, a different type of expertise (i.e., human dimensions) is needed to understand and predict social responses to management actions. In addition, implementation of recent NPS policy that emphasizes local community participation in planning can be aided by human dimensions knowledge. Despite the apparent potential benefit of human dimensions knowledge specific to park situations, little human dimensions inquiry and systematic application has occurred with respect to biological resource management. This study is intended to address this need by focusing on white-tailed deer issues in northeastern NPS units. White-tailed deer have generated a number of ongoing public issues whose biological dimensions have been studied extensively in NPS units throughout the northeastern U.S. My research will use inquiry about deer issues in the northeast to examine the general research question: How can the NPS improve its ability to anticipate and respond to human dimensions of biological resource management issues, such as those associated with deer, that originate in local communities? As part of a larger dissertation project, this study will utilize qualitative situation assessments and mail-back surveys of local community members to: (1) describe the differences in values for which a park is managed and those of stakeholders with respect to deer issues, and (2) suggest how NPS staff might utilize this understanding to design successful interactions with the public. My research will develop a framework and methodology to help NPS managers meet new policy directives related to public participation and will improve NPS ability to respond to other issues that, like deer, involve local communities in their emergence and evolution.						
Locations authorized: Activities will take place in communities surrounding (or encompassed within) the park, at local gathering spots (may be both public and private establishments) or private households. On occasion, interviewees may be encountered inside the park, and investigators will be required to pass through the park en route to interview sites. Only access points and trails open to the public will be used.						
Transportation method to research site(s): Foot, rental car						
Collection of the following specimens or materials, quantities, and any limitations on collecting: n/a						
Name of repository for specimens or sample materials if applicable: n/a						
Specific conditions or restrictions (also see attached conditions):						

See Attached

Recommended by park staff (name and title):

Michael S. Baker

Reviewed by Collections Manager:

Yes

No ☒

Approved by park official:

Michael S. Baker

Date Approved:

7/18/05

Title:

Superintendent

I Agree To All Conditions And Restrictions Of this Permit As Specified
(Not valid unless signed and dated by the principal investigator)

Kristen Leong

(Principal investigator's signature)

7/25/05
(Date)

THIS PERMIT AND ATTACHED CONDITIONS AND RESTRICTIONS MUST BE CARRIED AT ALL TIMES
WHILE CONDUCTING RESEARCH ACTIVITIES IN THE DESIGNATED PARK(S)

Valley Forge National Historical Park Research Permit

SCIENTIFIC RESEARCH AND COLLECTING PERMIT Grants permission in accordance with the attached general and special conditions United States Department of the Interior National Park Service Valley Forge NHP	Study#: VAFO-00013 Permit#: VAFO-2005-SCI-0003 Start Date: Aug 15, 2005 Expiration Date: Dec 31, 2006 Coop Agreement#: n/a Optional Park Code: n/a						
Name of principal investigator: Name: Ms Kirsten Leong Phone: 607-255-4136 Email: KML47@cornell.edu							
Name of institution represented: Cornell University							
Co-Investigators: <table style="width: 100%;"> <tr> <td style="width: 33%;">Name: Daniel J. Decker</td> <td style="width: 33%;">Phone: 607-255-2559</td> <td style="width: 33%;">Email: djd6@cornell.edu</td> </tr> <tr> <td>Name: Margaret A. Wild</td> <td>Phone: 970-225-3593</td> <td>Email: Margaret_Wild@nps.gov</td> </tr> </table>		Name: Daniel J. Decker	Phone: 607-255-2559	Email: djd6@cornell.edu	Name: Margaret A. Wild	Phone: 970-225-3593	Email: Margaret_Wild@nps.gov
Name: Daniel J. Decker	Phone: 607-255-2559	Email: djd6@cornell.edu					
Name: Margaret A. Wild	Phone: 970-225-3593	Email: Margaret_Wild@nps.gov					
Project title: Identifying Capacity for Local Community Participation in Biological Resource Management Planning on Federal Reserves: White-tailed Deer Issues in National Park Service Units in the Northeastern U.S.							
Purpose of study: The National Park Service (NPS) regularly addresses biological resource management issues that are of interest to the public. While biological expertise is needed to understand and predict ecosystem responses to management actions, a different type of expertise (i.e., human dimensions) is needed to understand and predict social responses to management actions. In addition, implementation of recent NPS policy that emphasizes local community participation in planning can be aided by human dimensions knowledge. Despite the apparent potential benefit of human dimensions knowledge specific to park situations, little human dimensions inquiry and systematic application has occurred with respect to biological resource management. This study is intended to address this need by focusing on white-tailed deer issues in northeastern NPS units. White-tailed deer have generated a number of ongoing public issues whose biological dimensions have been studied extensively in NPS units throughout the northeastern U.S. My research will use inquiry about deer issues in the northeast to examine the general research question: How can the NPS improve its ability to anticipate and respond to human dimensions of biological resource management issues, such as those associated with deer, that originate in local communities? As part of a larger dissertation project, this study will utilize qualitative situation assessments and mail-back surveys of local community members to: (1) describe the differences in values for which a park is managed and those of stakeholders with respect to deer issues, and (2) suggest how NPS staff might utilize this understanding to design successful interactions with the public. My research will develop a framework and methodology to help NPS managers meet new policy directives related to public participation and will improve NPS ability to respond to other issues that, like deer, involve local communities in their emergence and evolution.							
Locations authorized: Activities will take place in communities surrounding (or encompassed within) the park, at local gathering spots (may be both public and private establishments) or private households. On occasion, interviewees may be encountered inside the park, and investigators will be required to pass through the park en route to interview sites. Only access points and trails open to the public will be used.							
Transportation method to research site(s): Foot, rental car							
Collection of the following specimens or materials, quantities, and any limitations on collecting: n/a							
Name of repository for specimens or sample materials if applicable: n/a							
Specific conditions or restrictions (also see attached conditions):							

n/a

Recommended by park staff(name and title):

Margaret A. Capitol, Ecologist

Reviewed by Collections Manager:

Yes ☐ No ☒

Approved by park official:

Brian L. Fullen

Date Approved:

7/14/05

Title:

DBPT
Superintendent

I Agree To All Conditions And Restrictions Of this Permit As Specified
(Not valid unless signed and dated by the principal investigator)

Kirsten Long

(Principal investigator's signature)

7/11/05

(Date)

**THIS PERMIT AND ATTACHED CONDITIONS AND RESTRICTIONS MUST BE CARRIED AT ALL TIMES
WHILE CONDUCTING RESEARCH ACTIVITIES IN THE DESIGNATED PARK(S)**

Prince William Forest Park Research Permit

 SCIENTIFIC RESEARCH AND COLLECTING PERMIT Grants permission in accordance with the attached general and special conditions United States Department of the Interior National Park Service Prince William Forest Park	Study#: PRWI-00034 Permit#: PRWI-2005-SCI-0014 Start Date: Aug 10, 2005 Expiration Date: Dec 31, 2006 Coop Agreement#: n/a Optional Park Code: n/a
--	--

Name of principal investigator:

Name: Ms Kirsten Leong **Phone:** 607-255-4136 **Email:** KML47@cornell.edu

Name of institution represented:

Cornell University

Co-Investigators:

Name: Daniel J. Decker

Phone: 607-255-2559

Email: djd6@cornell.edu

Name: Margaret A. Wild

Phone: 970-225-3593

Email: Margaret_Wild@nps.gov

Project title:

Identifying Capacity for Local Community Participation in Biological Resource Management Planning on Federal Reserves: White-tailed Deer Issues in National Park Service Units in the Northeastern U.S.

Purpose of study:

The National Park Service (NPS) regularly addresses biological resource management issues that are of interest to the public. While biological expertise is needed to understand and predict ecosystem responses to management actions, a different type of expertise (i.e., human dimensions) is needed to understand and predict social responses to management actions. In addition, implementation of recent NPS policy that emphasizes local community participation in planning can be aided by human dimensions knowledge. Despite the apparent potential benefit of human dimensions knowledge specific to park situations, little human dimensions inquiry and systematic application has occurred with respect to biological resource management. This study is intended to address this need by focusing on white-tailed deer issues in northeastern NPS units. White-tailed deer have generated a number of ongoing public issues whose biological dimensions have been studied extensively in NPS units throughout the northeastern U.S. My research will use inquiry about deer issues in the northeast to examine the general research question: How can the NPS improve its ability to anticipate and respond to human dimensions of biological resource management issues, such as those associated with deer, that originate in local communities? As part of a larger dissertation project, this study will utilize qualitative situation assessments and mail-back surveys of local community members to: (1) describe the differences in values for which a park is managed and those of stakeholders with respect to deer issues, and (2) suggest how NPS staff might utilize this understanding to design successful interactions with the public. My research will develop a framework and methodology to help NPS managers meet new policy directives related to public participation and will improve NPS ability to respond to other issues that, like deer, involve local communities in their emergence and evolution.

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Activities will take place in communities surrounding (or encompassed within) the park, at local gathering spots (may be both public and private establishments) or private households. On occasion, interviewees may be encountered inside the park, and investigators will be required to pass through the park en route to interview sites. Only access points and trails open to the public will be used.

Transportation method to research site(s):

Foot, rental car

Collection of the following specimens or materials, quantities, and any limitations on collecting:

n/a

Name of repository for specimens or sample materials if applicable:

n/a

Specific conditions or restrictions (also see attached conditions):

Please see attached park specific conditions.

Recommended by park staff(name and title):

Jennifer A. Lee

Approved by park official:

Kent S. Hutz

Title:

Superintendent

Reviewed by Collections Manager:

Yes ☒ No ☐

Date Approved:

8/16/05

I Agree To All Conditions And Restrictions Of this Permit As Specified
(Not valid unless signed and dated by the principal investigator)

Kirsten Leong
(Principal investigator's signature)

9/12/05
(Date)

**THIS PERMIT AND ATTACHED CONDITIONS AND RESTRICTIONS MUST BE CARRIED AT ALL TIMES
WHILE CONDUCTING RESEARCH ACTIVITIES IN THE DESIGNATED PARK(S)**